

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari Post, Coimbatore - 641 021, Tamil Nadu, India. Phone : 0422 - 2980011 - 14 | Fax : 0422 - 2980022 | Email : info@kahedu.edu.in

Prof.Dr.M. Palaniswamy, M.Sc., M.Phil., PhD. Registrar

### Ref.KAHE/R/NAAC/DVV/2021/

05.05.2021

### **Certificate of Authentication**

This is to certify that the following documents related to the Metric ID: 1.2.2 (431 pages) are duly verified and authenticated by the Registrar, Karpagam Academy of Higher Education for DVV purpose.



Registrar

REGISTRAR Karpagam Academy of Higher Education (Deemed to be University Under Section 3 of UGC Act 1956) Pollachi Main Road, Eachanari Post, Coimbatore - 641 021.



 (Deemed to be University) (Established Under Section 3 of UGC Act, 1956)

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No:KAHE/R-Acad/A1/ 2019

06.06.2019

### CIRCULAR

I am by direction to inform that CBCS/Elective course system shall continue to be followed for 2019-2020 also for the programmes given in the enclosure.



List of Enclosure:

1. List of Programmes

REGISTRAR Karpagam Academy of Higher Education (Deemed to be University Under Section 3 of UGC Act 1956) Pollachi Main Road, Eachanari Post, Coimbatore - 641 021.

### То

All the Deans / Heads of the Departments

### Copy to

- 1. The Vice-Chancellor's Desk
- 2. The Director IQAC



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	List of Programmes	The States					
S.No	Name of the Programme						
1.	B.Sc., Bio-Chemistry	122.75					
2.	B.Sc., Biotechnology						
3.	3.Sc Chemistry						
4.	B.Com	A Sole					
5.	B.Com computer Application						
6.	B. Com-Business Process Services						
7.	B. Com-Professional Accounting	1.002					
8.	BCA						
9.	B.Sc Computer Science	all significant					
10.	B.Sc Information Technology						
11.	B.Sc Computer Technology						
12.	B.Sc., Electronics and Communication Systems						
13.	BBA						
14.	B.Sc Mathematics	10					
15.	B.Sc Microbiology						
16.	B.Sc Physics						
17.	B.Sc Computer Science(Cognitive Systems)	1. 25.89					
18.	B.E Automobile Engineering						
19.	B.Tech Biotechnology						
20.	BE-Biomedical Engineering						
21.	B. Tech-Chemical Engineering						
22.	B.E Civil Engineering						
23.	B.E-Computer Science Engineering						
24.	BE-Electronics and Communication Engineering						
25.	BE EEE						
26.	B.Tech Food Technology	1. 1. 1. 1. 1. 1.					
27.	B.E-Mechanical Engineering						
28.	B.ARCH						
29.	B.Design						
30.	B.Pharmacy						
31.	B.E-Mechanical Engineering(PT)						
32.	BE EEE(PT)						
33.	M.Sc Astrology	24					
34.	M.Sc. BioChemistry	The starts					
35.	M.Sc. Biotechnology						
36.	M.Sc Chemistry						
37.	M.Com						
38.	M.Com CA						

OF

CBE-21

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		-					
39.	MCA	1.34					
40.	M.Sc Computer Science						
41.	VIBA						
42.	M.Sc Mathematics						
43.	M.Sc. Microbiology						
44.	M.Sc Physics						
45.	M.E.Power Systemand Engineering						
46.	M.E. Water Resources and Environmental Engineering						
47.	M.ARCH						
48.	M.PLAN	6-722					
49.	Pharm D	1					
50.	M.Pharm						
51.	M.E.Power System and Engineering(PT)						
52.	M.E. Water Resources and Environmental Engineering (PT)						
53.	M.Phil Astrology	Paul Seal					
54.	M.Phil Biochemistry						
55.	M.Phil Biotechnology						
56.	M.Phil Chemistry	641496					
57.	M.Phil Commerce	1 ac./*					
58.	M.Phil Computer Science						
59.	M.Phil English						
60.	M.Phil Management						
61.	M.Phil Mathematics						
62.	M.Phil Microbiology						
63.	M.Phil Physics						
64.	M.Phil Tamil						
65.	M.Phil Hindi						
66.	Ph.D Civil Engineering						
67.	Ph.D Computer Science Engineering						
68.	Ph.D Electronics and Communication Engineering						
69.	Ph.D EEE	1.45					
70.	Ph.D Mechanical Engineering						
71.	Ph.D Pharmacy						
72.	Ph.D Biotechnology Engineering	i seato					
73.	Ph.D Astrology						
74.	Ph.D Biochemistry						
75.	Ph.D Biotechnology	2.2.1					
76.	Ph.D Chemistry						
77.	Ph.D Commerce	1995					
78.	Ph.D Computer Science						
79.	Ph.D English	D.C.					
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80.	Ph.D Management
81.	Ph.D Mathematics
82.	Ph.D Microbiology
83.	Ph.D Physics
84.	Ph.D Tamil
85.	Ph.D Hindi



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### **Approved Programme Structure and Curriculum**

S.No	Name of the Programme	Page Number
1.	B.Sc., Bio-Chemistry	8
2.	B.Sc., Biotechnology	13
3.	B.Sc Chemistry	21
4.	B.Com	28
5.	B.Com computer Application	32
6.	B. Com-Business Process Services	38
7.	B. Com-Professional Accounting	46
8.	BCA	52
9.	B.ScComputer Science	60
10.	B.ScInformation Technology	67
11.	B.ScComputer Technology	75
12.	B.Sc., Electronics and Communication Systems	82
13.	BBA	88
14.	B.Sc Mathematics	98
15.	B.Sc Microbiology	100
16.	B.ScPhysics	106
17.	B.ScComputer Science(Cognitive Systems)	116
18.	B.E Automobile Engineering	122
19.	B.TechBiotechnology	136
20.	BE-Biomedical Engineering	146
21.	B. Tech-Chemical Engineering	160
22.	B.E Civil Engineering	172
23.	B.E-Computer Science Engineering	188
24.	BE-Electronics and Communication Engineering	196
25.	BE EEE	210
26.	B.Tech Food Technology	222
27.	B.E-Mechanical Engineering	232
28.	B.ARCH	240
29.	B.Design	246
30.	B.Pharmacy	256
31.	B.E-Mechanical Engineering(PT)	262
32.	BE EEE(PT)	271
33.	M.Sc Astrology	278
34.	M.Sc. BioChemistry	281
35.	M.Sc. Biotechnology	285
36.	M.Sc Chemistry	289
37.	M.Com	294
38.	M.Com CA	298
39.	MCA	304

40.	M.Sc Computer Science	312
41.	MBA	316
42.	M.Sc Mathematics	324
43.	M.Sc. Microbiology	327
44.	M.Sc Physics	330
45.	M.E.PowerSystemand Engineering	334
46.	M.E. Water Resources and Environmental Engineering	341
47.	M.ARCH	347
48.	M.PLAN	350
49.	Pharm D	355
50.	M.Pharm	360
51.	M.E.Power System and Engineering(PT)	365
52.	M.E. Water Resources and Environmental Engineering (PT)	370
53.	M.Phil Astrology	376
54.	M.Phil Biochemistry	378
55.	M.Phil Biotechnology	380
56.	M.Phil Chemistry	382
57.	M.Phil Commerce	384
58.	M.Phil Computer Science	386
59.	M.Phil English	387
60.	M.Phil Management	388
61.	M.Phil Mathematics	390
62.	M.Phil Microbiology	391
63.	M.Phil Physics	392
64.	M.Phil Tamil	393
65.	M.Phil Hindi	394
66.	Ph.D Civil Engineering	395
67.	Ph.D Computer Science Engineering	396
68.	Ph.D Electronics and Communication Engineering	398
69.	Ph.D EEE	402
70.	Ph.D Mechanical Engineering	404
71.	Ph.D Pharmacy	408
72.	Ph.D Biotechnology Engineering	410
73.	Ph.D Astrology	413
74.	Ph.D Biochemistry	416
75.	Ph.D Biotechnology	418
76.	Ph.D Chemistry	419
77.	Ph.D Commerce	421
78.	Ph.D Computer Science	423
79.	Ph.D English	424
80.	Ph.D Management	425
81.	Ph.D Mathematics	427
82.	Ph.D Microbiology	428
83.	Ph.D Physics	429
84.	Ph.D Tamil	430
85.	Ph.D Hindi	431



### KARPAGAM ACADEMY OF HIGHER EDUCATION Coimbatore – 641 021 DEPARTMENT OF BIOCHEMISTRY FACULTY OF ARTS,SCIENCE AND HUMANITIES UG PROGRAM (CBCS)-B.Sc., Biochemistry (2019–2020 and onwards)

	Name of the course		ective d out es	Instruction hours / week			Maximum Marks			
Course code			POS	L	Т	Р	Credit(s)	CIA	ESE	Total
GEMEGTED	T						•	40	60	100
SEMIESTER -	I Languaga I	T	0	4			4	40	60	100
19LSU101	English	I I	a	4	-	-	4	40	60	100
19ENU101	Molecules of Life	T	a b k	3	-	-	4	40	60	100
19BCU102	Cell Biology	T	d k	4	-	-	4	40	60	100
19BCU102	Chemistry-I	I	d, K	4	-	-	4	40	60	100
19BCU111	Molecules of Life- Practical	Ш	d	-	-	3	2	40	60	100
19BCU112	Cell biology - Practical	III	d	-	-	3	2	40	60	100
19BCU112	Chemistry Practical- I	III	d	-	-	4	2	40	60	100
Semester Total				19	1	10	26	320	480	800
SEMESTER -	II					-	-			
19LSU 201	Language - II	Ι	а	4	-	-	4	40	60	100
19BCU201	Proteins	III	e, k	4	-	-	4	40	60	100
19BCU202	Enzymes	III	e	4	1	-	5	40	60	100
19BCU203	Chemistry-II	Ι	e	4	-	-	4	40	60	100
19BCU211	Proteins - Practical	III	e	-	-	3	2	40	60	100
19BCU212	Enzymes- Practical	III	e	-	I	3	2	40	60	100
19BCU213	Chemistry Practical -II		e	-	-	4	2	40	60	100
19AEC201	Environmental Studies	IV	h	3	-	-	3	40	60	100
Semester Total				19	1	10	26	320	480	800
SEMESTER -			-				1			
19BCU301	Metabolism of Carbohydrates and Lipids		f	4			4	40	60	100
19BCU302	Metabolism of Amino acids and Nucleic acids	I	f	4			4	40	60	100
19BCU303	Membrane Biology & Bioenergetics	l	f 3 1 -		4	40	60	100		
19BCU311	Practical Practical	111	c, f	-	-	4	2	40	60	100
19BCU312	Metabolism of Amino acids and Nucleic acids- Practical	III	c, f	-	-	4	2	40	60	100
19BCU313	Membrane Biology & Bioenergetics - Practical	III	c, f	-	-	4	2	40	60	100
19BCU304A	Tools and Techniques in Biochemistry	II	c, f	3	-			40	60	100
19BCU304B	Concepts in Genetics	Ι	c, f			3		40	00	100
19BCU314A	Tools and Techniques in Biochemistry – Practical	III	c, f	-	3 1		1	40	60	100
19BCU314B	Concepts in Genetics - Practical	III	c, f							
Semester Total				14	1	15	22	320	480	800
SEMESTER -	IV									
19BCU401	Gene Organization, Replication and Repair		g	4	-		4	40	60	100
19BCU402	Gene Expression and Regulation		g	4	-		4	40	60	100
19BCU403	Human Physiology	I, II	g	3	1	-	4	40	60	100
19BCU411	Gene Organisation, Replication and Repair- Practical	III	c, g	-	-	4	2	40	60	100
19BCU412	Gene Expression and Regulation- Practical III c, g -						2	40	60	100

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19BCU413	Human Physiology – Practical	III	c, g	-	-	4	2	40	60	100
19BCU404A	Bioinformatics III c.g.				-	-	-	4.0	60	100
19BCU404B	Protein Purification Techniques c. g						3	40	60	100
19BCU414A	Bioinformatics - Practical	-	-	3		4.0	60	100		
19BCU414B	Protein Purification Techniques - Practical	c, g			-	1	40	60	100	
Semester Total				14	1	15	22	320	480	800
SEMESTER -	V									
19BCU501	Hormone: Biochemistry and Functions	V	d, e, k	3	1	-	4	40	60	100
19BCU502A	Clinical Biochemistry	II, III	d, e	3	-	-	3	40	60	100
19BCU502B	Biochemical Correlation of Diseases	II, III	d, e							
19BCU503A	Basic Microbiology	Ι	d, e, 1	4	-	-	4	40	60	100
19BCU503B	Nutritional Biochemistry	Ι	i, l							
19BCU504A	Plant Biochemistry	V	d	4		-	4	40	60	100
19BCU504B	Molecular Basis of Infectious diseases	V	d, e		-		4	40	60	100
19BCU511	Hormone: Biochemistry and Functions – Practical	III	j	-	-	4	2	40	60	100
19BCU512A	Clinical Biochemistry- Practical	III	j	_	_	3	1	40	60	100
19BCU512B	Biochemical Correlation of Diseases- Practical	III	j, n	_	_	5	1	40	00	100
19BCU513A	Basic Microbiology- Practical	III	j	_	-	4	2	40	60	100
19BCU513B	Nutritional Biochemistry- Practical	III	j			т	2	40	00	100
19BCU514A	Plant Biochemistry—Practical	III	j	_	_	4	2	40	60	100
19BCU514B	Molecular Basis of Infectious diseases-Practical	III	j				-		00	100
Semester Total				15	-	15	22	320	480	800
SEMESTER -	VI	r			-	-		1	1	1
19BCU601	Immunology	V	i, j	3	1	-	4	40	60	100
19BCU602A	Genetic Engineering and Biotechnology	Ι	g, n, l	2			2	40	60	100
19BCU602B	Research Methodology	V	i, j, m	5	-	-	5	40	00	100
19BCU603A	Drug Biochemistry	II	i, j, l	4			4	40	(0)	100
19BCU603B	Biostatistics	III	e, l	4	-	-	4	40	00	
19BCU611	Immunology Practical	III	i, j	4		2	40	60	100	
19BCU612A	Genetic Engineering and Biotechnology- Practical		e	-	-	3	1	40	60	100
19BCU612B	CU612B Research Methodology - Practical III i, j									
19BCU613A	CU613A Drug Biochemistry- Practical II d		_	_	Δ	2	40	60	100	
19BCU613B	B Biostatistics-Practical III		e	_		-	2	70	00	100
19BCU691	Project work	j	2	-	6	6	40	60	100	
ECA / NCC / NS	ECA / NCC / NSS / Sports / General interest etc Good									
Semester Total	Semester Total 13 - 17 22 280 420 700							700		
Program Total				94	4	82	140	1880	2820	4700

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	Ability Enhancement Courses (AEC)						
Semester	<b>Course Code</b>	Name of the Course					
Ι	19LSU101	Language –I					
	19ENU101	English					
II	19LSU201	Language –II					
	19AEC201	Environmental Studies					

Generic Elective Courses (GE) /Allied Courses						
Semester	<b>Course Code</b>	Name of the Course				
Ι	19BCU103	Chemistry – I				
	19BCU113	Chemistry – I Practical				
II	19BCU203	Chemistry - II				
	19BCU213	Chemistry – II Practical				

	Core Courses (CC)					
Semester	<b>Course Code</b>	Name of the Course				
Ι	19BCU101	Molecules of Life				
	19BCU102	Cell biology				
	19BCU111	Molecules of Life- Practical				
	19BCU112	Cell biology - Practical				
II	19BCU201	Proteins				
	19BCU202	Enzymes				
	19BCU211	Proteins - Practical				
	19BCU212	Enzymes- Practical				
III	19BCU301	Metabolism of Carbohydrates and Lipids				
	19BCU302	Metabolism of Amino acids and Nucleic acids				
	19BCU303	Membrane Biology & Bioenergetics				
	19BCU311	Metabolism of Carbohydrates and Lipids - Practical				
	19BCU312	Metabolism of Amino acids and Nucleic acids- Practical				
	19BCU313	Membrane Biology & Bioenergetics - Practical				
IV	19BCU401	Gene Organization, Replication and Repair				
	19BCU402	Gene Expression and Regulation				
	19BCU403	Human Physiology				
	19BCU411	Gene Organisation, Replication and Repair- Practical				
	19BCU412	Gene Expression and Regulation- Practical				
	19BCU413	Human Physiology – Practical				
V	19BCU501	Hormone: Biochemistry and Functions				
	19BCU511	Hormone: Biochemistry and Functions - Practical				
VI	19BCU601	Immunology				
	19BCU611	Immunology Practical				
	19BCU691	Project work				

	Skill Enhancement Courses(SEC)						
Semester	<b>Course Code</b>	Name of the Course					
III	19BCU304A	Tools and Techniques in Biochemistry					
	19BCU304B	Concepts in Genetics					
III	19BCU314A	Tools and Techniques in Biochemistry - Practical					
	19BCU314B	Concepts in Genetics - Practical					
IV	19BCU404A	Bioinformatics					
	19BCU404B	Protein Purification Techniques					
IV	19BCU414A	Bioinformatics- Practical					
	19BCU414B	Protein Purification Techniques- Practical					
V	19BCU502A	Clinical Biochemistry					
	19BCU502B	Biochemical Correlations and Diseases					
V	19BCU512A	Clinical Biochemistry- Practical					

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	19BCU512B	Biochemical Correlations and Diseases- Practical
VI	19BCU602A	Genetic Engineering and Biotechnology
	19BCU602B	Research Methodology
VI	19BCU612A	Genetic Engineering and Biotechnology- Practical
	19BCU612B	Research Methodology - Practical

	Discipline Specific Elective Courses (DSE)						
Semester	er Course Code Name of the Course						
V	19BCU503A	Basic Microbiology					
	19BCU503B	Nutritional Biochemistry					
	19BCU504A	Plant Biochemistry					
	19BCU504B	Molecular basis of infectious diseases					
V	19BCU513A	Basic Microbiology- Practical					
	19BCU513B	Nutritional Biochemistry- Practical					
	19BCU514A	Plant Biochemistry- Practical					
	19BCU514B	Molecular basis of infectious diseases practical					
VI	19BCU603A	Drug Biochemistry					
	19BCU603B	Biostatistics					
	19BCU613A	Drug Biochemistry- Practical					
	19BCU613B	Biostatistics- Practical					

### PROGRAMME OUTCOME (POs).

The Biochemistry graduate will be able to acquire

- **a.** Critical Thinking and Language Training: The ability to analyze information objectively and make a reasonable judgment and conclusion by evaluating data, facts, observable phenomenon, and research findings from a set of information and distinguish among priorities to solve a problem To train them to communicate science by improving their English vocabulary. Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
- **b**. **Ethics:** Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
- **c.** Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings. Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- **d.** Understanding cellular function: To equip them with basic and advanced knowledge in cell biology in order to get entry/placed in cell based research and development institution/laboratories.
- e. Protein based skills: To make them understand protein, enzymes and human physiology to lay solid foundation and to get through competitive examinations. To equip them to get placed in recombinant protein production industries/laboratory.
- **f.** Understanding of endocrine system and metabolism: To train them on the regulatory role of hormone on the metabolism of carbohydrates, lipids, amino acids and nucleic acid.
- **g.** Molecular and Genetic understanding: To train them on the genetic regulation of immune system and to use computational tools.
- **h.** Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
- **i.** Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.
- **j.** Skill development: To gain hands on experience on various biochemical experiments and to equip them to interpret the data.

### **PROGRAMME SPECIFIC OUTCOME (PSOs)**

- k. Be able to demonstrate foundation knowledge in the areas of Biochemistry like Cell biology, Biomolecules, Protein Biochemistry, Molecular Biology, Pharmaceutical Chemistry and Hormonal Biochemistry.
- 1. Be able to integrate knowledge learned in discipline specific courses likeMicrobiology, Plant Biochemistry, Nutritional Biochemistry, Biostatistics, Drug Biochemistry and Biotechnology.
- m. To use standard laboratory protocols in biochemistry, modern instrumentations, proper laboratory safety protocols and classical techniques to carry out experiments and also use computers in data acquisition and processing and use available software as a tool in data analysis.
- n. To understand the applications of biological sciences in Genetics, Biochemical Correlations of Diseases, Microbiology, Genetic Engineering and Biotechnology.

### PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- I. To give students a basic knowledge in biochemistry and to teach on ethics.
- II. To develop analytical and critical-thinking skills that allows independent exploration of biological phenomena through the scientific methods.
- III. To acquaint knowledge on modern methods of biochemical experimentation to implement for future studies.
- IV. To motivate students for social responsibilities and to educate them on ethical values in addition to inculcating environmental awareness.
- V. To enable them to execute a research objective through experimentation.

POs	a	b	c	d	e	f	g	h	i	j	k	1	m	n
PEO I	X	X		X		X	X				X			
PEO II			X			X	X				X	X	X	X
PEO III			X	X	X		X				X	X	X	X
PEO IV								X		X				X
PEO V				X	X				X	X	X	X	X	X

### **Mapping of PEOs and POs**

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### KARPAGAM ACADEMY OF HIGHER EDUCATION Department of Biotechnology (Scheme of examination for 2019-2020 onwards) B.Sc., Biotechnology Curriculum

		Objectives and		Instruction				Marks			
Course	Name of the course	Out	tcomes	Hr	s / we	ek	Cred		Warks		
code	Name of the course	PEO	PO's &		т	D	it	CIA	ESE	Total	
			PSO's	<b>L</b>	1	F		CIA	ESE	TOLAT	
	SEMESTER I										
19LSU101	Language -I	-	-	04	00	00	4	40	60	100	
19ENU101	English	-	-	04	00	00	4	40	60	100	
19BTU101	Biochemistry and Metabolism		a, b	04	00	00	4	40	60	100	
19BTU102	Cell Biology		a, b	04	00	00	4	40	60	100	
19BTU103	Chemistry -I		а	04	00	00	4	40	60	100	
19BTU111	Biochemistry and Metabolism Practical	I	a, b	00	00	04	2	40	60	100	
19BTU112	Cell Biology Practical		a, b	00	00	03	2	40	60	100	
19BTU113	Chemistry Practical - I	I	а	00	00	03	2	40	60	100	
	Semester total			20	00	10	26	320	480	800	
SEMESTER II											
19LSU201	Language - II	-	-	04	00	00	4	40	60	100	
19BTU201	Genetics		е	04	00	00	4	40	60	100	
19BTU202	Chemistry - II		а	04	00	00	4	40	60	100	
19BTU203	General Microbiology		С	04	00	00	4	40	60	100	
19BTU211	Genetics Practical		е	00	00	03	2	40	60	100	
19BTU212	Chemistry Practical - II		а	00	00	03	2	40	60	100	
19BTU213	General Microbiology Practical		С	00	00	04	2	40	60	100	
19AEC201	Environmental Studies	I,IV	d, o	00	00	04	4	40	60	100	
	Semester total			20	00	10	26	320	480	800	
		SEI	MESTER III								
19BTU301	Plant Physiology		е	04	00	00	4	40	60	100	
19BTU302	Molecular Biology		е	04	00	00	4	40	60	100	
19BTU303	Immunology	II	f	04	00	00	4	40	60	100	
	I.P.R., Entrepreneurship,	IV	m,o								
19010304A	Bioethics and Biosafety			03	00	00	3	40	60	100	
19BTU304B	Bio - Analytical Tool	IV	m,n,o								
19BTU311	Plant Physiology Practical	II,IV	e, n	00	00	04	2	40	60	100	
19BTU312	Molecular Biology Practical	II, IV	e, n	00	00	04	2	40	60	100	
19BTU313	Immunology Practical		f, n	00	00	04	2	40	60	100	
19BTU3144	I.P.R., Entrepreneurship,	II, IV	m,o								
	Bioethics and BiosafetyPractical			00	00	03	1	40	60	100	
19BTU314B	Bio - Analytical Tool Practical	IV	m,n,o								
	Semester total			15	00	15	22	320	480	800	
	I	SEN	<b>MESTER IV</b>	-						1	
19BTU401	Bioprocess Technology		g, h	04	00	00	4	40	60	100	

19BTU402	Recombinant DNA Technology		e,g	04	00	00	4	40	60	100
19BTU403	Genomics and Proteomics	,	e,h, g, j,l	04	00	00	4	40	60	100
19BTU404A	Industrial Fermentation		g, h	02	00	00	3	40	60	100
19BTU404B	Enzymology		e,g, h	03	00	00		40	00	100
19BTU411	Bioprocess Technology Practical	II, IV	g, h, n	00	00	04	2	40	60	100
19BTU412	Recombinant DNA Technology Practical	II, IV	e,g, n	00	00	04	2	40	60	100
19BTU413	Genomics and Proteomics Practical	II,III, IV	e, h, g, j, I, n	00	00	04	2	40	60	100
19BTU414A	Industrial Fermentation Practical	II,IV	g, h, n							
19BTU414B	Enzymology Practical	II, IV	e, g, h, n	00	00	03	1	40	60	100
	Semester total			15	00	15	22	320	480	800
		SE	MESTER V							
19BTU501A	Plant Diversity - I		а							
19BTU501B	Basics of Forensic Science	IV	I	03	00	00	3	40	60	100
19BTU502A	Bioinformatics	III, IV	j, l	04	00	00	4	40	60	100
19BTU502B	Plant Diversity - II		а	04	00	00		40	00	100
19BTU503A	Plant Biotechnology	,	i, g	04	00	00	4	40	60	100
19BTU503B	Evolutionary Biology	I, III	b, i	04	00	00		40	00	100
19BTU504A	Animal Biotechnology	III	i	04	00	00	Δ	40	60	100
19BTU504B	Animal Diversity - I		а	U-F	00	00	т	-10	00	100
19BTU511A	Plant Diversity Practical - I	I, IV	a, n							
19BTU511B	Basics of Forensic Science Practical	III, IV	l, n	00	00	03	1	40	60	100
19BTU512A	Bioinformatics Practical	III, IV	j, l, n							
19BTU512B	Plant Diversity Practical – II	I, IV	a,n	00	00	04	2	40	60	100
19BTU513A	Plant Biotechnology Practical	II, III, IV	g, i, n	00	00	04	2	40	60	100
19BTU513B	Evolutionary Biology Practical	I, III, IV	b, i, n	00	00	04	2	40	00	100
19BTU514A	Animal Biotechnology Practical	III, IV	i, n							
19BTU514B	Animal Diversity Practical - I	I	a, n	00	00	04	2	40	60	100
	Semester total			15	00	15	22	320	480	800
	·	SEI	MESTER VI					·		
19BTU601A	Molecular Diagnostics	III, IV	k, I, o							
19BTU601B	Biotechnology and Human Welfare	I, III	d, I	03	00	00	3	40	60	100
19BTU602A	Medical Microbiology	I, III	c, k	04	00	00	Л	40	60	100
19BTU602B	Environmental Biotechnology	III, IV	d, k, l	04	00	00	4	40	00	100

19BTU603A	Biostatistics	III, IV	l,o							
19BTU603B	Environment Management	III, IV	d, k, l	04	00	00	4	40	60	100
19BTU611A	Molecular Diagnostics Practical	III, IV	k, l, o, n							
19BTU611B	Biotechnology and Human Welfare Practical	III, IV	d, l, n	00	00	03	1	40	60	100
19BTU612A	Medical Microbiology Practical	III, IV	c, k, n							
19BTU612B	Environmental Biotechnology Practical	I, III, IV	d, k, l, n	00	00	04	2	40	60	100
19BTU613A	Biostatistics Practical		l, o, n							
19BTU613B	Environment Management Practical	I, III, IV	d, k, l, n	00	00	04	2	40	60	100
19BTU691	Project – Viva Voce		I	00	00	08	6	40	60	100
ECA / NCC / NSS / Sports / General interest etc.,										Good
Semester total				11	00	19	22	280	420	700
Grand Total				90	00	90	140	1880	2820	4700

LS: Language course; EN: English course; ECA: Extra Curricular Activities; NCC: National Cadet Corps; NSS: National Social Service; DSE : Discipline Specific Elective

Ability Enhancement Courses (AEC)						
Semester	Course Code	Name of the Course				
Ι	19LSU101	Language – I				
	19ENU101	English				
II	19LSU201	Language – II				
	19AEC201	Environmental Studies				

Generic Elective Course (GE)/ Allied Course						
Semester	Course Code	Name of the Course				
I	19BTU103	Chemistry - I				
	19BTU113	Chemistry Practical - I				
I	19BTU202	Chemistry – II				
	19BTU212	Chemistry Practical - II				

Core Courses (CC)							
Semester	Course Code	Name of the Course					
I	19BTU101	Biochemistry and Metabolism					
	19BTU102	Cell Biology					
	19BTU111	Biochemistry and Metabolism Practical					
	19BTU112	Cell Biology Practical					
	19BTU201	Genetics					

	19BTU203	General Microbiology
	19BTU211	Genetics Practical
	19BTU213	General Microbiology Practical
III	19BTU301	Plant Physiology
	19BTU302	Molecular Biology
	19BTU303	Immunology
	19BTU311	Plant Physiology Practical
	19BTU312	Molecular Biology Practical
	19BTU313	Immunology Practical
IV	19BTU401	Bioprocess Technology
	19BTU402	Recombinant DNA Technology
	19BTU403	Genomics and Proteomics
	19BTU411	Bioprocess Technology Practical
	19BTU412	Recombinant DNA Technology Practical
	19BTU413	Genomics and Proteomics Practical
VI	19BTU691	Project – Viva Voce

Skill Enhand	Skill Enhancement Elective Courses (SEC)					
Semester	Course Code	Name of the Course				
III	19BTU304A	I.P.R., Entrepreneurship, Bioethics and Biosafety				
	19BTU304B	Bio - Analytical Tool				
	19BTU314A	I.P.R., Entrepreneurship, Bioethics and Biosafety Practical				
	19BTU314B	Bio - Analytical Tool Practical				
IV	19BTU404A	Industrial Fermentation				
	19BTU404B	Enzymology				
	19BTU414A	Industrial Fermentation Practical				
	19BTU414B	Enzymology Practical				
V	19BTU501A	Plant Diversity - I				
	19BTU501B	Basics of Forensic Science				
	19BTU511A	Plant Diversity Practical - I				
	19BTU511B	Basics of Forensic Science Practical				
VI	19BTU601A	Molecular Diagnostics				
	19BTU601B	Biotechnology and Human Welfare				
	19BTU611A	Molecular DiagnosticsPractical				
	19BTU611B	Biotechnology and Human Welfare Practical				

Discipline Specific Elective Courses (DSE)						
Semester	Course Code	Name of the Course				
V	19BTU502A	Bioinformatics				
	19BTU502B	Plant Diversity - II				
	19BTU503A	Plant Biotechnology				
	19BTU503B	Evolutionary Biology				
	19BTU504A	Animal Biotechnology				

	19BTU504B	Animal Diversity - I
V	19BTU512A	Bioinformatics Practical
	19BTU512B	Plant Diversity Practical – II
	19BTU513A	Plant Biotechnology Practical
	19BTU513B	Evolutionary Biology Practical
	19BTU514A	Animal Biotechnology Practical
	19BTU514B	Animal Diversity Practical - I
VI	19BTU602A	Medical Microbiology
	19BTU602B	Environmental Biotechnology
	19BTU603A	Biostatistics
	19BTU603B	Environment Management
	19BTU612A	Medical Microbiology Practical
	19BTU612B	Environmental Biotechnology Practical
	19BTU613A	Biostatistics Practical
	19BTU613B	Environment Management Practical

### PROGRAMME OUTCOMES (POs)

- a) Graduates will acquire in-depth understanding of basic concept, knowledge about biochemistry and cell organelles, their functions for applied field, allied subject and lifeskills.
- b) The students will be able to discuss the metabolic aspects ofbiomolecules.
- c) The Graduates will gain the technical capability of handling, isolating and identifying various organisms from different sources.
- d) Understanding and better knowledge of the causes, types and control methods for environmental pollution by thestudents.
- e) The student will be able to discuss the mechanisms associated with gene expression system in prokaryotes and eukaryotes.
- f) Understand the role of different types of cells, effectors and effectors mechanisms in immune- technology by thestudents.
- g) Develop skills associated with screening of industrially important strains, various aspects of bioprocess technology and rDNA technology by thegraduates.
- h) The student will be able to understand the production of enzymes from different sources and enzyme characterization and kinetic actions in livingorganisms.
- i) The student will be able to understand the production of transgenic plants and animals for human and environmentalwelfare.
- j) Understand the basic concepts and modern knowledge of bioinformatics bygraduates.
- k) Apply the knowledge and skills gained from molecular aspects should be useful in developing new innovations in different life forms by thegraduates.
- The student will be able design, solve the application-oriented problem in biotechnological field through project-basedlearning.

### PROGRAMME SPECIFIC OUTCOMEs (PSOs)

### To enable the student to emerge as:

- Proficiency to work on biotechnological concepts and interdisciplinary areas of science and technology towards product and process development for industrial and academic research applications.
- An expert in Biotechnology and allied fields (medical, microbial, agricultural, environmental, plant and animal) for utilizing the practical skills to address biotechnologicalchallenges.

 Proficiency to demonstrate entrepreneurial and leadership skills with lifelonglearning

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

### To impart the following PEOs to the students of Under-graduates in Biotechnology:

- **PEO I :** To obtain detailed information about the fundamentals of Biotechnology, allied subjects and life skills.
- **PEO II :** To provide information about the molecular methods which involved in cellular processes of living systems such as microbes to higher order organisms for applied aspects. To address the emerging need for skilled scientific manpower with research ethics involving organisms.
- **PEO III** : To impart the basics and current molecular tools in the areas of Molecular Diagnostics, Fermentation Technology, Plant, Animal & Environmental Biotechnology are included to train the students for man power development and also sensitize them to scope for research with inputs of bioinformatics techniques. The practical subjects will provide information about the careers in the industry and applied research where biological system is employed.
- **PEO IV :** To make the graduates of Biotechnology to learn and to adopt in a competitive world of technology update and contribute to all forms of life.

						Progr	amme	Outcor	me (s)						
PEOs	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(I)	(m)	(n)	(0)
PEO I	*	*	×	×											
PEO II					×	×	×	×							
PEO III									×	×	×	×			
PEO IV											×	×	×	×	×

### MAPPING OF PEOs WITH POs, PSOs

### **B.Sc. CHEMISTRY** CHOICE BASED CREDIT SYSTEM (CBCS)

# Curriculum 2019-2020



### DEPARTMENT OF CHEMISTRY

FACULTY OF ARTS, SCIENCE AND HUMANITIES

### KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established under section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore- 641021, Tamil Nadu, India

> Phone: 0422 – 2980011 – 15 Fax No: 0422 – 2980022-23 Email: <u>info@karpagam.com</u> Web: <u>www. kahedu.edu.in</u>

### Preamble

Karpagam Academy of Higher Education (KAHE) has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of the University. The measures taken to enhance the quality in higher education include innovation and improvements in curriculum, teaching-learning process, and examination and evaluation systems. The grading system is considered to be better than the conventional marks system and is followed. This will facilitate student mobility across institutions within and across countries and also enable potential employers to assess the performance of students.

**Choice Based Credit System (CBCS):** The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses will be evaluated following the grading system, which is considered to be better than the conventional marks system.

### **Outline of Choice Based Credit System:**

- **1.** Core Course: A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.
- 2. Elective Course: Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.
- **2.1 Generic Elective :** Generic elective is an elective course chosen generally from an unrelated discipline/subject, with an intention to provide exposure in other areas of interest also to students
- **2.2 Discipline Specific Elective (DSE) Course**: Elective courses offered by the main discipline/subject of study is referred to as Discipline Specific Elective.

- **2.3 Project work/Dissertation** is considered as a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A Project/Dissertation work would be of 6 credits. A Project/Dissertation work is given in lieu of a discipline specific elective paper.
- 3. Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course: The Ability Enhancement (AE) Courses are of two kinds: AE Compulsory Course (AECC) and AE Elective Course (AEEC). "AECC" courses are the courses based upon the content that leads to Knowledge enhancement. They ((i) Environmental Science, (ii) English/MIL Communication) are mandatory courses. AEEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.
- **3.1** AE Compulsory Course (AECC): Environmental Science, English Communication/MIL Communication.

**3.2** AE Elective Course (AEEC): These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based instruction.

### 4. Value Added Courses

Courses of varying durations but not less than 30 hours which are optional and offered outside the curriculum that add value and helping the students in getting placement. Students of all programmes are eligible to enrole for the value added programme. The student shall choose one Value Added Course per semester from the list of Value Added Courses available in KAHE. The examinations shall be conducted at the end of the value added programme at the Department level and the students has to secure a minimum of 50% of marks to get a pass. The certificate for the value added programme for the passed out students shall be issued duly signed by the HOD and Dean of the Faculty concerned.

### DEPARTMENT OF CHEMISTRY FACULTY OF ARTS, SCIENCE AND HUMANITIES

### UG PROGRAM (CBCS) – B.Sc. Chemistry (2019–2020 Batch and onwards)

Course code	Name of the course	Object	ives &	I	nstructi	on	Cre	Max	imum	Marks
		Oute	omes	hou	ırs per v	veek	dits			
		PEO'	PO's	L	Т	Р		CI	ES	Tota
		S						Α	Е	1
	SEM	ESTER	I							
19LSU101	Language –I	4	7	4	0	0	4	40	60	100
19ENU 101	English	4	7	4	0	0	4	40	60	100
19CHU101	Mathematics-I	1,4	1,4,5, 10	4	0	0	4	40	60	100
19CHU102	Inorganic Chemistry I:Atomic structure and Chemical Bonding	1	1,3	5	0	0	5	40	60	100
19CHU103	Organic Chemistry I: Basics and Hydrocarbons	1	1,3	5	0	0	5	40	60	100
19CHU111	Mathematics- I Practical	2,3	2,5,9	0	0	4	2	40	60	100
19CHU112	Atomic structure and Chemical	1	1,4,1	0	0	2	1	40	60	100
	Bonding- Practical		0							
19CHU113	Basics and Hydrocarbons-	1	1,4,1	0	0	2	1	40	60	100
	Practical		0							
	Semester total			22		8	26	320	480	800
	SEN	MESTE	R II	-				-		
19LSU201	Language –II			4	0	0	4	40	60	100
19CHU201	Mathematics-II	1,4	1,4,5, 10	4	0	0	4	40	60	100
19CHU202	Physical Chemistry I: Chemical Thermodynamics and its Application	1,2	2,5,1 0	5	0	0	5	40	60	100
19CHU203	Organic Chemistry II: Oxygen Containing Functional Groups	1,2	2,5	6	0	0	6	40	60	100
19CHU211	Mathematics- II Practical			0	0	4	2	40	60	100
19CHU212	Chemical Thermodynamics and its Application- Practical	1,2,3	2,3,4, 9	0	0	2	1	40	60	100
19CHU213	Oxygen Containing Functional Groups- Practical	1,2,3	2,3,4, 9	0	0	2	1	40	60	100
19AEC201	Environmental Studies	2	-	3	0	0	3	40	60	100
	Semester Total			22		8	26	320	480	800
	SEN	<b>IESTEI</b>	RIII		•					
19CHU301	Physics- I	1,2,3	2,3,4, 10	04	0	0	4	40	60	100
19CHU302	Inorganic Chemistry II: Coordination Chemistry	1,2,3	2,3,4, 10	04	0	0	4	40	60	100
19CHU303	Physical Chemistry II: Phase Equilibria and Chemical Kinetics	1,2,3	2,3,4, 10	04	0	0	4	40	60	100
19CHU311	Physics Practical-I	1,2,5	2,3,4, 9	0	0	4	2	40	60	100

19CHU312	Coordination Chemistry- Practical	1,2	2,3,4, 9	0	0	4	2	40	60	100
19CHU313	Phase Equilibria and Chemical Kinetics- Practical	1,2	2,3,4, 9	0	0	4	2	40	60	100
19CHU304A	Pharmaceutical Chemistry	1,2,3	2,3,6,	03	0	0	3	40	60	100
19CHU304B	IT Skills for Chemists	, ,	10							
19CHU314A	Pharmaceutical Chemistry-	1,2,3	2,3,6,	0	0	3	1	40	60	100
	Practical		10							
19CHU314B	IT Skills for Chemists- Practical									
	Semester total			15		15	22	320	480	800
10.0111.10.1	SEN	<b>IESTER</b>	RIV					10	60	100
19CHU401	Physics-II	2,3	2,3,4	04	0	0	4	40	60	100
19CHU402	Physical Chemistry III: Electrochemistry	1,2,3	1,2,4, 5,9	04	0	0	4	40	60	100
19CHU403	Organic Chemistry III : Organic Spectroscopy	1,2,3	2,3,4, 6	04	0	0	4	40	60	100
19CHU411	Physics Practical- II	2,5	2,3,4	0	0	4	2	40	60	100
19CHU412	Physical Chemistry III: Electrochemistry- Practical	1,2,3	2,3,4, 5,6	0	0	4	2	40	60	100
19CHU413	Organic Spectroscopy- Practical	1,2,3	2,4,6, 7,8	0	0	4	2	40	60	100
19CHU404A	Green Methods in Chemistry	1,2,3	1,3,6, 8 9	03	0	0	3	40	60	100
19CHU404B	Analytical Clinical Biochemistry	1,2,3	1,2,3, 10							
19CHU414A	Green Methods in Chemistry- Practical	1,2,3	1,3,6, 8,9	0	0	3	1	40	60	100
19CHU414B	Analytical Clinical Biochemistry- Practical	1,2,3	1,2,3							
	Semester total			15		15	22	320	480	800
	SEN	MESTE	RV			-				
19CHU501A	Cheminformatics	1,2,3	1,2,5, 8,10	03	0	0	3	40	60	100
19CHU501B	Chemistry of Cosmetics and Perfumes	1,23,	2,3,7							
19CHU511A	Cheminformatics- Practical	2,3	1,2,5, 8	0	0	3	1	40	60	100
19CHU511B	Chemistry of Cosmetics and Perfumes- Practical	2,3	2,3,7, 9							
19CHU502A	Polymer Chemistry	1,2,3	2,3,4, 7,8	04	0	0	4	40	60	100
19CHU502B	Novel Inorganic Solids	1,2,3	3,4,7							
19CHU503	Organic Chemistry IV:Nitrogen	1,2,3	2,3,4,	04	0	0	4	40	60	100
	containing functional groups,		5,6			I				
	Heterocyclic Chemistry and					I				
100111704	Natural products	1.0.0	225	0.4	0	0	4	40	(0)	100
L19CHU504	In an a contract the constant of the contract			1 11/4	0		- 4	1 /1(1)	60	100
1)0110201	Chemistry II: Metallurgy s-block	1,2,5	2,3,3,	01	Ū	U	т	40	00	100

	and p-block Elements									
19CHU512A	Polymer Chemistry- Practical	1,2,3	2,3,4, 5,6	0	0	4	2	40	60	100
19CHU512B	Novel Inorganic Solids- Practical	2,3	3,4,7, 9							
19CHU513	Nitrogen containing functional groups, Heterocyclic Chemistry and Natural products – Practical	1,2,3	2,3,9	0	0	04	2	40	60	100
19CHU514	InorganicChemistryII:Metallurgy, s-block and p-block Elements - Practical			0	0	04	2	40	60	100
	Semester Total			15		15	22	320	480	800
10.0111.001.1	SEN	IESTEI	<u>R VI</u>					10	60	100
19CHU601A	Basic Analytical Chemistry	1,2,3	2,4,5	03	0	0	3	40	60	100
19CHU601B	Pesticide Chemistry	1,2,3	3,6,7	0	0	2	1	40	(0	100
19CHU611A	Practical	1,2,3	2,4,5	0	0	3	1	40	60	100
19CHU611B	Pesticide Chemistry- Practical	1,2,3	3,6,7	0.4	0			40	(0)	100
19CHU602	Inorganic Chemistry IV: Organometallic Chemistry	1,2,3	2,3,4, 5,6	04	0	0	4	40	60	100
19CHU603	Physical Chemistry IV: States of Matter and Ionic Equilibrium	1,2,3	2,3,4, 5,7	04	0	0	4	40	60	100
19CHU612	Organometallic Chemistry- Practical	1,2	2,3,4, 9	0	0	04	2	40	60	100
19CHU613	Physical Chemistry IV: States of Matter and Ionic Equilibrium- Practical	1,2	2,3,4, 9	0	0	04	2	40	60	100
19CHU604	Molecular Modeling and Drug Design	1,2,3	1,3,6, 8	0	0	8	6	40	60	100
19CHU614	Molecular Modeling and Drug Design Practical	1,2,3	2,3,6							
19CHU691	Project Work	1,2,3, 4	1,2,3, 5,6,8							
				11		19	22	280	420	700
	ECA / NCC / NSS / Spo	orts / Ger	neral inte	erest /	etc					Goo d
	G. Total						14	188	282	4700
							0	0	0	

### **Programme Outcomes**

- 1. Have firm foundations in the fundamentals and application of current chemical and scientific theories.
- 2. Are able to design, carry out, record and analyze the results of chemical experiments.
- 3. Knows the proper procedures and regulations for safe handling and use of chemicals and can follow the proper procedures and regulations for safe handling when using chemicals.
- 4. Students should have a working knowledge of the main areas of chemistry: organic, inorganic, analytical, and physical.
- 5. Students should possess critical thinking and problem solving abilities.
- 6. Students should be able to perform and understand chemical research.
- 7. Students should be able to describe, both in writing and orally, chemical processes and procedures
- 8. Students should be able to work in a chemical or related field.

### **Programme Specific Outcomes**

- 9. Are able to use modern instrumentation and classical techniques, to design experiments, and to properly record the results of their experiment.
- 10. Students should have a basic level understanding of the following areas of chemistry Analytical, Inorganic, Organic, and Physical Chemistry.
- 11. Students should be able to work in a chemical or related field.

### **Programme Educational Objectives**

### PEO-1

Acquire the fundamental principles of science and demonstrate broad knowledge of descriptive chemistry and will be able to nurture the needs of industries/laboratories related to chemistry

### PEO-2

To motivate critical thinking and analytical skills to solve chemical problems of practical relevance to society while complying with economical, environmental, ethical, and safety factors.

### PEO-3

To synthesize, separate and characterize compounds using published reactions, protocols, standard laboratory equipment, and modern instrumentation.

### PEO-4

Demonstrate professional excellence, ethics and will be able to communicate effectively the scientific information and research results in written and oral formats, to both professional scientists and to the public.

	,										
PO's	1	2	3	4	5	6	7	8	9	10	11
PEO 1	Χ	Χ	Χ	Χ			Χ		Χ	Χ	
PEO 2					Χ		Χ		Χ		
PEO 3		Χ				Χ			Χ		Χ
PEO 4						Χ	Χ	Χ		Χ	Χ

#### Mapping

#### KARPAGAM ACADEMY OF HIGHER EDUCATION, (Deemed to be University) (Established Under Section 3 of UGC Act 1956) BACHELOR OF COMMERCE B.Com

(For the Students admitted during the year 2019 – 2022 Batch onwards)

	1	Scheme o	of Examina	tion						
		Obje	ectives	Inst	tructi	on		Max	imum M	larks
		and O	utcomes	Hou	rs / W	'eek				
Course Code	Name of the Course	PEOs	Pos	L	Т	Р	Credits	CIA	ESE	Total
								40	60	100
	•	Ser	nester 1							•
19ENU101	Language-I	II	b,e,f,	6	0	0	6	40	60	100
18ENU101	English–I	I, IV	a,g,i	4	0	0	4	40	60	100
19CMU101	Financial Accounting	I, IV	a,g,i	6	2	0	6	40	60	100
19CMU102	BusinessLaw	III	c,d,h	8	0	0	6	40	60	100
	Business	III	c,d,h	4	0	0	4	40	60	100
19AEC101	Communication				Ű	Ŭ	•			100
				28	2	0	26	200	300	500
		Sen	nester II		-	-				
19ENU201	Language – II		b,e,f,	6	0	0	6	40	60	100
18ENU201	English – II	I, IV	a,g,1	4	0	0	4	40	60	100
19CMU201	Corporate Accounting	III	c,d,h	6	2	0	6	40	60	100
10CMU202	Business Mathematics	II	b,e,f,	6	2	0	6	40	60	100
19CM0202	Environmental Studies	III	cdh	4	0	0	4	40	60	100
1)ALC201		111	0,0,11	7	4	0	7	200	300	500
		Sem	l nester III	20	т	U	20	200	500	300
18ENU301	English – III		a.g.i	8	0	0	6	40	60	100
19CMU301	Cost Accounting	III	c.d.h	6	2	0	6	40	60	100
	Income Tax Law and	II	b.e.f.	6	n	0	6	40	60	100
19CMU302	Practice		·,•,•,	0	2	0	0	40	60	100
19CMU303A	Auditingand CorporateGovernance	I, IV	a,g,i	4	0	0	3	40	60	100
	Computerised	II	b e f							
19CMU303B	Accounting System		·,•,•,	2	0	0	2	40	60	100
19CMU311A	Auditingand CorporateGovernance	I, IV	a,g,i	0	0	2	1	40	60	100
	Computerised	II	b,e,f,	0	0	4	<u>،</u>	40	60	100
19CMU311B	Accounting System (practical)			0	0	4	Z	40	00	100
				22/ 24	4	4 / 2	22	200	300	500
	1	Sen	nester IV	1		-				•
18ENU401	English IV	I, IV	a,g,i	8	0	0	6	40	60	100
19CMU401	Indirect Taxation	II	b,e,f,	6	2	0	6	40	60	100
19CMU402	Research Methodology	II	b,e,f,	8	0	0	6	40	60	100
	Financial Analysis and	I, IV	a,g,i	А	0	0	2	40		100
19CMU403A	Reporting			4	U	U	3	40	60	100
19CMU403B	Excel for Business	II	b,e,f,	2	0	0	2	40	60	100
19CMU411A	Financial Analysis and	I, IV	a,g,i	0	0	2	1	40	60	100

	Reporting (Practical)									
	Excel for Business	II	b,e,f,	0	0	1	2	40	60	100
19CMU411B	(Practical)			0	0	4	2	40	00	100
				24/2	2	4/2	22	200	300	500
	I	Ser	nester V	4						
19CMU501A	Company Law	III	c.d.h	8	0	0	6	40	60	100
19CMU501B	Financial Management	III	c.d.h	6	2	0	6	40	60	100
	Financial Services and	Π	b.e.f.		0	0	~	_		
19CMU502A	Capital Markets		-,-,-,	6	0	0	5	40	60	100
19CMU502B	Marketing Management	III	c,d,h	6	0	0	5	40	60	100
19CMU503A	Management Accounting	III	c,d,h	5	1	0	4	40	60	100
19CMU503B	Advanced Accounting	I, IV	a,g,i	5	1	0	4	40	60	100
19CMU504A	Business Economics	II	b,e,f,	5	1	0	5	40	60	100
	Management and	I, IV	a,g,i	6	0	0	5	40	<u> </u>	100
19CMU504B	Organization Behavior			0	0	0	5	40	60	100
	Financial Services and	II	b,e,f,	0	0	2	1	40	60	100
19CMU511A	Capital Markets (Practical)			v	Ŭ	2	1		00	100
19CMU511B	Marketing Management (Practical)	III	c,d,h	0	0	2	1	40	60	100
	Business Economics	II	b,e,f,	0	0	2	1	40	60	100
19CMU512A	(Practical)			0	0	2	1	40	00	100
	Management and	I, IV	a,g,i			_				
1000 (11510)	Organization Behavior			0	0	2	1	40	60	100
19CMU512B	(Practical)			25/2						
				25/2	1/4	4	22	240	360	600
		Sen	l Jester VI	Z						
19CMU601A	Banking and Insurance			6	0	0	5	40	60	100
19CMU601R	Investment Management	П	hef	6	0	0	5	40	60	100
	Human Resource	I IV	agi	-			-	-10	00	100
19CMU602A	Management	1, 1,	<b>"</b> , <u>B</u> ,1	5	0	0	5	40	60	100
19CMU602B	International Business	III	c,d,h	5	0	0	5	40	60	100
19CMU603A	Entrepreneurship	III	c,d,h	5	0	0	3	40	60	100
	Personal Selling and	III	c,d,h	5	0	0	2			
19CMU603B	Salesmanship		, ,	5	0	0	3	40	60	100
	Banking and Insurance	I, IV	a,g,i	0	0	2	1	40	60	100
19CMU611A	(Practical)			0	U	2	1	40	00	100
	Investment Management	II	b,e,f,	0	0	2	1	40	60	100
19CMU611B	(Practical)			Ŭ	Ŭ	_	1			100
	Human Resource	I, IV	a,g,1	0	0	2	1	40	60	100
19CMU612A	International Duginage	III	l l.							
19CM11612B	(Practical)		c,a,n	0	0	2	1	40	60	100
19CIVI0012D	(Tactical) Entrepreneurship	Ш	cdh							
19CMU613A	(Practical)		C,U,II	0	0	2	1	40	60	100
17 0110 01011	Personal Selling and	Ш	c d h			-				
19CMU613B	Salesmanship (Practical)		•,•,•1	0	0	2	1	40	60	100
19CMU691	Project		1	8	0	0	6	40	60	100
				24	0	6	22	280	420	600
ECA / NCC / N	SS / Sports / General interes	t etc		•		•				Good
							140	1320	1980	3300

### **PROGRAM OUTCOMES (PO)**

a. Graduates will demonstrate solid foundation in bookkeeping, accounting and professional fundamentals required to record the business transaction ability.

b. Graduates will apply IT skills in Accounting, Taxation and business management for effective decision making.

c. Graduates will obtain the ability to analyse and solve the complex business problemsusing quantitative; qualitative tools and technologies.

d. Graduates will exhibit critical thinking skills in understanding the real-time businessissues and advocate solutions.

e. Graduates will acquire and demonstrate the interpersonal and communication skills toconvey and negotiate ideas for achieving the common goals.

f. Graduates will attain and exhibit skills to work as team to take effective decisionsin achieving the common goals.

g. Graduates will demonstrate the leadership skills to initiate, lead and deliver the bestperformance together with the team members.

### PROGRAM SPECIFIC OUTCOMES (PSO)

h. Graduates will gain lifelong learning practice by identifying, formulating, and analysing complex business problems substantiated conclusions through to reach research considering the changing environmental factors.

i. Graduate will demonstrate legal, ethical code and socially sustainable code of conductin both personal and professional decision making process pertaining to their career.

### PROGRAM EDUCATIONAL OBJECTIVES (PEO)

I. Graduates will acquire knowledge in accounting, taxation, finance and management concepts and apply it in business to become qualified professionals.

II. Graduates will possess the professional skills and competence to perform effectively inhigher studies, jobs and entrepreneurial ventures.

III. Graduates will develop a lifelong learning by applying the gained knowledge and skills inresearch and practice.

IV. Graduates will demonstrate high standard of ethical conduct and become socially responsible citizens contributing to the sustainable growth of the career and the community.

Program Educational Objectives				P O	rogram utcomes	8			
	a	b	c	d	e	f	g	h	i
Graduates will acquire knowledge in accounting, taxation, finance, management concepts and computer applications and apply it in business to become qualified professionals.	$\checkmark$		V	V			√		~
Graduates will possess the professional skills, computer skills and competence in field related to accounting and commerce which will enable them to perform effectively in higher studies, KPO/BPO field of IT sector and entrepreneurial ventures.	V	~			✓	$\checkmark$			
Graduates will continuously improve accounting and computer skills required to develop a life long learning through IT enabled research and practice.			~	✓				V	
Graduates will demonstrate high standard of ethical conduct in application of computer in accounting and finance and become socially responsible citizens contributing to the sustainable growth of profession and the community.	V		1	V			✓	V	~

### DEPARTMENT OF COMMERCE FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.COM. (CA) (2019–2020 Batch and onwards)

Common and a	Norma e 641 a compara	Objectives a	nd outcomes	In	struct hours / weel	ion k	lit(s)	Maximum Marks			
Course code	Name of the course	EOs	POs	L	Т	Р	Cred	CIA	ESE	Total	
		ł						40	60	100	
		SEM	ESTER – I								
19LAU101	Language - I	C,d,h	I,III	6	0	0	6	40	60	100	
19ENU101	English – I	A,f,i	IV	4	0	0	4	40	60	100	
19CCU101	Financial Accounting	A,f,i	IV	6	2	0	6	40	60	100	
19CCU102	Introduction to Information Technology	C,d,h	I,III	4	0	0	4	40	60	100	
19AEC101	Business Communication	C,d,h	I,III	4	0	0	4	40	60	100	
19CCU111	Introduction to Information Technology (Practical)	A,f,i	IV	0	0	4	2	40	60	100	
	Semester Total			24	2	4	26	240	360	600	
		SEM	ESTER – II								
19LAU201	Language – II	C,d,h	I,III	6	0	0	6	40	60	100	
19ENU201	English – II	A,f,i	IV	4	0	0	4	40	60	100	
19CCU201	Business Law	C,d,h	I,III	8	0	0	6	40	60	100	
19CCU202	Business Mathematics and Statistics	A,f,i	IV	6	2	0	6	40	60	100	
19AEC201	Environmental Studies	b,e,g	Π	4	0	0	4	40	60	100	
	Semester Total			28	2	0	26	200	300	500	
		SEME	ESTER – III								
19ENU301	English – III	A,f,i	IV	8	0	0	6	40	60	100	
19CCU301	Corporate Accounting	A,f,i	IV	6	2	0	6	40	60	100	
19CCU302	Database Management System	b,e,g	II	4	0	0	4	40	60	100	
19CCU303A	Auditing and Corporate Governance	b,e,g	II	4	0	0	3	40	60	100	
19CCU303B	Computerised Accounting System	A,f,i	IV	2	0	0	2	40	60	100	

		Objectives ar	nd outcomes	Ir	nstruct hours / weel	ion K	it(s)	Max	kimum N	larks
Course code	Name of the course	PEOs	POs	L	Т	Р	Cred	CIA	ESE	Total
								40	60	100
19CCU311	Database Management System (Practical)	b,e,g	II	0	0	4	2	40	60	100
19CCU312A	Auditing and Corporate Governance (practical)	A,f,i	IV	0	0	2	1	40	60	100
19CCU312B	Computerised Accounting System (practical)	C,d,h	I,III	0	0	4	2	40	60	100
	Semester Total			22/ 20	2	6/8	22	240	360	600
		SEMF	ESTER – IV							
19ENU401	English – IV	A,f,i	IV	8	0	0	6	40	60	100
19CCU401	Research Methodology	b,e,g	II	8	0	0	6	40	60	100
19CCU402	Cost Accounting	A,f,i	IV	6	2	0	6	40	60	100
19CCU403A	Financial Analysis and Reporting	C,d,h	I,III	4	0	0	3	40	60	100
19CCU403B	HTML Programming	C,d,h	I,III	2	0	0	2	40	60	100
19CCU411	Research Methodology (Practical)	b,e,g	II	0	0	2	1	40	60	100
19CCU412A	Financial Analysis and Reporting (Practical)	b,e,g	II	0	0	2	1	40	60	100
19CCU412B	HTML Programming (Practical)	A,f,i	IV	0	0	4	2	40	60	100
	Semester Total			24/ 26	2	4/2	22	200	300	500
		SEMI	ESTER – V							
19CCU501A	Company Law	C,d,h	I,III	8	0	0	6	40	60	100
19CCU501B	Financial Management	A,f,i	IV	6	2	0	6	40	60	100
19CCU502A	Management Accounting	A,f,i	IV	6	2	0	6	40	60	100
19CCU502B	Advanced Accounting	C,d,h	I,III	6	2	0	6	40	60	100
19CCU503A	Object Oriented Programming with C++	C,d,h	I,III	2	0	0	2	40	60	100
19CCU503B	Investment Management	b,e,g	II	4	0	0	3	40	60	100
19CCU504A	Business Economics	C,d,h	I,III	6	0	0	5	40	60	100

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021

Course ande	Nome of the course	Objectives ar	nd outcomes	Ir	istructi hours / weeł	ion k	lit(s)	Max	ximum M	larks
Course code	Name of the course	PEOs	POs	L	Т	Р	Cred	CIA	ESE	5 Total
19CCU504B	Management and Organization Behaviour	b,e,g	II	6	0	0	5	40	60	100
19CCU511A	Object Oriented Programming with C++ (Practical)	A,f,i	IV	0	0	4	2	40	60	100
19CCU511B	Investment Management (Practical)	b,e,g	II	0	0	2	1	40	60	100
19CCU512A	Business Economics (Practical)	b,e,g	II	0	0	2	1	40	60	100
19CCU512B	Management and Organization Behaviour (Practical)	A,f,i	IV	0	0	2	1	40	60	100
	Semester Total			23/ 20	1⁄4	6	22	240	360	600
		SEMF	ESTER – VI							
19CCU601A	Taxation	b,e,g	II	4	2	0	5	40	60	100
19CCU601B	Internet and Web designing	C,d,h	I,III	4	0	0	4	40	60	100
19CCU602A	Entrepreneurship	b,e,g	II	4	0	0	3	40	60	100
19CCU602B	Personal Selling and Salesmanship	A,f,i	IV	4	0	0	3	40	60	100
19CCU603A	Human Resource Management	A,f,i	IV	6	0	0	5	40	60	100
19CCU603B	Management Information system	b,e,g	II	6	0	0	5	40	60	100
19CCU611A	Taxation (Practical)	b,e,g	II	0	0	2	1	40	60	100
19CCU611B	Internet and Web designing	C,d,h	I,III	0	0	4	2	40	60	100
19CCU612A	Entrepreneurship (Practical)	b,e,g	II	0	0	2	1	40	60	100
19CCU612B	Personal Selling and Salesmanship (Practical)	A,f,i	IV	0	0	2	1	40	60	100
19CCU613A	Human Resource Management (Practical)	A,f,i	IV	0	0	2	1	40	60	100
19CCU613B	Management Information system (Practical)	A,f,i	IV	0	0	2	1	40	60	100

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19CCU691	Project	b,e,g	II	8	0	0	6	40	60	100
ECA/NCC/N	SS/Sports/General Interest et	c								Good
Common and a		Objectives a	nd outcomes	Iı	nstruct hours / weel	ion s k	lit(s)	Max	kimum N	larks
Course code	Name of the course	<b>PEOs</b>	POs	L	Т	Р	Cred	CIA	ESE	Total
		I						40	60	100
	Semester Tota	1		22	2/0	6/8	22	240/ 280	360/ 420	600/ 700
	Programme Tot	tal					140	1360/ 1400	2040/ 2100	3400/ 3500

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021

### PROGRAM OUTCOMES [PO]

- a. Graduates will have solid foundation in bookkeeping, accounting, computers and professional fundamentals required to record the business transaction ability.
- b. Graduates will apply technological skills in accounting, taxation by creating and applying the appropriate software and software tools for business management.
- c. Graduates will obtain the ability to analyze and develop programs for system based applications which will help in solving complex business problems to make effective decisions.
- d. Graduates will exhibit critical thinking skills in understanding the real-time business issues and advocate solutions.
- e. Graduates will acquire and demonstrate the interpersonal and communication skills to convey and negotiate ideas for achieving the common goals.
- f. Graduates will attain and exhibit skills to work as team to take effective decisions in achieving the common goals.
- g. Graduates will demonstrate the leadership skills to initiate, lead and deliver the best performance together with the team members.

### PROGRAM SPECIFIC OUTCOMES (PSO)

- h. Graduates will apply a lifelong learning gained through knowledge and skills in continuous adaption of new technologies and the changes in environment factors pertaining to accounting, IT, and finance.
- i. Graduates will demonstrate legal, ethical compliance (including IT norms) and socially sustainable code of conduct in both personal and professional decision making process.
#### **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

- I. Graduates will acquire knowledge in accounting, taxation, finance, management concepts and computer applications and apply it in business to become qualified professionals.
- II. Graduates will possess the professional skills, computer skills and competence in field related to accounting and commerce which will enable them to perform effectively in higher studies, KPO/BPO field of IT sector and entrepreneurial ventures.
- III. Graduates will continuously improve accounting and computer skills required to develop a lifelong learning through IT enabled research and practice.
- IV. Graduates will demonstrate high standard of ethical conduct in application of computer in accounting and finance and become socially responsible citizens contributing to the sustainable growth of profession and the community.

Program Educational Objectives				Prog	am Outco	omes			
	a	b	c	D	e	f	g	h	i
Graduates will acquire knowledge in accounting,									
taxation, finance, management concepts and									
computer applications and apply it in business to			V					$\checkmark$	
become qualified professionals.									
Graduates will possess the professional skills,									
computer skills and competence in field related									
to accounting and commerce which will enable									
them to perform effectively in higher studies,									
KPO/BPO field of IT sector and entrepreneurial									
ventures.						,			
Graduates will continuously improve accounting									
and computer skills required to develop a lifelong									
learning through IT enabled research and			$\checkmark$	$\checkmark$				$\checkmark$	
practice.									
Graduates will demonstrate high standard of									
ethical conduct in application of computer in									
accounting and finance and become socially									
responsible citizens contributing to the					$\checkmark$				
sustainable growth of profession and the									
community.									
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# **DEPARTMENT OF COMMERCE**

FACULTY OF ARTS, SCIENCE AND HUMANITIES

# KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore – 641 021, Tamil Nadu, India Phone: 0422- 2980011-2980015, Fax No: 0422 – 2980022 - 23 Email: info@karnagam.com. Web: www.kahedu.edu.in

#### DEPARTMENT OF COMMERCE FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.COM.(BPS) (2019–2020 Batch and onwards)

	N 60	Objecti outc	Objectives and outcomes		Instruction hours / week			Maximum Marks				
Course code	Name of the course	EOs	20s	L	Т	Р	Cred	CIA	ESE	Total		
		P	H					40	60	100		
	SEMESTER – I											
19LAU101	Language - I	I, II, III	a, e	6	0	0	6	40	60	100		
19ENU101	English – I	I, II, III	a, e	4	0	0	4	40	60	100		
19BPU101	Financial Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100		
19BPU102	Management and Organization Behaviour	I, II, III	a, c,d, e,h	6	0	0	5	40	60	100		
19AEC101	Business Communication	I, II, III	a, e, g, f	4	0	0	4	40	60	100		
19BPU111	Management and Organization Behaviour (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100		
	Semester Total			26	2	2	26	240	360	600		
	SE	MESTER	R – II									
19LAU201	Language – II	I, II, III	a, e	6	0	0	6	40	60	100		
19ENU201	English – II	I, II, III	a, e	4	0	0	4	40	60	100		
19BPU201	Business Process Services in Finance and Accounting	I, II, III	a, b,c, d,e, h	6	0	0	5	40	60	100		
19BPU202	Business Analytics	I, II, III	a, c, d,e, h	5	2	0	5	40	60	100		
19AEC201	Environmental Studies	I, III, IV	a,c,d,e,h , i	3	0	0	3	40	60	100		
19BPU211	Business Process Services in Finance and Accounting (Practical)	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100		
19BPU212	Computer Applications for Business (Practical)	I, II, III	a, b, c, d,e,h	0	0	2	1	40	60	100		
	Semester Total			24	2	4	25	280	420	700		

	Name of the course	Objecti outc	ives and omes	Instruction hours / week			it(s)	Max	imum N	Aarks
Course code	Name of the course	EOs	Os	L	Т	Р	Cred	CIA	ESE	Total
		H	Ρ					40	60	100
	SE	MESTER	– III		<u>.</u>					
19BPU301	Supply Chain Management	I, II, III	a, e	6	2	0	6	40	60	100
19BPU302	Income Tax Law and Practices	I, II, III, IV	a, c, d,e, f,g,h,i	6	2	0	6	40	60	100
19BPU303	Cost and Management Accounting	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
19BPU304A	Principles of Auditing	I, II, III, IV	a, c, d,e, h,i	4	0	0	3	40	60	100
19BPU304B	<i>Business Process Services</i> in <i>Insurance</i>	I, II, III	a, b, c, d,e, h	4	0	0	3	40	60	100
19BPU311A	Principles of Auditing(Practical)	I, II, III, IV	a, c, d,e, h,i	0	0	2	1	40	60	100
19BPU311B	<i>Business Process Services</i> in <i>Insurance (Practical)</i>	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100
	Semester Total			22	6	2	22	200	300	500
	SE	MESTER	– IV							
19BPU401	Indirect Taxation	I, II, III	a, e	6	2	0	6	40	60	100
19BPU402	Campus to Corporate Transition	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
19BPU403	Retail CPG and Market Research	I, II, III	a, b, c, d,e, h	6	2	0	6	40	60	100
19BPU404A	Financial Analysis and Reporting	I, II, III, IV	a, c, d,e, h,i	4	0	0	4	40	60	100
19BPU404B	Business Process Services in Banking	I, II, III	a, b, c, d,e,h	4	0	0	4	40	60	100
19BPU411A	Financial Analysis and Reporting (Practical)	I, II, III, IV	a, c, d,e,h,i	0	0	2	1	40	60	100
19BPU411B	Business Process Services in Banking (Practical)	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100
	Semester Total			22	6	2	23	240	360	600
	SE	MESTER	R - V							
19BPU501A	Services Marketing	I, II, III, IV	a, c, d,e,h,i	6	2	0	6	40	60	100

~ ·	Name of the course	Objecti outc	Objectives and outcomes		Instruction hours / week			Max	<b>Aarks</b>	
Course code	Name of the course	SOS	Os	L	Т	Р	Cred	CIA	ESE	Fotal
		PE	P	12	1	•		40	60	100
19BPU501B	Business Process Services in Capital Market	I, II, III	a, b, c, d,e,h	6	2	0	6	40	60	100
19BPU502A	Business Law	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
19BPU502B	Managing Business Processes - I	I, II, III	a, b, c, d,e,h	6	2	0	6	40	60	100
19BPU503A	Marketing Management	I, II, III	a, e,h	4	0	0	3	40	60	100
19BPU503B	Research Methodology	I, II, III	a, b, c, d,e,f,g,h	4	0	0	3	40	60	100
19BPU504A	Business Economics	I, II, III	a, c,d, e,h	6	2	0	6	40	60	100
19BPU504B	Management Information System	I, II, III, IV	a,c,d,e,h ,i	6	2	0	6	40	60	100
19BPU511A	Marketing Management (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
19BPU511B	SPSS(Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
	Semester Total			22	6	2	22	200	300	500
	S	emester –	VI							
19BPU601A	Human Resource Management	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
19BPU601B	Managing Business Processes – II	I, II, III, IV	a, b, c, d,e,h,i	6	2	0	6	40	60	100
19BPU602A	Company Law	I, II, III	a,e,h	6	2	0	6	40	60	100
19BPU602B	Financial Management	I, II, III	a,e,h	6	2	0	6	40	60	100
19BPU603A	Entrepreneurship	I,II, III	a,e,h	4	0	0	3	40	60	100
19BPU603B	Excel for Business	I, II, III	a, b, c, d,e,h	2	0	0	2	40	60	100
19BPU611A	Entrepreneurship (Practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100
19BPU611B	Excel for Business (Practical)	I, II, III	a, b, c, d,e,h	0	0	4	2	40	60	100
19BPU691	19BPU691 Project I, II, II		a,b,c,d,e, ,h	8	0	0	6	40	60	100
ECA/NCC/NS	S/Sports/General Interest etc			<b>a</b> + 1		<i>a</i> (		1		Good
	Semester Total			24/ 22	4	2/ 4	22	200	300	500

4

Course code		Objectives and outcomes		Instruction hours / week		ion /	it(s)	Maximum Marks		
	Name of the course	EOs	Os	L	Т	Р	Cred	CIA	ESE	Total
		P						40	60	100
Programme total							140	1360	2040	3400

A	ABILITY ENHANCEMENT COURSES								
Semester	Course code	Name of the course							
Ι	19ENU101	English – I							
Ι	19LAU101	Language - I							
Ι	19AEC101	Business Communication							
II	19ENU201	English – II							
II	19LAU201	Language – II							
II	19AEC201	Environmental Studies							

	CORE COURSES								
Semester	Course code	Name of the course							
Ι	19BPU101	Financial Accounting							
Ι	19BPU102	Management and Organization Behaviour							
II	19BPU201	Business Process Services in Finance and Accounting							
II	19BPU202	Business Analytics							
III	19BPU301	Supply Chain Management							
III	19BPU302	Income Tax Law and Practices							
III	19BPU303	Cost and Management Accounting							
	19BPU401	Indirect Taxation							
IV	19BPU402	Campus to Corporate Transition							
	19BPU403	Retail, CPG and Market Research							
VI	19BPU691	Project							

	SKILI	L ENHANCEMENT COURSES
Semester	Course code	Name of the course
III	19BPU304A	Principles of Auditing
	19BPU311A	Principles of Auditing(Practical)
III	19BPU304B	Business Process Services in Insurance
	19BPU311B	Business Process Services in Insurance (Practical)
IV	19BPU404A	Financial Analysis and Reporting
	19BPU411A	Financial Analysis and Reporting (Practical)
IV	19BPU404B	Business Process Services in Banking
	19BPU411B	Business Process Services in Banking (Practical)
V	19BPU503A	Marketing Management
	19BPU511A	Marketing Management (Practical)
V	19BPU504B	Research Methodology
	19BPU511B	SPSS (Practical)
VI	19BPU603A	Entrepreneurship
	19BPU611A	Entrepreneurship (Practical)
VI	19BPU603B	Excel for Business
	19BPU611B	Excel for business (Practical)

	DISCIPLINE SPECIFIC ELECTIVES								
Semester	Course code	Name of the course							
V	19BPU501A	Service Marketing							
	19BPU501B	Business Process Services in Capital Market							
	19BPU502A	Business Law							
	19BPU502B	Managing Business Processes - I							
VI	19BPU601A	Human Resource Management							
	19BPU601B	Managing Business Processes – II							

	GENERIC ELECTIVE							
Semester	Course code	Name of the course						
V	19BPU504A	Business Economics						
	19BPU504B	Management Information System						
VI	19BPU602A	Company Law						
	19BPU602B	Financial Management						

#### PROGRAM OUTCOMES (PO)

- a. Graduates will have a solid foundation in bookkeeping, accounting, business process services and professional fundamentals required to perform in business scenarios.
- b. Graduates will apply the knowledge of ITeSdomainskills in accounting, taxation, business process domain and business management for enabling effective decision making.
- c. Graduates will obtain the ability to analyze and solve complex business problems using indepth domain knowledge by using quantitative; qualitative tools and techniques.
- d. Graduates will exhibitcritical thinking skills to understand real-time issues in the business process services domain and advocate solutions.
- e. Graduates will acquire and demonstrate interpersonal and communication skills to convey and negotiate ideas to work in teams for achieving the target in specified time.
- f. Graduates will attain and exhibit skills to work as team to take effective decisions in achieving the common goals.
- g. Graduates will demonstrate the leadership skills to initiate, lead and deliver the best performance together with the team members.

#### **PROGRAM SPECIFIC OUTCOMES (PSO)**

- h. Graduateswillapply a lifelong learning gained through knowledge and skills in continuous adaption of new technologies and the changes in environment factors pertaining to accounting, IT, and finance domain applicable to all industry and specific knowledge and skills catering to ITes sector.
- i. Graduates will demonstrate legal, ethical code and socially sustainable code of conduct in both personal and professional decision making process pertaining to all industry and specific knowledge and skills catering to ITes sector.

#### **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

- I. Graduates will acquire knowledge in accounting, taxation, finance, business process services and management concepts and apply it in business to become qualified professionals.
- II. Graduates will possess the obtain industry ready professional skills and competence to perform effectively in higher studies, jobs in the various domain of ITeS sector, entrepreneurial ventures.
- III. Graduates will continuously develop a lifelong learning to excel in career obtained through domain specific research and practice.
- IV. Graduates will demonstrate high standard of ethical conduct and become socially responsible citizens contributing to the sustainable growth of profession and the community.

Program Educational Objectives				Progra	m Outo	comes			
	a	b	c	d	e	f	g	h	i
Graduates will acquire knowledge in									
accounting, taxation, finance, business	$\checkmark$		$\checkmark$	$\checkmark$				$\checkmark$	
process services and management									
concepts and apply it in business to									
become qualified professionals.									
Graduates will possess the obtain									
industry ready professional skills and									
competence to perform effectively in	$\checkmark$		$\checkmark$						
higher studies, jobs in the various									
domain of ITeS sector, entrepreneurial									
ventures.									
Graduates will continuously develop a									
lifelong learning to excel in career	$\checkmark$								
obtained through domain specific									
research and practice.									
Graduates will demonstrate high									
standard of ethical conduct and become		$\checkmark$							
socially responsible citizens									
contributing to the sustainable growth									
of profession and the community.									

#### DEPARTMENT OF COMMERCE FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.COM.(PA) (2019–2020 Batch and onwards)

Course code	Name of the course	Objec out	tives and comes	Instru	iction ł week	ours /	redit(s)	Maximum Marks			
		EO s	Os	L	т	Р	C	C C I	E S E	T ot al	
		L I	A Semested I		-	-		40	60	100	
19LAU101	Language - I	ТПШ	a e	6	0	0	6	40	60	100	
19ENU101	English – I	I, II, III	a, e	4	0	0	4	40	60	100	
19PAU101	Financial Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100	
19PAU102	Business Law	I,III,IV	a,c,d,e,h,i	8	0	0	6	40	60	100	
19AEC101	<b>Business Communication</b>	I, II, III	a, e, g, f	4	0	0	4	40	60	100	
S	emester Total			28	2	0	26	200	300	500	
		S	EMESTER – I	I							
19LAU201	Language – II	I, II, III	a, e	6	0	0	6	40	60	100	
19ENU201	English – II	I, II, III	a, e	4	0	0	4	40	60	100	
19PAU201	Corporate Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100	
19PAU202	Business Mathematics and Statistics	I, II, III	a, c, d,e, h	6	3	0	6	40	60	100	
19AEC201	Environmental Studies	I,III, IV	a, e,h, i	3	0	0	3	40	60	100	
S	emester Total			25	5	0	25	200	300	500	
SEMESTER – III											
19ENU301	English – III	I, II, III	a, e	4	0	4	6	40	60	100	
19PAU301	Cost Accounting	I, II, III	a, c, e, d, h	6	2	0	6	40	60	100	
19PAU302	Income Tax Law and Practice	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100	
19PAU303A	Auditing and Corporate Governance	I, II, III, IV	a, c, d,e,h,i	4	0	0	3	40	60	100	
19PAU303B	Computerised Accounting System	I, II, III, IV	a, e, h,i	2	0	0	2	40	60	100	
19PAU311A	Auditing and Corporate Governance (Practical)	I, II, III, IV	a, c, d,e, f, g, h,i	0	0	2	1	40	60	100	
19PAU311B	Computerised Accounting System (practical)	I, II, III, IV	a, b, c, d,e, h,i	0	0	4	2	40	60	100	
S	emester Total			20/18	4	6/8	22	200	300	500	
		S	EMESTER – Г	V							
19ENU401	English – IV	I, II, III	a, e	4	0	4	6	40	60	100	
19PAU401	Research Methodology	I, II, III, IV	a, c, d,e,h	6	0	0	6	40	60	100	
19PAU402	Indirect Taxation	I, II, III, IV	a, c, d,e, h,i	6	0	0	5	40	60	100	
19PAU403A	Financial Analysis and Reporting	I, II, III, IV	a, c, d,e, h,i	4	0	0	3	40	60	100	
19PAU403B	Excel for Business	I, II, III	a, c, d,e,h	2	0	0	2	40	60	100	
19PAU411	Research Methodology (Practical)	I, II, III, IV	a, c, d,e,f, g,h,i	0	0	2	1	40	60	100	
19PAU412	Indirect Taxation (Practical)	I, II, III, IV	a, c, d,e, h,i	0	0	2	1	40	60	100	

Course code	Name of the course	Objec out	Objectives and outcomes		iction l week	ours /	redit(s)	Max	imum N	/larks
		s	0s	T	т	р	C	L C	E N E	T ot al
19PAU413A	Financial Analysis and	I, II, III,	a, c, d,e,h,i	0	0	2	1	<b>40</b> 40	<b>60</b> 60	<b>100</b> 100
19PAU413B	Excel for Business	IV I, II, III	a, b, c, d,e,h	0	0	4	2	40	60	100
S	(practical) emester Total			20/19	0	12/12	23	280	420	700
			SEMESTER V	20/17	U	12/12	45	200	420	700
19PAU501A	Company Law	I, II, III, IV	a, c, d,e,f,g,h,i	8	0	0	6	40	60	100
19PAU501B	Financial Management	I, II, III	a, c, d,e, f,g,h	6	2	0	6	40	60	100
19PAU502A	Management Accounting	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
19PAU502B	Advanced Accounting	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
19PAU503A	Marketing Management	I, II, III	a, e,h	4	0	0	3	40	60	100
19PAU503B	Investment Management	I, II, III	a, e, h	4	0	0	3	40	60	100
19PAU504A	Business Economics	I, II, III	a, c,d, e,h	6	0	0	5	40	60	100
19PAU504B	Management and Organization Behaviour	I, II, III	a, c,d, e,h	6	0	0	5	40	60	100
19PAU511A	Marketing Management (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
19PAU511B	Investment Management (Practical)	I, II, III	a, c, d,e, h	0	0	2	1	40	60	100
19PAU512A	Business Economics (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
19PAU512B	Management and Organization Behaviour (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
S	emester Total			24/22	2/4	4	22	240	360	600
		S	EMESTER – V	Ι						
19PAU601A	Banking Law and Practice	I, II, III, IV	a,e,h,i	6	0	0	5	40	60	100
19PAU601B	Insurance Law and Practice	I, II, III, IV	a,e,h,i	6	0	0	5	40	60	100
19PAU602A	Entrepreneurship	I, II, III	a,e,h	4	0	0	3	40	60	100
19PAU602B	Personal Selling and Salesmanship	1, 11, 111	a,e,h	4	0	0	3	40	60	100
19PAU603A	Information System Control and Audit	I, II, III, IV	a,e,h,i	6	0	0	5	40	60	100
19PAU603B	Strategic Management	I, II, III	a,c,de,h	6	0	0	5	40	60	100
19PAU611A	Banking Law and Practice (Practical)	I, II, III, IV	a,c,d,e,h,i	0	0	2	1	40	60	100
19PAU611B	Insurance Law and Practice (Practical)	I, II, III, IV	a,c,d,e,,h,i	0	0	2	1	40	60	100
19PAU612A	Entrepreneurship (practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100
19PAU612B	Personal Selling and Salesmanship (practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100
19PAU613A	Information System Control and Audit (Practical)	I, II, III, IV	a,c,d,e,h,i	0	0	2	1	40	60	100
19PAU613B	Strategic Management (Practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100

Course code	Name of the course	Objec out	Objectives and outcomes			Instruction hours / week			Maximum Marks			
		EO s	Os	L	Т	Р	C	► C	E N E	ot al		
		Ρ	Р					40	60	100		
19PAU691	Project	I, II, III	a, b, c, d,e,f,g,h	8	0	0	6	40	60	100		
ECA/NCC/NS	S/Sports/General Interest etc	;			-		-			Good		
	Semester Total			24	0	6	22	280	420	700		
	Programme Total						140	1400	2100	3500		

	ABILIT	Y ENHANCEMENT COURSES
Semester	Course code	Name of the course
Ι	19ENU101	English – I
Ι	19LAU101	Language - I
Ι	19AEC101	Business Communication
II	19ENU201	English – II
II	19LAU201	Language – II
II	19AEC201	Environmental Studies
III	19ENU301	English – III
IV	19ENU401	English – IV
	CORE COURSES (CC)	
Semester	Course code	Name of the course
Ι	19PAU101	Financial Accounting
Ι	19PAU102	Business Law
II	19PAU201	Corporate Accounting
II	19PAU202	Business Mathematics and Statistics
III	19PAU301	Cost Accounting
III	19PAU302	Income Tax Law and Practice
IV	19PAU401	Research Methodology
	19PAU411	Research Methodology (Practical)
IV	19PAU402	Indirect Taxation
	19PAU412	Indirect Taxation (Practical)
	SKILL ENHA	NCEMENT ELECTIVE COURSES
Semester	Course code	Name of the course
III	19PAU303A	Auditing and Corporate Governance
	19PAU311A	Auditing and Corporate Governance (practical)
III	19PAU303B	Computerised Accounting System
	19PAU311B	Computerised Accounting System (practical)
IV	19PAU403A	Financial Analysis and Reporting
	19PAU413A	Financial Analysis and Reporting (Practical)
IV	19PAU403B	Excel for Business
	19PAU413B	Excel for Business (Practical)
V	19PAU503A	Marketing Management
·	19PAU511A	Marketing Management (Practical)
V	19PAU503B	Investment Management
·	19PAU511B	Investment Management (Practical)
VI	19PAU602A	Entrepreneurship
× =	19PAU612A	Entrepreneurship (practical)
VI	19PAU602B	Personal Selling and Salesmanship
V I	19PAU612B	Personal Selling and Salesmanship (practical)
		zering mit zaresing (praetiem)

	DISCIPLINE SPECIFIC ELECTIVES								
Semester	Course code	Name of the course							
V	19PAU501A	Company Law							
	19PAU501B	Financial Management							
	19PAU502A	Management Accounting							
	19PAU502B	Advanced Accounting							
VI	19PAU601A	Banking Law and Practice							
	19PAU611A	Banking Law and Practice (Practical)							
	19PAU601B	Insurance Law and Practice							
	19PAU611B	Insurance Law and Practice (Practical)							
	19PAU691	Project							
	(	GENERAL ELECTIVE							
Semester	Course code	Name of the course							
V	19PAU504A	Business Economics							
	19PAU512A	Business Economics (Practical)							
	19PAU504B	Management and Organization Behaviour							
	19PAU512B	Management and Organization Behaviour (Practical)							
VI	19PAU603A	Information Systems Control and Audit							
	19PAU613A	Information Systems Control and Audit (Practical)							
	19PAU603B	Strategic Management							
	19PAU613B	Strategic Management (Practical)							

#### B. COM. (PA) : THREE-YEAR (6-SEMESTER) CBCS PROGRAMME

PROGRAI	MME S'	TRUCI	<b>URE</b>

Course code	Name of the course	Course Type
SEMESTER I		
19LAU101	Language - I	Ability Enhancement Course
19ENU101	English – I	Ability Enhancement Course
19PAU101	Financial Accounting	Core Course – I
19PAU102	Business Law	Core Course - II
19AEC101	Business Communication	Ability Enhancement Course
SEMESTER II		
19LAU201	Language – II	Ability Enhancement Course
19ENU201	English – II	Ability Enhancement Course
19PAU201	Corporate Accounting	Core Course – III
19PAU202	Business Mathematics and Statistics	Core Course - IV
19AEC201	Environmental Studies	Ability Enhancement course
SEMESTER III		
19ENU301	English – III	Ability Enhancement Course
19PAU301	Cost Accounting	Core Course V
19PAU302	Income Tax Law and Practice	Core Course VI
19PAU303A	Auditing and Corporate Governance	Skill Enhancement Elective Course - I
19PAU311A	Auditing and Corporate Governance (practical)	
19PAU303B	Computerised Accounting System	
19PAU311B	Computerised Accounting System (practical)	
SEMESTER IV		
19ENU401	English – IV	Ability Enhancement Course
19PAU401	Research Methodology	Core Course VII
19PAU411	Research Methodology (Practical)	
19PAU402	Indirect Taxation	Core Course VIII
19PAU412	Indirect Taxation (Practical)	
19PAU403A	Financial Analysis and Reporting	Skill Enhancement Elective Course - II
19PAU413A	Financial Analysis and Reporting (Practical)	

Course code	Name of the course	Course Type
19PAU403B	Excel for Business	
19PAU413B	Excel for Business (Practical)	
SEMESTER V		
19PAU501A	Company Law	<b>Discipline Specific Elective (DSE)-I</b>
19PAU501B	Financial Management	
19PAU502A	Management Accounting	<b>Discipline Specific Elective (DSE)-II</b>
19PAU502B	Advanced Accounting	
19PAU503A	Marketing Management	Skill Enhancement Elective Course – III
19PAU511A	Marketing Management (Practical)	
19PAU503B	Investment Management	
19PAU511B	Investment Management (Practical)	
19PAU504A	Business Economics	
19PAU512A	Business Economics (Practical)	Generic Elective (GE) – I
19PAU504B	Management and Organization Behaviour	
19PAU512B	Management and Organization Behaviour	
SEMESTER VI		
19PAU601A	Banking Law and Practice	Discipline Specific Elective (DSE)-III
19PAU611A	Banking Law and Practice(Practical)	
19PAU601B	Insurance Law and Practice	
19PAU611B	Insurance Law and Practice(Practical)	
19PAU602A	Entrepreneurship	
19PAU612A	Entrepreneurship (practical)	
19PAU602B	Personal Selling and Salesmanship	Skill Enhancement Elective Course – IV
19PAU612B	Personal Selling and Salesmanship (practical)	
19PAU603A	Information Systems Control and Audit	
19PAU613A	Information Systems Control and Audit (Practical)	Generic Elective (GE) – II
19PAU603B	Strategic Management	
19PAU613B	Strategic Management (Practical)	
19PAU691	Project	Discipline Specific Elective (DSE)-IV

## PROGRAM OUTCOMES [PO]

- a. Graduates will have a knowledge in bookkeeping, accounting, compliance abiding norms of financial services industry.
- b. Graduates will apply the IT skills in accounting, taxation and finance career for effective decision making.
- c. Graduates will obtain ability to analyze and solve the complex business problems with professional expertise and accuracy using quantitative and qualitative tools and techniques for effective decision making.
- d. Graduates will exhibit critical thinking skills to understand the accuracy in financial reporting, real-time business issues and advocate suitable solutions.
- e. Graduates will acquire and demonstrate the interpersonal and communication skills to convey the audited findings and negotiate for the conformity of the results got through in-depth analysis.
- f. Graduates will attain and exhibit skills to work as team to take effective decisions in achieving the common goals.
- g. Graduates will demonstrate the leadership skills to initiate, lead and deliver the best performance together with the team members.

## PROGRAM SPECIFIC OUTCOMES (PSO)

h. Graduates will apply a lifelong learning in research and practice gained through knowledge and skills in continuous adaption of the changes in environment factors pertaining to accounting, auditing, and finance.

i. Graduates will demonstrate legal, ethical compliance and socially sustainable code of conduct in both personal and professional decision making process.

## PROGRAM EDUCATIONAL OBJECTIVES (PEO)

- I. Graduates will gain knowledge of accounting, taxation, auditing, finance and management to perform effectively in professional courses like CA, CMA, CS, ICWA and other courses.
- II. Graduates will obtain and demonstrate skills pertaining to professional coursesto perform effectively in studies, jobs and entrepreneurial ventures.
- III. Graduates will develop a life-long learning by applying the gained knowledge and skills in Professional practice and research.
- IV. Graduates will demonstrate high standard of ethical conduct and become socially responsible citizenscontributing to the sustainable growth of profession and the community.

<b>Program Educational Objectives</b>			]	Progra	m Out	comes			
	a	b	С	d	e	f	g	h	i
Graduates will gain knowledge of accounting, taxation, auditing, finance and management to perform effectively in professional courses like CA, CMA, CS, ICWA and other courses.	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$					
Graduates will obtain and demonstrate skills pertaining to professional courses to perform effectively in studies, jobs and entrepreneurial ventures.		$\checkmark$							
Graduates will develop a lifelong learning by applying the gained knowledge and skills in Professional practice and research.		$\checkmark$	$\checkmark$	V	$\checkmark$	$\checkmark$		$\checkmark$	
Graduates will demonstrate high standard of ethical conduct and become socially responsible citizens contributing to the sustainable growth of profession and the community.				V	V	V	V	V	$\checkmark$

# **BACHELOR OF COMPUTER APPLICATIONS (BCA)**

# **CHOICE BASED CREDIT SYSTEM (CBCS)**

**Curriculum** (2019 – 2022)



# DEPARTMENT OF COMPUTER APPLICATIONS FACULTY OF ARTS, SCIENCE AND HUMANITIES

# KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Eachanari (Post), Coimbatore – 641 021. Phone No. 0422-6471114, 6471115, 6453777 Fax No: 0422-2980022-3 E mail ID: info@karpagam.com Web: www.kahedu.edu.in

#### PROGRAM OUTCOMES : The program must enable students to attain by the time of

#### graduation

- a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
- b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- c) An ability to design, implement and evaluate a computer-based system, process, component or program to meet desired needs.
- d) An ability to function effectively on teams to accomplish a common goal
- e) An understanding of professional, ethical, legal, security and social issues and responsibilities
- f) An ability to communicate effectively with a range of audiences
- g) An ability to use current techniques, skills and improves the employability of students.
- h) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking and web systems and technologies
- i) An ability to effectively integrate IT-based solutions into the user environment
- j) An understanding of best practices and standards and their application

#### PROGRAM SPECIFIC OUTCOME (PSOs)

- k) Understand analyze and develop computer programs in the areas related to Database systems and Big data Analytics, cloud computing, soft computing, IoT, Image processing, Green computing, web designing, mobile computing and networking for efficient design of computer based system of varying complexity.
- 1) Apply standard software Engineering practices and strategies in software project development using open-source programming environment and enhance entrepreneurship skills to deliver a quality for business success.
- m) Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.
- n) An ability to produce cost effective, quality and maintainable software products and solutions (services) meeting the global standards and requirements with the knowledge acquired and using the emerging techniques, tools and software engineering methodologies and principles and able to comprehend and write effective project reports in multidisciplinary environment in the context of changing technologies.

#### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

- PEO I : To be a working Information Technology (IT) professional with core competencies that can be used on multi-disciplinary projects
- PEO II : To understand the importance of relationship building within the IT industry
- PEO III : To understand the need for lifelong learning in the exploration and journey in IT
- PEO IV : To understand, evaluate and practice ethical behavior within the IT industry
- PEO V : To be cognizant of security issues and their impacts on industry

POs	а	b	С	d	e	f	f	h	i	j	k	1	m	n
PEO I	Х	Х	Х				Х	Х	Х				Х	
PEO II				Х	Х	Х								Х
PEO III	Х	Х						Х		X	X			
PEO IV			Х	Х	X				X			Х		
PEO V					X					X		Х		

#### **MAPPING of PEOs and POs**

#### DEPARTMENT OF COMPUTER APPLICATIONS FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – Bachelor of Computer Applications (BCA) (2019–2020 Batch and onwards)

Course code	Name of the course	Obj an	ectives d out omes	Ins hou	struc rs / v	tion week	Cred it(s)	Max	Maximum Marks			
		PEOs	POs	L	Τ	Р		CIA	ESE	Total		
								40	60	100		
	SEME	STEF	R - I		<b>T</b>				1			
19LSU101	Language -I	V	d,e,f	04	-	-	4	40	60	100		
19CAU101	Programming Fundamentals using C / C++	Ι	a,b,c, h	05	-	-	5	40	60	100		
19CAU102	Computer System Architecture	Ι	a,b,c	04	-	-	4	40	60	100		
19CAU103	Introduction to Information Technology	III	a,b,c,	04	-	-	4	40	60	100		
19CAU111	Programming Fundamentals using C / C++ (Practical)	Ι	a,b,c, g,i,j	-	-	04	2	40	60	100		
19CAU112	Computer System Architecture (Practical)	Ι	b,c,g, i,j	-	-	03	2	40	60	100		
19CAU113	Introduction to Information Technology (Practical)	III	a,b,c, h,i,j	-	-	03	2	40	60	100		
19AEC101	Environmental Studies	IV	d,e	03	-	-	3	40	60	100		
	Semester Total			20	-	10	26	320	480	800		
	SEMES	TER	– II							1		
19LSU201	Language – II	V	d,e,f	04	-	-	4	40	60	100		
19ENU201	English	Π	d,e,f	04	-	-	4	40	60	100		
19CAU201	Programming in JAVA	Ι	a,b,c, d	04	-	-	4	40	60	100		
19CAU202	Discrete Structures	I,II I	a,b	04	-	-	4	40	60	100		
19CAU203	Computer Networks and Internet Technologies	IV ,V	g,k	04	-	-	4	40	60	100		
19CAU211	Programming in JAVA - Practical	Ι	a,c,h,i	-	-	04	2	40	60	100		
19CAU212	Discrete Structures - Practical	I,II I	a,b,j	-	-	03	2	40	60	100		
19CAU213	Computer Networks and Internet	IV	g,k,i,j	-	-	03	2	40	60	100		

	Technologies-Practical									
	Semester Total			20	-	10	26	320	480	800
	SEMES'	ΓER	– III							
19CAU301	Data Structures	Ι	a,b,c	04	-	-	4	40	60	100
19CAU302	Operating Systems	Ι	a,b,c	04	-	-	4	40	60	100
19CAU303	Advanced Networking	I, V	a,b,c	04	-	-	4	40	60	100
19CAU304A /	Android Programming /	Ι	g,k,i	03			3	40	60	100
19CAU304B	Struts Framework				-	-				
19CAU311	Data Structures - Practical	Ι	a,b,c,i ,j	-	-	04	2	40	60	100
19CAU312	Operating Systems - Practical	Ι	a,b,c,i	-	-	04	2	40	60	100
19CAU313	Advanced Networking - Practical	I, V	a,b,c,i	-	-	04	2	40	60	100
19CAU314A /	Android Programming - Practical /	Ι	g,i,j,k	-	-	03	1	40	60	100
19CAU314B	Struts Framework- Practical							220	40.0	000
	Semester Total			15	-	15	22	320	480	800
	SEMES'	TER	– IV							
19CAU401	Relational Database Management Systems	Ι	f,g,k	04	-	-	4	40	60	100
19CAU402	Software Engineering	I,II	a,b,l, n	04	-	-	4	40	60	100
19CAU403	Web Programming	Ι	g,k	04	-	-	4	40	60	100
19CAU404A /	R Programming /	Ι	a,b,g.	03			3	40	60	100
19CAU404B	Open Source Technologies		i		-	-				
19CAU411	Relational Database Management Systems- Practical	Ι	b,c,d, g	-	-	04	2	40	60	100
19CAU412	Software Engineering - Practical	I,II	b,c,h, i	-	-	04	2	40	60	100
19CAU413	Web Programming - Practical	I,II	a,b,g, i	-	-	04	2	40	60	100
19CAU414A /	R Programming - Practical /	I,II	a,b,g,	_	-	03	1	40	60	100
19CAU414B	Open Source Technologies - Practical		i	15		15		220	400	000
	Semester Total			15	-	15	22	320	480	800
	SEMES	TER	$-\mathbf{V}$	·1			·			
19CAU501A /	Artificial Intelligence/	Ι	a,b,e,	04	_	-	4	40	60	100
19CAU501B	Software Testing	Ŧ	g.1,m	0.1				10		100
19CAU502A /	Computer Graphics/ Information Security and Cyber Laws	I, V	a,b,h,	04	-	-	4	40	60	100
19CAU502B	Data Mining /	I II	g,i achi	04			Δ	40	60	100
1701030311/		1,11	u,v,11,1	0-1	-	-	-	-10	00	100

19CAU503B	Programming in Python		e,g,l,							
19CAU504A /	Digital Image Processing /	Ι	a,b,h	03			3	40	60	100
19CAU504B	Mongo DB				-	-	_	_		
19CAU511A /	Artificial Intelligence- Practical/	Ι	a,b,e,			04	2	40	60	100
19CAU511B	Software Testing - Practical		g.i,m	-	-					
19CAU512A /	Computer Graphics- Practical /	I,	a,b,h,			04	C	40	60	100
19CAU512B	Information Security and Cyber Laws-	V	g,i	-	-	04	2	40	00	100
	Practical									
19CAU513A /	Data Mining - Practical/	I,II	a,c,h,i			04	2	40	60	100
19CAU513B	Programming in Python - Practical		e,g,l,	-	-	04	2	40	00	100
			m							
19CAU514A /	Digital Image Processing - Practical /	Ι	a,b,h	_	-	03	1	40	60	100
19CAU514B	Mongo DB - Practical									
	Semester Total			15	-	15	22	320	480	800
	CEMES	TFD	X/T							
	SEWIES	ICK	- VI							
19CAU601A /	PHP Programming /	Ι	a,b,g,	04	_	_	4	40	60	100
19CAU601B	Unix / Linux Programming		i			_				
19CAU602A /	Database Administration /	I,II	g,i	04	-	_	4	40	60	100
19CAU602B	Cloud Computing									
19CAU603A /	Big Data Analytics /	Ι	a,b,g,	03	_	_	3	40	60	100
19CAU603B	System Programming		i							
19CAU611A /	PHP Programming - Practical/	Ι	C,h,i	-	_	04	2	40	60	100
19CAU611B	Unix / Linux Programming - Practical					<u> </u>				
19CAU612A /	Database Administration - Practical/	Ι	g,i	-	-	04	2	40	60	100
19CAU612B	Cloud Computing- Practical	-								
19CAU613A /	Big Data Analytics - Practical/	Ι	a,b,g,	-	-	03	1	40	60	100
19CAU613B	System Programming - Practical		1					10	60	100
19CAU691	Project and Viva Voce		a,b,1,J	08	-	-	6	40	60	100
	ECA / NCC / NSS / Sports / General		•	·l		Goo	od		·	
	interest etc									
	Semester Total			19	-	11	22	280	420	700
			104	-	76	140	1880	2820	4700	
						-				

	Ability Enhancement Courses (AEC)								
Semester	<b>Course Code</b>	Name of the Course							
Ι	19LSU101	Language –I							
	19AEC101	Environmental Studies							
II	19LSU201	Language –II							
	19ENU201	English							

Generic Elective Courses (GE) / Allied Courses							
Semester	Semester   Course Code   Name of the Course						
Ι	19CAU102	Computer System Architecture					

	19CAU112	Computer System Architecture - Practical
II	19CAU202	Discrete Structures
	19CAU212	Discrete Structures - Practical

		Core Courses (CC)
Semester	<b>Course Code</b>	Name of the Course
Ι	19CAU101	Programming Fundamentals using C / C++
	19CAU103	Computer Fundamentals
	19CAU111	Programming Fundamentals using C / C++ -Practical
	19CAU113	Computer Fundamentals - Practical
Π	19CAU201	Programming in JAVA
	19CAU203	Computer Networks and Internet Technologies
	19CAU211	Programming in JAVA - Practical
	19CAU213	Computer Networks and Internet Technologies-Practical
III	19CAU301	Data Structures
	19CAU302	Operating Systems
	19CAU303	Advanced Networking
	19CAU311	Data Structures-Practical
	19CAU312	Operating Systems-Practical
	19CAU313	Advanced Networking-Practical
IV	19CAU401	Relational Database Management Systems
	19CAU402	Software Engineering
	19CAU403	Web Programming
	19CAU411	Relational Database Management Systems-Practical
	19CAU412	Software Engineering-Practical
	19CAU413	Web Programming-Practical
V	19CAU501A	Artificial Intelligence
	19CAU501B	Software Testing
	19CAU511A	Artificial Intelligence-Practical
	19CAU511B	Software Testing-Practical
VI	19CAU601A	PHP Programming
	19CAU601B	Unix / Linux Programming
	19CAU611A	PHP Programming -Practical
	19CAU611B	Unix / Linux Programming -Practical
	19CAU691	Project and Viva Voce

	Skill Enhancement Courses(SEC)							
Semester	<b>Course Code</b>	Name of the Course						
III	19CAU304A	ndroid Programming						
	19CAU304B	Struts Framework						
	19CAU314A	ndroid Programming-Practical						
	19CAU314B	Struts Framework-Practical						
IV	19CAU404A	R Programming						
	19CAU404B	Open Source Technologies						
	19CAU414A	R Programming-Practical						
	19CAU414B	Open Source Technologies-Practical						

V	19CAU502A	Computer Graphics						
	19CAU502B	Information Security and Cyber Laws						
	19CAU512A	Computer Graphics-Practical						
	19CAU512B	formation Security and Cyber Laws -Practical						
VI	19CAU603A	Big Data Analytics						
	19CAU603B	System Programming						
	19CAU613A	Big Data Analytics -Practical						
	19CAU613B	System Programming-Practical						

# Discipline Specific Elective Courses (DSE)

Semester	Course Code	Name of the Course
V	19CAU503A	Data Mining
	19CAU503B	Programming in Python
	19CAU513A	Data Mining-Practical
	19CAU513B	Programming in Python -Practical
	19CAU504A	Digital Image Processing
	19CAU504B	Mongo DB
	19CAU514A	Digital Image Processing-Practical
	19CAU514B	Mongo DB -Practical
VI	19CAU602A	Database Administration
	19CAU602B	Cloud Computing
	19CAU612A	Database Administration -Practical
	19CAU612B	Cloud Computing-Practical

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#### DEPARTMENT OF COMPUTER SCIENCE FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.Sc. Computer Science (2019–2020 Batch and onwards) CURRICULUM

# **PROGRAM OUTCOMES:**The program must enable students to attain by the time ofgraduation

- a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
- b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- c) An ability to design, implement and evaluate a computer-based system, process, component or program to meet desired needs.
- d) An ability to function effectively on teams to accomplish a common goal
- e) An understanding of professional, ethical, legal, security and social issues and responsibilities
- f) An ability to communicate effectively with a range of audiences
- g) An ability to use current techniques, skills and tools necessary for computing practice
- h) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking and web systems and technologies
- i) An ability to effectively integrate IT-based solutions into the user environment
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#### PROGRAM SPECIFIC OUTCOME (PSOs)

k) Understand analyze and develop computer programs in the areas related to Database systems and Big data Analytics, cloud computing, soft computing, IoT, Image

processing, Green computing, web designing, mobile computing and networking for efficient design of computer based system of varying complexity.

- Apply standard software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality for business success.
- m) Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.
- n) An ability to produce cost effective, quality and maintainable software products and solutions (services) meeting the global standards and requirements with the knowledge acquired and using the emerging techniques, tools and software engineering methodologies and principles and able to comprehend and write effective project reports in multidisciplinary environment in the context of changing technologies.

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO I : To be a working Information Technology (IT) professional with core competencies that can be used on multi-disciplinary projects
- PEO II : To understand the importance of relationship building within the IT industry
- PEO III : To understand the need for lifelong learning in the exploration and journey in IT
- PEO IV : To understand, evaluate and practice ethical behavior within the IT industry
- PEO V : To be cognizant of security issues and their impacts on industry

POs	а	b	С	d	e	f	f	h	i	j	k	1	m	n
PEO I	Х	Х	Х				Х	Х	X				Х	
PEO II				Х	X	Х								X
PEO III	Х	Х						Х		Х	Х			
PEO IV			Х	Х	X				X			Х		
PEO V					Х					Х		Х		

### MAPPING of PEOs and POs

#### DEPARTMENT OF COMPUTER SCIENCE FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.Sc. Computer Science (2019–2020 Batch and onwards)

Course code	Name of the course	Ob ar c	jectives nd out omes	Inst h	truct ours week	tion /	it(s)	Maximum Marks		
				L	Τ	P	Cred	CIA	ESE	Total
								40	60	100
101 \$1101	SEMI		<b>K - I</b>	04	1		4	40	60	100
19CSU101	Programming Fundamentals using C / C++		a,b,c	04	-	-	5	40	60	100
19CSU102	Computer System Architecture	I	b.c.g	04	-	-	4	40	60	100
19CSU102	Computer Fundamentals	III	h,i	04	-	-	4	40	60	100
19CSU111	Programming Fundamentals using C / C++ - Practical	Ι	a,b,c,g	_	-	04	2	40	60	100
19CSU112	Computer System Architecture – Practical	Ι	a,c,g	-	-	03	2	40	60	100
19CSU113	Computer Fundamentals – Practical	III	b,h,j	-	-	03	2	40	60	100
19AEC101	Environmental Studies	IV	d,e	03	-	-	3	40	60	100
			20	-	10	26	320	480	800	
101.011001	SEME	STE	$\mathbf{R} - \mathbf{II}$	0.4	r	1		10		100
19LSU201	Language – II	IV	d,e	04	-	-	4	40	60	100
19ENU201	English – I		d,f	04	-	-	4	40	60	100
19CSU201	Programming in JAVA		c,n,1	04	-	-	4	40	60	100
19CSU202	Computer Networks and Internet Technologies	IV	e,i	04	-	-	4	40	60	100
19CSU211	Programming in JAVA – Practical	Ι	a.c.h.i	_	-	04	2	40	60	100
19CSU212	Discrete Structures – Practical	III	a,b,j	-	-	03	2	40	60	100
19CSU213	Computer Networks and Internet Technologies - Practical	IV	c,e	-	-	03	2	40	60	100
	Semester Total			20	-	10	26	320	480	800
	SEME	STE	R - III	1						
19CSU301	Data Structures	Ι	a,b,g, h	04	-	-	4	40	60	100
19CSU302	Operating Systems		a,b,h, k	04	-	-	4	40	60	100
19CSU303	Computer Networks		a,b,j,k	04	-	-	4	40	60	100
19CSU304A	Android Programming		a,b,c, m	03			3	40	60	100
19CSU304B	Programming in Visual Basic / Gambas	IV	c,d,e,i	05	-	-	5	40	60	100
19CSU311	Data Structures – Practical	Ι	a,b,g,	-	-	04	2	40	60	100

			h							
19CSU312			a.b.h.				-	40		100
	Operating Systems – Practical		k	-	-	04	2	40	60	100
19CSU313	Computer Networks – Practical	III	a,b,j,k	-	-	04	2	40	60	100
19CSU314A	Android Programming – Practical		a,b,c, m	-	-	03		40	60	100
19CSU314B	Programming in Visual Basic / Gambas - Practical	IV	c,d,e,i	-	-	03	1	40	60	100
	Semester Total			15	-	15	22	320	480	800
	SEME	STE	R – IV			1		1	1	1
19CSU401	Design and Analysis of Algorithms	Ι	a,b,c, m	04	-	-	4	40	60	100
19CSU402	Software Engineering	IV	c,d,e,l	04	-	-	4	40	60	100
19CSU403	Database Management Systems	Ι	a,b,g, h	04	-	-	4	40	60	100
19CSU404A	HTML Programming	III	a,b,h,j							
19CSU404B	XML Programming	III	a,b,h,j ,k	03	-	-	3	40	60	100
19CSU411	Design and Analysis of Algorithms - Practical		a,b,c, m	-	-	04	2	40	60	100
19CSU412	Software Engineering – Practical		c,d,e,l	-	-	04	2	40	60	100
19CSU413	Database Management Systems – Practical		a,b,g, h	-	-	04	2	40	60	100
19CSU414A	HTML Programming – Practical		a,b,h,j ,k			02	1	40	(0)	100
19CSU414B	<sup>4B</sup> XML Programming – Practical		a,b,h,j ,k			03	1	40	60	100
	Semester Total			15	-	15	22	320	480	800
	SEME	ESTE	R-V							
19CSU501A	Cloud Computing	Ι	b,e,m	04	-	-				
19CSU501B	Software Testing	Ι	c,g	04	-	-	4	40	60	100
19CSU502A	Internet Technologies	III	a,b,h,j	04	-	-	4	40	60	100
19CSU502B	Information Security and Cyber Law	Ι	a,b,h				4	40	00	100
19CSU503A	Data Mining	III	A,b,h, k	04	-	-	4	40	60	100
19CSU503B	R Programming		d,e,f		-	-				
19CSU504A	Oracle (SQL/PL-SQL)		c,e,i,l	03			3	40	60	100
19CSU504B	Programming in Python		b,h,j,k	05	-	-	3	40	00	100
19CSU511A	Cloud Computing – Practical		b,e,m	-	-	04	2	40	60	100
19CSU511B	Software Testing - Practical	Ι	c,g	-	-					
19CSU512A	Internet Technologies - Practical	III	a,b,h,j							
19CSU512B	Information Security and Cyber Law - Practical	Ι	a,b,h	-	-	04	2	40	60	100
19CSU513A	Data Mining – Practical	III	a,b,h, k	-	-	04	2	40	60	100
19CSU513B	R Programming – Practical		d,e,f	-	-					

19CSU514A	Oracle (SQL/PL-SQL ) – Practical		c,e,i,l			02	1	40	60	100
19CSU514B	Programming in Python – Practical		b,h,j,k	-	-	05	1	40	00	100
	Semester Total			15	-	15	22	320	480	800
	SEME	STE	R –VI				-	_	_	_
19CSU601A	PHP Programming		e,j,l	04			1	40	60	100
19CSU601B	Unix / Linux Programming	Ι	a,b,h,i	04		_	-	40	00	100
19CSU602A	Web and E-Commerce Technologies	Ι	a,d,g, m	04	_	-	4	40	60	100
19CSU602B	Computer Graphics	Ι	a,c,g, m					40	00	100
19CSU603A	Artificial Intelligence	III	a,b,h,j ,k	03	-	-	3	40	60	100
19CSU603B	System Programming		c,d,e							
19CSU611A	PHP Programming –Practical		e,j,l							
19CSU611B	Unix / Linux Programming – Practical	Ι	a,b,h,i	-	-	04	2	40	60	100
19CSU612A	Web and E-Commerce Technologies - Practical	Ι	a,d,g, m	-	-	04	2	40	(0)	100
19CSU612B	Computer Graphics – Practical	Ι	a,c,g, m	-	-			40	00	100
19CSU613A	Artificial Intelligence – Practical		a,b,h,j ,k	-	_	03	1	40	60	100
19CSU613B	System Programming – Practical		c,d,e							
19CSU691	Project	II	d,e,f,n	08	-	-	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc					Go	ood			
	Semester Total			19	-	11	22	280	420	700
	Grand Total			104	-	76	140	1880	2820	4700

Ability Enhancement Courses (AEC)							
Semester	Course Code	Name of the Course					
Ι	19LSU101	Language –I					
	19AEC101	Environmental Studies					
Π	19LSU201	Language –II					
	19ENU201	English					

Generic Elective Courses (GE) /Allied Courses					
Semester	Course Code	Name of the Course			
Ι	19CSU102	Computer System Architecture			
	19CSU112	Computer System Architecture - Practical			
II	19CSU202	Discrete Structures			
	19CSU212	Discrete Structures - Practical			

Core Courses (CC)					
Semester	Course Code	Name of the Course			
Ι	19CSU101	Programming Fundamentals using C / C++			
	19CSU103	Computer Fundamentals			
	19CSU111	Programming Fundamentals using C / C++ -Practical			
	19CSU113	Computer Fundamentals - Practical			
II	19CSU201	Programming in JAVA			
	19CSU203	Computer Networks and Internet Technologies			
	19CSU211	Programming in JAVA - Practical			
	19CSU213	Computer Networks and Internet Technologies - Practical			
III	19CSU301	Data Structures			
	19CSU302	Operating Systems			
	19CSU303	Computer Networks			
	19CSU311	Data Structures – Practical			
	19CSU312	Operating Systems – Practical			
	19CSU313	Computer Networks– Practical			
IV	19CSU401	Design and Analysis of Algorithms			
	19CSU402	Software Engineering			
	19CSU403	Database Management Systems			
	19CSU411	Design and Analysis of Algorithms - Practical			
	19CSU412	Software Engineering – Practical			
	19CSU413	Database Management Systems – Practical			
V	19CSU502A	Internet Technologies			
	19CSU502B	Information Security and Cyber Laws			
	19CSU512A	Internet Technologies– Practical			
	19CSU512B	Information Security and Cyber Laws – Practical			
VI	19CSU603A	Artificial Intelligence			
	19CSU603B	System Programming			
	19CSU613A	Artificial Intelligence – Practical			
	19CSU613B	System Programming – Practical			
	19CSU691	Project			

	Skill Enhancement Courses(SEC)						
Semester	Course Code	lame of the Course					
III	19CSU304A	Android Programming					
	19CSU304B	Programming in Visual Basic/Gambas					
	19CSU314A	Android Programming – Practical					
	19CSU314B	Programming in Visual Basic/Gambas- Practical					
IV	19CSU404A	HTML Programming					
	19CSU404B	XML Programming					
	19CSU414A	HTML Programming – Practical					
	19CSU414B	XML Programming – Practical					
V	19CSU501A	Cloud Computing					
	19CSU501B	Software Testing					
	19CSU511A	Cloud Computing - Practical					
	19CSU511B	Software Testing – Practical					

VI	19CSU601A	PHP Programming
	19CSU601B	Unix / Linux Programming
	19CSU611A	PHP Programming –Practical
	19CSU611B	Unix / Linux Programming – Practical

	Discipline Specific Elective Courses (DSE)					
Semester	Course Code	Name of the Course				
V	19CSU503A	Data Mining				
	19CSU503B	R Programming				
	19CSU504A	Oracle (SQL/PL-SQL)				
	19CSU504B	Programming in Python				
V	19CSU513A	Data Mining – Practical				
	19CSU513B	R Programming –Practical				
	19CSU514A	Oracle (SQL/PL-SQL) – Practical				
	19CSU514B	Programming in Python – Practical				
VI	19CSU602A	Web and E-Commerce Technologies				
	19CSU602B	Computer Graphics				
	19CSU612A	Web and E-Commerce Technologies – Practical				
	19CSU612B	Computer Graphics – Practical				

## KARPAGAM ACADEMY OF HIGHER EDUCATION COIMBATORE-21 DEPARTMENT OF COMPUTER SCIENCE, COMPUTER APPLICATIONS & INFORMATION TECHNOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES

# PROGRAM OUTCOMES :The program must enable students to attain by the time of graduation

- a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
- b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- c) An ability to design, implement and evaluate a computer-based system, process, component or program to meet desired needs.
- d) An ability to function effectively on teams to accomplish a common goal
- e) An understanding of professional, ethical, legal, security and social issues and responsibilities
- f) An ability to communicate effectively with a range of audiences
- g) An ability to use current techniques, skills and tools necessary for computing practice
- h) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking and web systems and technologies
- i) An ability to effectively integrate IT-based solutions into the user environment
- j) An understanding of best practices and standards and their application

#### PROGRAM SPECIFIC OUTCOME (PSOs)

- k) Understand analyze and develop computer programs in the areas related to Database systems and Big data Analytics, cloud computing, soft computing, IoT, Image processing, Green computing, web designing, mobile computing and networking for efficient design of computer based system of varying complexity.
- Apply standard software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality for business success.
- m) Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.
- n) An ability to produce cost effective, quality and maintainable software products and solutions (services) meeting the global standards and requirements with the knowledge acquired and using the emerging techniques, tools and software engineering methodologies and principles and able to comprehend and write effective

project reports in multidisciplinary environment in the context of changing technologies.

#### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

- PEO I : To be a working Information Technology (IT) professional with core competencies that can be used on multi-disciplinary projects
- PEO II : To understand the importance of relationship building within the IT industry
- PEO III : To understand the need for lifelong learning in the exploration and journey in IT
- PEO IV : To understand, evaluate and practice ethical behavior within the IT industry
- PEO V : To be cognizant of security issues and their impacts on industry

POs	а	b	с	D	e	f	f	h	i	j	k	1	m	n
PEO I	Х	X	Х				X	Х	X				X	
PEO II				X	X	X								X
PEO III	Х	X						Х		X	X			
PEO IV			Х	Х	Х				Х			Х		
PEO V					X					X		X		

#### **MAPPING of PEOs and POs**

## DEPARTMENT OF COMPUTER SCIENCE, COMPUTER APPLICATIONS & INFORMATION TECHNOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.Sc. Information Technology (2019–2020 Batch and onwards)

Course code	rse code Name of the course Objectives and out		Ins hou	struct irs / v	tion veek		Max	kimum N	Iarks	
		c	omes							
		PEOs	POs	L	T	Р	Credit(s)	CIA	ESE	Total
								40	60	100
	SEM	ESTI	ER - I							
19LSU101	Language – I	IV	d,e	04	-	-	4	40	60	100
19ITU101	Programming Fundamentals using C / C++	Ι	a,b,c	05	-	-	5	40	60	100
19ITU102	Computer System Architecture	Ι	b,c,g	04	-	-	4	40	60	100
19ITU103	Computer Fundamentals	III	h,j	04	-	-	4	40	60	100
19ITU111	Programming Fundamentals using C / C++ - Practical	Ι	a,b,c,g	-	-	04	2	40	60	100
19ITU112	Computer System Architecture – Practical	Ι	a,c,g	-	-	03	2	40	60	100
19ITU113	Computer Fundamentals - Practical	III	b,h,j	-	-	03	2	40	60	100
19AEC101	Environmental Studies	IV	d,e	03	-	-	3	40	60	100
	Semester Total			20	-	10	26	320	480	800
	SEMI	ESTE	$\mathbf{R} - \mathbf{H}$				-			
19LSU201	Language – II			04	-	-	4	40	60	100
19ENU201	English	II	d,f	04	-	-	4	40	60	100
19ITU201	Programming in JAVA	Ι	c,h,i	04	-	-	4	40	60	100
19ITU202	Discrete Structures	III	a,b	04	-	-	4	40	60	100
19ITU203	Computer Networks and Internet Technologies	IV	e,i	04	-	-	4	40	60	100
19ITU211	Programming in JAVA - Practical	Ι	a,c,h,i	-	-	04	2	40	60	100
19ITU212	Discrete Structures - Practical	III	a,b,j	-	-	03	2	40	60	100
19ITU213	Computer Networks and Internet Technologies Practical	IV	c,e	-	-	03	2	40	60	100
	SEME	STE	R – III							
19ITU301	Data Structures	Ι	a,b,c	04	-	-	4	40	60	100
19ITU302	Operating Systems	II	a,b,c,g	04	-	-	4	40	60	100
19ITU303	Relational Database Management Systems	I	a,b,c	04	-	-	4	40	60	100
19ITU304A	Android Programming	I	a,b,c	03	-	-	3	40	60	100
19ITU304B	Programming in Python	Ι	a,b,c							
19ITU311	Data Structures – Practical	Ι	a,b,c,g	-	-	04	2	40	60	100
19ITU312	Operating Systems – Practical	II	b,h,j	-	-	04	2	40	60	100
19ITU313	RDBMS – Practical	I	a,b,c,g	-	-	04	2	40	60	100
19ITU314A	Android Programming – Practical		a,b,c,g	-	-	03	1	40	60	100
1911U314B	Programming in Python – Practical		a,b,c,g			20	22	220	400	000
	CTTN/IE	 Стр	D <b>I</b> \7		l	30	22	320	460	000
101711401	SERVIE Data Communication and Networks		$\mathbf{N} - \mathbf{I}\mathbf{V}$	04	<u> </u>		1	10	60	100
1911U401 19ITU402	Software Engineering	v П	ahcg	04	-	-	4 4	40	60	100
19ITU403	Programming in PERL	I	a,b,c,g	04	-	-	4	40	60	100

19ITU404A	Scripting Language	Ι	a,b,c,g	03	-	-	3	40	60	100
19ITU404B	XML Programming	Ι	a,b,c,g							
19ITU411	Data Communication and Networks -	V	a,b,c,g	-	-	04	2	40	60	100
	Practical									
19ITU412	Software Engineering - Practical	II	b,h,j	-	-	04	2	40	60	100
19ITU413	Programming in PERL - Practical	Ι	b,h,j	-	-	04	2	40	60	100
19ITU414A	Scripting Language - Practical	Ι	a,c,h,i	-	-	03	1	40	60	100
19ITU414B	XML Programming - Practical	Ι	a,c,h,i							
						30	22	320	480	800
	SEM	ESTE	$\mathbf{E}\mathbf{R} - \mathbf{V}$							
19ITU501A	Artificial Intelligence	V	a,b,c	04	-	-	4	40	60	100
19ITU501B	Software Testing	V	a,b,c							
19ITU502A	.NET Programming	Ι	a,b,c	04	-	-	4	40	60	100
19ITU502B	Network Programming	Ι	a,b,c							
19ITU503A	Data Mining	III	a,b,c	04	-	-	4	40	60	100
19ITU503B	Machine Learning	III	a,b,c							
19ITU504A	Digital Image Processing	Ι	a,b,c	03	-	-	3	40	60	100
19ITU504B	Multimedia and its Applications	Ι	a,b,c							
19ITU511A	Computer Graphics - Practical	V	a,b,c,g	-	-	04	2	40	60	100
19ITU511B	Software Testing - Practical	V	a,b,c,g							
19ITU512A	.NET Programming -Practical	Ι	a,b,c,g	-	-	04	2	40	60	100
19ITU512B	Network Programming -Practical	Ι	a,b,c,g							
19ITU513A	Data Mining - Practical	III	a,b,c,g	-	-	04	2	40	60	100
19ITU513B	Machine Learning - Practical	III	a,b,c,g							
19ITU514A	Digital Image Processing - Practical	Ι	a,b,c,g	-	-	03	1	40	60	100
19ITU514B	Multimedia and Applications - Practical	Ι	a,b,c,g							
						30	22	320	480	800
	SEMI	ESTE	$\mathbf{R} - \mathbf{VI}$							
19ITU601A	PHP Programming	Ι	b,c,g	04	-	-	4	40	60	100
19ITU601B	Unix / Linux Programming	Ι	a,b,c							
19ITU602A	E-Commerce Technologies	II	b,c,h,i	04	-	-	4	40	60	100
19ITU602B	Cloud Computing	II	b,c,g							
19ITU603A	Big Data Analytics	III	b,c,g	03	-	-	3	40	60	100
19ITU603B	System Programming	III	b,c,h,i							
19ITU611A	PHP Programming - Practical I a,b,c,g		-	04	2	40	60	100		
19ITU611B	Unix / Linux Programming - Practical	l I a,b,c,g								
19ITU612A	E-Commerce Technologies -Practical	II	a,b,c,g	-	-	04	2	40	60	100
19ITU612B	Cloud Computing – Practical		a,b,c,g							
19ITU613A	Big Data Analytics - Practical	III	a,b,c,g	-	-	03	1	40	60	100
19ITU613B	System Programming - Practical	III	a,b,c,g							
19ITU691	Project	IV	i,j	-	-	08	6	40	60	100
	Semester Total				-	30	22	280	420	700
				-	180	140	1880	2820	4700	

Ability Enhancement Courses (AEC)				
Semester	Course Code	Name of the Course		
Ι	19LSU101	Language –I		
	19AEC101	Environmental Studies		
II	19LSU201	Language –II		

19ENU201	English

Generic Elective Courses (GE) /Allied Courses					
Semester	Course Code	Name of the Course			
Ι	19ITU102	Computer System Architecture			
	19ITU112	Computer System Architecture - Practical			
II	19ITU202	Discrete Structures			
	19ITU212	Discrete Structures – Practical			
		Core Courses (CC)			
Semester	Semester         Course Code         Name of the Course				
Ι	19ITU101	Programming Fundamentals using C / C++			
	19ITU103	Computer Fundamentals			
	19ITU111	Programming Fundamentals using C / C++ -Practical			
	19ITU113	Computer Fundamentals - Practical			
II	19ITU201	Programming in JAVA			
	19ITU203	Computer Networks and Internet Technologies			
	19ITU211	Programming in JAVA - Practical			
	19ITU213	Computer Networks and Internet Technologies - Practical			
III	19ITU301	Data Structures			
	19ITU302	Operating Systems			
	19ITU303	Relational Database Management Systems			
	19ITU311	Data Structures – Practical			
	19ITU312	Operating Systems – Practical			
	19ITU313	RDBMS – Practical			
IV	19ITU401	Data Communication and Networks			
	19ITU402	Software Engineering			
	19ITU403	Programming in PERL			

	19ITU411	Data Communication and Networks - Practical
	19ITU412	Software Engineering - Practical
	19ITU413	Programming in PERL - Practical
V	19ITU502A	.NET Programming
	19ITU502B	Network Programming
	19ITU512A	.NET Programming -Practical
	19ITU512B	Network Programming -Practical
VI	19ITU601A	PHP Programming
	19ITU601B	Unix / Linux Programming
	19ITU611A	PHP Programming - Practical
	19ITU611B	Unix / Linux Programming - Practical
	19ITU691	Project

Skill Enhancement Courses(SEC)		
Semester	Course Code	Name of the Course
III	19ITU304A	Android Programming
	19ITU304B	Programming in Python
	19ITU314A	Android Programming – Practical
	19ITU314B	Programming in Python – Practical
IV	19ITU404A	Scripting Language
	19ITU404B	XML Programming
	19ITU414A	Scripting Language - Practical
	19ITU414B	XML Programming - Practical
V	19ITU501A	Artificial Intelligence
	19ITU501B	Software Testing
	19ITU511A	Computer Graphics - Practical
	19ITU511B	Software Testing - Practical
VI	19ITU603B	System Programming
19ITU613B System Programm	ing - Practical	
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	Discipline Specific Elective Courses (DSE)					
Semester	Course Code	Name of the Course				
V	19ITU503A	Machine Learning				
	19ITU503B	Data Mining				
	19ITU504A	Digital Image Processing				
	19ITU504B	Multimedia and its Applications				
	19ITU513A	Machine Learning - Practical				
	19ITU513B	Data Mining - Practical				
	19ITU514A	Digital Image Processing - Practical				
	19ITU514B	Multimedia and Applications - Practical				
VI	19ITU602A	E-Commerce Technologies				
	19ITU602B	Cloud Computing				
	19ITU603A	Big Data Analytics				
	19ITU603A	Big Data Analytics - Practical				
	19ITU612A	E-Commerce Technologies -Practical				
	19ITU612B	Cloud Computing – Practical				

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#### UG PROGRAM (CBCS) – B.Sc. Computer Technology (2019–2020 Batch and onwards)

Course code	Name of the course	Ob an c	jectives nd out comes	Instruction hours / week				Maximum Marks		
		PEOs	POs	L	T	Р	Credit(s	CIA	ESE	Total
								40	60	100
	SEM	IEST	ER - I	T	1					
19LSU101	Language – I	IV	d,e	04	-	-	4	40	60	100
19CTU101	Programming Fundamentals using C / I a,b,c 05		5	40	60	100				
19CTU102	Computer System Architecture	tecture I b,c,g 04		-	4	40	60	100		
19CTU103	Computer Fundamentals III h,j 04		-	4	40	60	100			
19CTU111	Programming Fundamentals using C / C++ -Practical		a,b,c,g	-	-	04	2	40	60	100
19CTU112	Computer System Architecture - Practical	Ι	a,c,g	-	-	03	2	40	60	100
19CTU113	Computer Fundamentals - Practical	III	b,h,j	-	-	03	2	40	60	100
19AEC101	Environmental Studies	IV	d,e	03	-	-	3	40	60	100
Semester Total				20	-	10	26	320	480	800
SEMESTER – II										
19LSU201	Language – II			04	-	-	4	40	60	100
19ENU201	English	II	d,f	04	-	-	4	40	60	100
19CTU201	Programming in JAVA	Ι	c,h,i	04	-	-	4	40	60	100

19CTU202	Discrete Structures	a,b	04	-	-	4	40	60	100	
19CTU203	Computer Networks and Internet Technologies	IV	e,i	04	-	-	4	40	60	100
19CTU211	Programming in JAVA - Practical	Ι	a,c,h,i	-	-	04	2	40	60	100
19CTU212	Discrete Structures - Practical	III	a,b,j	-	-	03	2	40	60	100
19CTU213	Computer Networks and Internet Technologies Practical	IV	c,e	-	-	03	2	40	60	100
	SEMI	ESTE	CR – III		1	1				
19CTU301	I9CTU301     Data Structures     I     a,b,c     04     -     4     4							40	60	100
19CTU302	Data Communication and Networks V b,c,g 04 - 4					40	60	100		
19CTU303	Relational Database ManagementIa,b,c04Systems </td <td>-</td> <td>4</td> <td>40</td> <td>60</td> <td>100</td>					-	4	40	60	100
19CTU304A	Android Programming	Ι	a,b,c	03	_	_	3	40	60	100
19CTU304B	Programming in Python I a,b,c			Ŭ			100			
19CTU311	Data Structures – PracticalIa,b,c,g-O4					2	40	60	100	
19CTU312	Data Communication and Networks – Practical	and Networks – V a,b,c,g 04				2	40	60	100	
19CTU313	RDBMS – Practical	Ι	a,b,c,g	-	-	04	2	40	60	100
19CTU314A	Android Programming – Practical	Ι	a,b,c,g	-	-	03	1	40	60	100
19CTU314B	Programming in Python – Practical	Ι	a,b,c,g	-	-					100
						30	22	320	480	800
	SEMI	ESTE	ER – IV					I	I	
19CTU401	Operating Systems	II	a,b,c,g	04	-	-	4	40	60	100
19CTU402	Software Engineering	II	a,b,c,g	04	-	-	4	40	60	100
19CTU403	Artificial Intelligence	Ι	a,b,c,g	04	-	-	4	40	60	100
19CTU404A	Scripting Language	Ι	a,b,c,g	03	_	_	3	40	60	100
19CTU404B	XML Programming	Ι	a,b,c,g					UTU	00	100
19CTU411	Operating Systems - Practical	II	b,h,j	-	-	04	2	40	60	100

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19CTU412	Software Engineering - Practical	II	b,h,j	-	-	04	2	40	60	100
19CTU413	Artificial Intelligence - Practical	Ι	b,h,j	-	-	04	2	40	60	100
19CTU414A	Scripting Language - Practical	Ι	a,c,h,i	-	-	03	1	40	60	100
19CTU414B	XML Programming - Practical	Ι	a,c,h,i	-	-					
						30	22	320	480	800
	SEM	ESTI	$\mathbf{E}\mathbf{R} - \mathbf{V}$	I	I					
19CTU501A	Cryptography and Network Security	V	a,b,c	04	04			40	60	100
19CTU501B	Software Testing	V	a,b,c	04	-	-	4	40	00	100
19CTU502A	.NET Programming	Ι	a,b,c	04			1	40	60	100
19CTU502B	Network Programming	Ι	a,b,c	04		-	7	40	00	100
19CTU503A	Data Mining	III	a,b,c	04	_		4	40	60	100
19CTU503B	R - Programming	III	a,b,c				-	40	00	100
19CTU504A	Digital Image Processing	Ι	a,b,c	03	_		3	40	60	100
19CTU504B	Multimedia and its Applications	Ι	a,b,c				Ŭ	10		100
19CTU511A	Cryptography and Network Security - Practical	V	a,b,c,g	-	-	0.4	0	40	<u> </u>	400
10CTU511D	Software Testing Prestical	V	a h a g			04	2	40	60	100
190103116	Software Testing - Practical	v	a,o,c,g	-	-					
19CTU512A	.NET Programming - Practical	Ι	a,b,c,g	-	-	04	2	40	60	100
19CTU512B	Network Programming - Practical	Ι	a,b,c,g	-	-					
19CTU513A	Data Mining - Practical	III	a,b,c,g	-	-	04	2	40	60	100
19CTU513B	R – Programming - Practical	III	a,b,c,g	-	-					
19CTU514A	Digital Image Processing - Practical	Ι	a,b,c,g	-	-					
19CTU514B	Multimedia and its Applications - PracticalIa,b,c,g03		03	1	40	60	100			
						30	22	320	480	800
	SEMI	ESTE	ER – VI	1	1	1	1	1	1	
19CTU601A	PHP Programming	Ι	b,c,g	04	-	-	4	40	60	100

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19CTU601B	Unix / Linux Programming	x / Linux Programming I a,b,c								
19CTU602A	E-Commerce Technologies	II	b,c,h,i	04	-	-	4	40	60	100
19CTU602B	Cloud Computing	II	b,c,g	-						
19CTU603A	Big Data Analytics	III	b,c,g	03	_	-	3	40	60	100
19CTU603B	System Programming	III	b,c,h,i							
19CTU611A	PHP Programming - Practical	Ι	a,b,c,g	-	-	04 2		40	60	100
19CTU611B	Unix / Linux Programming - Practical	Ι	a,b,c,g	-	-					
19CTU612A	E-Commerce Technologies - Practical	II	a,b,c,g	-	-	04 2		40	60	100
19CTU612B	Cloud Computing - Practical	II	a,b,c,g	-	-					
19CTU613A	Big Data Analytics - Practical	III	a,b,c,g	-	-	03	1	40	60	100
19CTU613B	System Programming - Practical	III	a,b,c,g	-	-					
19CTU691	Project	IV	i,j	-	-	08	6	40	60	100
	Semester Total				-	30	22	280	420	700
				-	180	140	1880	2820	4700	

	Ability Enhancement Courses (AEC)					
Semester	Course Code	Name of the Course				
Ι	19LSU101	Language –I				
	19AEC101	Environmental Studies				
II	19LSU201	Language –II				
	19ENU201	English				

Generic Elective Courses (GE) /Allied Courses					
Semester	Course Code	Name of the Course			
Ι	19CTU102	Computer System Architecture			
	19CTU112	Computer System Architecture - Practical			
II	19CTU202	Discrete Structures			
	19CTU212	Discrete Structures – Practical			

	Core Courses (CC)					
Semester	Course Code	Name of the Course				
Ι	19CTU101	Programming Fundamentals using C / C++				
	19CTU103	Computer Fundamentals				
	19CTU111	Programming Fundamentals using C / C++ -Practical				
	19CTU113	Computer Fundamentals - Practical				
II	19CTU201	Programming in JAVA				
	19CTU203	Computer Networks and Internet Technologies				
	19CTU211	Programming in JAVA - Practical				
	19CTU213	Computer Networks and Internet Technologies - Practical				
III	19CTU301	Data Structures				
	19CTU302	Data Communication and Networks				
	19CTU303	Relational Database Management Systems				
	19CTU311	Data Structures – Practical				
	19CTU312	Data Communication and Networks – Practical				
	19CTU313	RDBMS – Practical				
IV	19CTU401	Operating Systems				
	19CTU402	Software Engineering				

	19CTU403	Artificial Intelligence
	19CTU411	Operating Systems - Practical
	19CTU412	Software Engineering - Practical
	19CTU413	Artificial Intelligence - Practical
V	19CTU502A	.NET Programming
	19CTU502B	Network Programming
	19CTU512A	.NET Programming -Practical
	19CTU512B	Network Programming -Practical
VI	19CTU601A	PHP Programming
	19CTU601B	Unix / Linux Programming
	19CTU611A	PHP Programming - Practical
	19CTU611B	Unix / Linux Programming - Practical
	19CTU691	Project

	Skill Enhancement Courses(SEC)				
Semester	Course Code	Name of the Course			
III	19CTU304A	Android Programming			
	19CTU304B	Programming in Python			
	19CTU314A	Android Programming – Practical			
	19CTU314B	Programming in Python – Practical			
IV	19CTU404A	Scripting Language			
	19CTU404B	XML Programming			
	19CTU414A	Scripting Language - Practical			
	19CTU414B	XML Programming - Practical			
V	19CTU501A	Cryptography and Network Security			

	19CTU501B	Software Testing
	19CTU511A	Cryptography and Network Security - Practical
	19CTU511B	Software Testing - Practical
VI	19CTU603A	Big Data Analytics
	19CTU603B	System Programming
	19CTU613A	Big Data Analytics - Practical
	19CTU613B	System Programming - Practical

		Discipline Specific Elective Courses (DSE)
Semester	Course Code	Name of the Course
V	19CTU503A	Data Mining
	19CTU503B	R - Programming
	19CTU504A	Digital Image Processing
	19CTU504B	Multimedia and its Applications
	19CTU513A	Data Mining - Practical
	19CTU513B	R-Programming - Practical
	19CTU514A	Digital Image Processing - Practical
	19CTU514B	Multimedia and Applications - Practical
VI	19CTU602A	E-Commerce Technologies
	19CTU602B	Cloud Computing
	19CTU612A	E-Commerce Technologies -Practical
	19CTU612B	Cloud Computing – Practical

#### DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS FACULTY OF ARTS, SCIENCE AND HUMANITIES UG Curriculum (CBCS)- (2017 – 2020) Batch Program: B.Sc Electronics and Communication Systems Curriculum

# **PROGRAM OUTCOMES:** The program must enable students to attain by the time of graduation

## a) An ability to apply knowledge of electronics and communication systems, mathematics, computing and appropriate to the program's student outcomes and to the discipline

- b) An ability to Identify, design, formulate analyze & interpret data
- c) An ability to design an integrated system with due considerations to public health, safely, societal and environment
- d) Acquire skills to use electronic and communication tools and software tools.
- e) An ability to function effectively on teams to accomplish a common goal
- f) An understanding of professional, ethical, legal, security and social issues and responsibilities
- g) An ability to communicate effectively with a range of audiences
- h) Acquire knowledge to design, develop, predict and model an electronic system and also to implement communication protocols
- An ability to use and apply current technical concepts and practices in the core electronics and communication technologies, automation, embedded and signal processing technologies
- j) An understanding of best practices and standards and their application

#### PROGRAM SPECIFIC OUTCOME (PSOs)

- k) Design, Implement and test Electronics and Communication Systems using analytical knowledge and applying modern hardware and software tools.
- Apply the concepts of Electronics and Communciation Systems to design a variety of components and systems for applications including embedded systems, VLSI, ssignal processing, image processing and control system.
- m) Be acquainted with the continuous learning in the field of Embedded systems, VLSI design, Communication and Signal Processing and hold expertise in the modern tools for quenching the techno-thirsty society.

n) An ability to produce cost effective, quality and maintainable electronics and communication products and services meeting the global standards and requirements with the knowledge acquired and using the emerging techniques, tools and engineering methodologies and principles and able to comprehend and write effective project reports in multidisciplinary environment in the context of changing technologies.

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO I : To impart students with strong fundamental knowledge in the field of Electronics and Communication Systems to meet the emerging industrial needs.
- PEO II : To impart skill based training to apply engineering practices to design, implement model and analyze real time problems and interpret the result.
- PEO III : To understand the need for lifelong learning, applying and adapting new ideas and technologies in the field of Electronics and communication Systems.
- PEO IV : To recognize and apply the acquired knowledge in computer science and mathematics in solving electronics and communication system design issues.
- PEO V : To inculcate a sense of ethics, professional and effective communication skill and to cultivate skills needed for a successful professional career.

POs	a	b	C	d	e	f	g	h	i	j	k	1	m	n
PEO I	X		Х	Х				Х	Х	X	Х			
PEO II		X	X	X				X			X			
PEO III	X								X			X	X	
PEO IV		Х	Х	X							X			X
PEO V					X	X	Х							X

#### **MAPPING of PEOs and POs**

### DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS FACULTY OF ARTS, SCIENCE AND HUMANITIES

UG Curriculum (CBCS)- (2017 – 2020) Batch

**Program: B.Sc Electronics and Communication Systems** 

Curriculum

Course	Name of the Course	Objec Out	Objectives and Outcomes I			Marks		Exam	Credit
Code	Name of the Course	PEOs	POs	week	CIA	ESE	Total	/ Hrs	
	SEMESTER – I				I				
17LSU101	Language-I	V	f,g	04	40	60	100	3	4
17ECU101	Basic Circuit Theory and Network Analysis	Ι	a,c,d	04	40	60	100	3	4
17ECU102	Mathematics Foundation for Electronics	IV	b,k	04	40	60	100	3	4
17ECU103	Semiconductor Devices	Ι	c,i,j	04	40	60	100	3	4
17ECU111	Basic Circuit Theory and Network Analysis - Practical		c,d	03	40	60	100	3	2
17ECU112	Mathematics Foundation for Electronics - Practical	IV	b,k	03	40	60	100	3	2
17ECU113	Semiconductor Devices - Practical	Ι	c,i,j	04	40	60	100	3	2
17AEC101	Environmental Studies	V	e,f,n	04	40	60	100	3	4
	Semester tot	al		30	320	480	800	-	26
		SEM	ESTER –	II					
17LSU201	Language-II	V	f,g	04	40	60	100	3	4
17ENU201	English	V	e,f,g	04	40	60	100	3	4
17ECU201	Electronic Circuits	II	b,c,k	04	40	60	100	3	4
17ECU202	C Programming and Data Structures	IV	b,d,n	04	40	60	100	3	4
17ECU203	Communication Electronics	Ι	a,c,i,j	04	40	60	100	3	4
17ECU211	Electronic Circuits - Practical	II	b,c,k	03	40	60	100	3	2
17ECU212	C Programming and Data Structures - Practical	IV	b,d,n	03	40	60	100	3	2
17ECU213	Communication Electronics - Practical	Ι	c,i,j	04	40	60	100	3	2
	Semester total		30	1	320	480	800	-	26
		SEM	ESTER – I	Π					
17ECU301	Digital Electronics and VHDL	Ι	c,h,j	04	40	60	100	3	4
17ECU302	Digital and Cellular Communication	II	c,d,h,k	04	40	60	100	3	4
17ECU303	Internet and Java Programming	IV	b,d,k	04	40	60	100	3	4
17ECU304A/ 17ECU304B	Design and Fabrication of Printed Circuit Boards / Electronic Instrumentation	II	c,d,k	03	40	60	100	3	3

17ECU311	Digital Electronics and VHDL - Practical	Ι	c,h,j	04	40	60	100	3	2
17ECU312	Digital and Cellular Communication - Practical	II	c,d,h,k	04	40	60	100	3	2
17ECU313	Internet and Java Programming - Practical	IV	b,d,k,	04	40	60	100	3	2
17ECU314A/ 17ECU314B	Design and Fabrication of Printed Circuit Boards - Practical / Electronic Instrumentation - Practical	II	c,d,k	03	40	60	100	3	1
	Semester total		30		320	480	800	-	22
	•	SEM	ESTER -	- IV					
17ECU401	Operational Amplifier and It's Applications	II	b,c	04	40	60	100	3	4
17ECU402	Microprocessor and Microcontroller	III	a,l,m	04	40	60	100	3	4
17ECU403	Power Electronics	II	c,h,k	04	40	60	100	3	4
17ECU404A/ 17ECU404B	Electrical Circuits and Networ Digital System Design	Ι	i,j,k	03	40	60	100	3	3
17ECU411	Operational Amplifier - Practical	II	b,c	04	40	60	100	3	2
17ECU412	Microprocessor and Microcontroller - Practical	III	a,l,m	04	40	60	100	3	2
17ECU413	Power Electronics - Practical	II	c,h,k	04	40	60	100	3	2
17ECU414A/ 17ECU414B	Electrical Circuits and Networ - Practical / Digital System De - Practical	Ι	i,j,k	03	40	60	100	3	1
	Semester total		30		320	480	800	-	22
		SEM	ESTER –	V					
17ECU501A/ 17ECU501B	Programmable Logic Controller / Nano Electronics	III	a,i	04	40	60	100	3	4
17ECU502A/ 17ECU502B	Advanced Communication Systems / Control Systems	III	a,i,m	04	40	60	100	3	4
17ECU503A/ 17ECU503B	Biomedical Instrumentation / Signals and Systems	Ι	c,d,h	04	40	60	100	3	4
17ECU504A/ 17ECU504B	Robotics / Mobile Applications Development	III	i,l,m	03	40	60	100	3	3
17ECU511A/ 17ECU511B	Programmable Logic Controller - Practical / Nano Electronics - Practical	III	a,i	04	40	60	100	3	2
17ECU512A/ 17ECU512B	Advanced Communication Systems - Practical/ Control Systems - Practical	III	a,i,m	04	40	60	100	3	2
17ECU513A/ 17ECU513B	Biomedical Instrumentation - Practical / Signals and	Ι	c,d,h	04	40	60	100	3	2

	Systems - Practical								
17ECU514A/	Robotics - Practical/	III	i,l,m	03	40	60	100	3	1
17ECU514B	Mobile Applications								
	Development - Practical								
	Semester total			30	32	0 480	800	-	22
		SEME	STER –	VI					
17ECU601A/	Embedded Systems /			04	40	60	100	3	4
17ECU601B	Basic VLSI Design	III	a.l.m						
17ECU602A/	Digital Signal Processing /			04	40	60	100	3	4
17ECU602B	Virtual Instrumentation	II	d,h,k						
17ECU603A/	Programming with LabView /			03	40	60	100	3	3
17ECU603B	Verilog and FPGA based		,l,m						
	System Design	III							
17ECU611A/	Embedded Systems -			04	40	60	100	3	2
17ECU611B	Practical /	III	a.l.m						
	Basic VLSI Design -								
	Practical								
17ECU612A/	Digital Signal Processing -	II	d,h,k	04	40	60	100	3	2
17ECU612B	Practical /								
	Virtual Instrumentation -								
	Practical								
17ECU613A/	Programming with LabView			03	40	60	100	3	1
17ECU613 B	- Practical /Verilog and FPGA	III	,l,m						
	System Design - Practical								
17ECU691	Project and Viva -Voce	1V	b,,j,m,	08	40	60	100	3	6
			n						
ECA/NCC/	ECA/NCC/NSS/Sports/General Interest etc.,					G	ood		
	Semester total			30	280	420	700	-	22
	G. Total			180	1,880	2,820	4,700		140

	Skill Enhancement Course (SEC)								
Semester	Course Code	Name of the Course							
ш	17ECU304A/ 17ECU304B	Design and Fabrication of Printed Circuit Boards / Electronic Instrumentation							
	17ECU314A/ 17ECU314B	Design and Fabrication of Printed Circuit Boards - Practical / Electronic Instrumentation - Practical							
	17ECU404A/ 17ECU404B	Electrical Circuits and Network Skills / Digital System Design							
IV	17ECU414A/ 17ECU414B	Electrical Circuits and Network Skills - Practical / Digital System Design- Practical							
	17ECU504A/17ECU504B	Robotics /Mobile Applications Development							
v	17ECU514A/17ECU514B	Robotics - Practical / Mobile Applications Development - Practical							
VI	17ECU603A/17ECU603B	Programming with LabView / Verilog and FPGA based System Design							
VI	17ECU613A/17ECU613 B	Programming with LabView - Practical / Verilog and FPGA based System Design - Practical							

		Discipline Specific Course (DSC)
Semester	Course Code	Name of the Course
V	17ECU501A / 17ECU501B	Programmable Logic Controller / Nano Electronics
V	17ECU502A / 17ECU502B	Advanced Communication Systems / Control Systems
V	17ECU503A / 17ECU503B	Biomedical Instrumentation / Signals and Systems
V	17ELU511A / 17ELU511B	Programmable Logic Controller - Practical / Nano Electronics - Practical
V	17ECU512A / 17ECU512B	Advanced Communication Systems - Practical / Control Systems - Practical
V	17ECU513A / 17ECU513B	Biomedical Instrumentation - Practical / Signals and Systems - Practical
VI	17ECU601A / 17ECU601B	Embedded Systems / Basic VLSI Design
	17ECU602A / 17ECU602B	Digital Signal Processing / Virtual Instrumentation
VI	17ECU611A / 17ECU611B	Embedded Systems - Practical / Basic VLSI Design - Practical
VI	17ECU612A / 17ECU612B	Digital Signal Processing - Practical / Virtual Instrumentation - Practical

## BBA Bachelor of Business Administration CHOICE BASED CREDIT SYSTEM (CBCS)

## Curriculum

2019 - 2020



## DEPARTMENT OF MANAGEMENT FACULTY OF ARTS, SCIENCE AND HUMANITIES

## **KARPAGAM ACADEMY OF HIGHER EDUCATION**

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore – 641 021, Tamil Nadu, India Phone: 0422- 2980011-2980015, Fax No: 0422 – 2980022 - 23 Email: info@karpagam.com, Web: www.kahedu.edu.in

#### DEPARTMENT OF MANAGEMENT FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.B.A. (2019–2020 Batch and onwards)

		Objectives a	and outcomes	In hou	struct urs / w	ion veek	t(s)	Maximum Marks			
Course code	Name of the course	EOs	SOS	L	Т	Р	Credit	CIA	ESE	Total	
		Ъ	I				-	40	60	100	
		SEMEST	TER – I							-	
19LAU101	Language - I	I, II, III	a, e	6	0	0	6	40	60	100	
19ENU101	English – I	I, II, III	a, e	4	0	0	4	40	60	100	
19BAU101	Fundamentals of Management and Organizational Behaviour	I, II, III, IV	a, b, c,d,e, f, g,j	6	0	0	5	40	60	100	
19BAU102	Business Accounting	I, II, III,IV	a, b, c, e, i,j,k	5	1	0	5	40	60	100	
19AEC101	Business Communication	I, II, III	a, b, e	4	0	0	4	40	60	100	
19BAU111	Fundamentals of Management and Organizational Behaviour (Practical)	I,II,III	a, c, d,e,f,g, h,j	0	0	2	1	40	60	100	
19BAU112	Financial software package (Practical)	I,II, III,IV	a, b, c,d,e, j	0	0	2	1	40	60	100	
	Semester Total			25	1	4	26	280	420	700	
		SEMEST	ER – II								
19LAU201	Language – II	I, II, III	a, e	6	0	0	6	40	60	100	
19ENU201	English – II	I, II, III	a, e	4	0	0	4	40	60	100	
19BAU201	Managerial Economics	I, II, III	a, b, c,e, d,j	6	0	0	5	40	60	100	
19BAU202	Business Mathematics and Statistics	I, II, III	a, b, c, d,e,j,k	6	3	0	6	40	60	100	
19AEC201	Environmental Studies	I,II, III, IV	a, h, e, i	3	0	0	3	40	60	100	
19BAU211	Managerial Economics (Practical)	I, II, III	a,b,c,d,e,f,g, j	0	0	2	1	40	60	100	
	Semester Total			25	3	2	25	240	360	600	
		SEMEST	ER – III								
19BAU301	Human Resource Management	I, III	a,e	6	0	0	5	40	60	100	
19BAU302	Principles of Marketing	I, III	a,e	6	0	0	5	40	60	100	

Course code	Name of the course	Objectives a	and outcomes	In hou	struct urs / w	ion veek	Cred it(s)	Maximum Mar		
19BAU303	Management Accounting	I, II, III	a, b, c, d,e	5	1	0	5	40	60	100
19BAU304A	IT Tools for Business	I, III	a,e	2	0	0	2	40	60	100
19BAU304B	E- Commerce	I, III	a,e	2	0	0	2	40	60	100
19BAU311	Human Resource Management (Practical)	I, II,III	a, b.c,d,e,f,g,j, k	0	0	2	1	40	60	100
19BAU312	Principles of Marketing (Practical)	I, II, III	a, b.c,d,e,f,g,j, k	0	0	2	1	40	60	100
19BAU313	Management Accounting (Practical)	I, II, III	a, b.c,d,e,f,g,j, k	0	0	2	1	40	60	100
19BAU314A	IT Tools for Business (Practical)	I,II, III	a, b, c, e	0	0	4	2	40	60	100
19BAU314B	E-Commerce (Practical)	I,II, III	a, b, c, e	0	0	4	2	40	60	100
	Semester Total	SEMEST	FR – IV	19	1	10	22	320	480	800
19BAU401	Legal Aspects for Business	I, II, III, IV	a, b, e,,i, j	6	0	0	5	40	60	100
19BAU402	Business Research Methods	I, II, III	a,c,d,e,j,k	6	0	0	6	40	60	100
19BAU403	Financial Management	I, II, III	a, b, c.d, e, j	6	2	0	6	40	60	100
19BAU404A	Financial Analysis and Reporting	I, III, IV	a,c,d,e, i.j	4	0	0	3	40	60	100
19BAU404B	Decision making using SPSS	I, III	a,c,d, j,k	2	0	0	2	40	60	100
19BAU411	Legal Aspects for Business (Practical)	I, II, III, IV	a, b.d,e,,i, j,k	0	0	2	1	40	60	100
19BAU412	Business Research Methods (Practical)	I, II, III	a, b.c,d,e,f,g,j, k	0	0	2	1	40	60	100
19BAU413A	Financial Analysis and Reporting (Practical)	I, II, III	a, b.c,d,e,f,g,j, k	0	0	2	1	40	60	100

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Course code	Name of the course	Objectives and outcomes		In hou	struct urs / v	ion veek	Cred it(s)	Maximum Mark		
19BAU413B	Decision Making Using SPSS (Practical)	I, II, III	a, b.c,d,e, j,k	0	0	4	2	40	60	100
	Semester Total			22/ 20	2	6/8	23	280	420	700
		SEMES'	TER V							
19BAU501A	Investment Analysis and Portfolio Management	I,III	a, e, j	6	0	0	5	40	60	100
19BAU501B	Banking and Insurance	I,III	a, e, j	6	0	0	5	40	60	100
19BAU502A	Advertising and Brand Management	I,III	a, e, j	6	0	0	5	40	60	100
19BAU502B	Retail Management	I,III	a, e, j	6	0	0	5	40	60	100
19BAU503A	International Trade Procedures and Documentation	I, II, III, IV	a, b, e,,i, j	4	0	0	3	40	60	100
19BAU503B	Leadership and Team Building	I,II,III	a, b, c,d,e,f,g,j	6	0	0	4	100	0	100
19BAU504A	Taxation	I, II, III, IV	a,b,c,d,e,i,j,k	5	1	0	5	40	60	100
19BAU504B	Production and Operations Management	I, II, III,IV	a,,c,d,e,h,i,j, k	6	0	0	5	40	60	100
19BAU511A	Investment Analysis and Portfolio Management (practical)	I, II, III	a, b.c,d,e,j,k	0	0	2	1	40	60	100
19BAU511B	Banking and Insurance (Practical)	I, II, III	a, b.c,d,e,j,k	0	0	2	1	40	60	100
19BAU512A	Advertising and Brand Management (practical)	I, II, III	a, b.c,d,e,f,g,j, k	0	0	2	1	40	60	100
19BAU512B	Retail Management (practical)	I, II, III	a, b, c, d,e, f,g,j,k	0	0	2	1	40	60	100
19BAU513A	International Trade Procedures and Documentation (Practical)	I, II, III, IV	a, b.d,e,,i, j,k	0	0	2	1	40	60	100
19BAU514A	Taxation (Practical)	I, II, III, IV	a, b.c,d,e,i,j,k	0	0	2	1	40	60	100
19BAU514B	Production and Operations Management (Practical)	I, II, III, IV	a, b.c,d,e,f,g,j, k	0	0	2	1	40	60	100

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Course code	Name of the course	Objectives a	and outcomes	In ho	struct urs / v	tion veek	Cred it(s)	Maxi	imum I	Marks
	Semester Total	-	21/ 24	1/0	8/6	22	320/ 340	480/ 360	800/ 700	
		SEMEST	ER – VI							
19BAU601A	Management of Industrial Relations	I, III, IV	a, e,i,j	6	0	0	5	40	60	100
19BAU601B	Training and Development	I, III	a,e,j	6	0	0	5	40	60	100
19BAU602A	Excel for Business	I, III	a,e,j,k	2	0	0	2	40	60	100
19BAU602B	Personality Development and Communication Skills	I,II,III	a, b, d,e,f,g,j	6	0	0	4	100	0	100
19BAU603A	Ethics & Corporate Social Responsibility	I, III, IV	a, e,i,j	6	0	0	5	40	60	100
19BAU603B	Entrepreneurship Development	I, III	a,e,j	6	0	0	5	40	60	100
19BAU611A	Management of Industrial Relations (Practical)	I, II, III, IV	a,b,c,d,e,f, g,i,j,k	0	0	2	1	40	60	100
19BAU611B	Training and Development (practical)	I, II, III	a, b, c, e, f, g,j,k	0	0	2	1	40	60	100
19BAU612A	Excel for Business (Practical)	I,II,III	a, b, c, d, e,j,k	0	0	4	2	40	60	100
19BAU613A	Ethics & Corporate Social Responsibility (Practical)	I,II,III, IV	a,b,c,d,e,f, g,h,i,j,k	0	0	2	1	40	60	100
19BAU613B	Entrepreneurship Development (Practical)	I, II, III	a,b,c,d,e,f, g,h,j,k	0	0	2	1	40	60	100
19BAU691	Project	I, II, III	a,b,c,d, e,h,j,k	8	0	0	6	40	60	100
ECA/NCC/NS	SS/Sports/General Interest etc			-	-					Goo d
	Semester Total			22/ 26	0	8/4	22	280/ 300	420/ 300	700/ 600
	Programme Total						14 0	172 0/ 176 0	258 0/ 234 0	4300/ 4100

A	ABILITY ENHANCEMENT COURSES									
Semester	Course code	Name of the course								
Ι	19ENU101	English – I								
I	19LAU101	Language - I								
Ι	19AEC101	Business Communication								
II	19ENU201	English – II								
II	19LAU201	Language – II								
II	19AEC201	Environmental Studies								

		CORE COURSES
Semester	Course code	Name of the course
Ι	19BAU101	Fundamentals of Management and Organizational Behaviour
	19BAU111	Fundamentals of Management and Organizational Behaviour (Practical)
I	19BAU102	Business Accounting
	19BAU112	Financial software package (Practical)
II	19BAU201	Managerial Economics
	19BAU211	Managerial Economics (Practical)
II	19BAU202	Business Mathematics and Statistics
III	19BAU301	Human Resource Management
	19BAU311	Human Resource Management (Practical)
	19BAU302	Principles of Marketing
	19BAU312	Principles of Marketing (Practical)
	19BAU303	Management Accounting
	19BAU313	Management Accounting (Practical)
IV	19BAU401	Legal Aspects for Business
	19BAU411	Legal Aspects for Business (Practical)
	19BAU402	Business Research Methods
	19BAU412	Business Research Methods (Practical)
	19BAU403	Financial Management

	SKILL	ENHANCEMENT COURSES
Semester	· Course code	Name of the course
III	19BAU304A	IT Tools for Business
	19BAU314A	IT Tools for Business (Practical)
	19BAU304B	E- Commerce
	19BAU314B	E-Commerce (Practical)
IV	19BAU404A	Financial Analysis and Reporting
	19BAU413A	Financial Analysis and Reporting (Practical)
	19BAU404B	Decision Making Using SPSS
	19BAU413B	Decision Making Using SPSS (Practical)
V	19BAU503A	International Trade Procedure and Documentation
	19BAU513A	International Trade Procedure and Documentation (Practical)
	19BAU503B	Leadership and Team Building
VI	19BAU602A	Excel for Business
	19BAU612A	Excel for Business (Practical)
	19BAU602B	Personality Development and Communication Skills
	DISCI	PLINE SPECIFIC ELECTIVES
Semester	Course code	Name of the course
V	19BAU501A	Investment Analysis and Portfolio Management
	19BAU511A	Investment Analysis and Portfolio Management (practical)
	19BAU501B	Banking and Insurance
	19BAU511B	Banking and Insurance (Practical)
	19BAU502A	Advertising and Brand Management
	19BAU512A	Advertising and Brand Management (practical)
	19BAU502B	Retail Management
	19BAU512B	Retail Management (practical)
VI	19BAU601A	Management of Industrial Relations
	19BAU611A	Management of Industrial Relations (Practical)
	19BAU601B	Training and Development
	19BAU611B	Training and Development (practical)
	19BAU691	Project

	GENERIC ELECTIVE								
Semester	Course code	Name of the course							
V	19BAU504A	Taxation							
	19BAU514A	Taxation (Practical)							
	19BAU504B Production and Operations Management								
	19BAU514B	Production and Operations Management (Practical)							
VI	19BAU603A	Ethics & Corporate Social Responsibility							
	19BAU613A	Ethics & Corporate Social Responsibility (Practical)							
	19BAU603B	Entrepreneurship Development							
	19BAU613B	Entrepreneurship Development (Practical)							

#### PROGRAMME OUTCOMES (PO)

- a) Graduates will acquire fundamental knowledge in the Management and its functional domains.
- b) Graduates will gain hands on experience of real time business practices through tutorials, case studies, role plays, projects, workshops and training to facilitate lifelong learning.
- c) Graduates will obtain the ability to analyse and solve the complex business problems using management tools and technologies
- d) Graduates will exhibit critical thinking skills in understanding the real-time managerial issues and advocate creative and innovative solutions.
- e) Graduates will acquire and demonstrate the interpersonal and communication skills to convey and negotiate ideas.
- f) Graduates will attain and exhibit skills to work as teamand take effective decisions in achieving the common goals.
- g) Graduates will demonstrate the leadership skills to initiate, lead and deliver the best performance together with the team members.
- h) Graduates will understand various environmental factors and their impact on society and business.
- i) Graduates will demonstrate ethical and socially sustainable code of conduct in personal and professional decision making process.

#### PROGRAMME SPECIFIC OUTCOMES (PSO)

- j) Graduates will understand the problems faced by the business sector in the current scenario and analyse the practical aspects of Organizational setting and techniques applying theoretical knowledge.
- k) Graduates will acquire the research and technological skills needed to analyze a business situation and prepare and present a management report and take strategic decisions.

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- I. Graduates will gain knowledge on theory and practical aspects of management and functional domains.
- II. Graduates will be equipped with quantitative and qualitative skills to identify, analyze, create opportunities in higher studies, managerial jobs and entrepreneurial ventures.
- III. Graduates evince the importance of lifelong learning by acquiring necessary managerial skills to think strategically and to lead, motivate and manage teams.
- IV. Graduates will become socially responsible and value driven citizens contributing to the sustainable growth of management profession and the community.

Program Educational Objectives	Program Outcomes										
	a	b	c	d	e	f	g	h	i	j	k
Graduates will gain knowledge on theory and practical aspects of management.	$\checkmark$	V								V	
Graduates will be equipped with quantitative and qualitative skills to identify, analyze, create opportunities in higher studies, managerial jobs and entrepreneurial ventures.	V	V	V	V						V	V
Graduates evince the importance of life-long learning by acquiring necessary managerial skills to think strategically and to lead, motivate and manage teams.			$\checkmark$	$\checkmark$	V	V	V				$\checkmark$
Graduates will become socially responsible and value driven citizens contributing to the sustainable growth of management profession and the community.			V	V	V	V	V	$\checkmark$	V		

#### DEPARTMENT OF MATHEMATICS FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.Sc. Mathematics (2019–2020 Batch and onwards)

	Name of the Course	Obj s an Co	ective d Out omes	Ins Hou	struct irs / V	ion Veek	t(s)	Maximum Marks			
Course Code	Name of the Course	PEOs	POs	L	Т	Р	Credi	CIA	ESE	Total	
								40	60	100	
	SEM	ESTI	E <b>R – I</b>	-	r	1		[	1		
19LSU101	Language –I	III	n,o	4	0	0	4	40	60	100	
19ENU101	English	II	n,p	4	0	0	4	40	60	100	
19MMU101	Calculus	II	g, e	4	0	0	4	40	60	100	
19MMU102	Algebra	II T	m	6	1	0	6	40	60	100	
19MMU103	Physics I	I	a, c	4	0	0	4	40	60	100	
19MMU111	Calculus-Practical	II	g, e	0	0	3	2	40	60	100	
19MMU112	Physics I-Practical	Ι	a, c	0	0	4	2	40	60	100	
	Semester Total			22	1	7	2 6	280	420	700	
	SEM	ESTE	$\mathbf{R} - \mathbf{H}$		1						
19LSU201	Language – II			4	0	0	4	40	60	100	
19MMU201	Differential Equations	I,II	a, 1	5	0	0	5	40	60	100	
19MMU202	202 Real Analysis			6	1	0	6	40	60	100	
19MMU203	9MMU203 Physics II			4	0	0	4	40	60	100	
19MMU211	Differential Equations –Practical	I,II	a	0	0	3	2	40	60	100	
19MMU212	Physics II-Practical	Ι	a, c	0	0	4	2	40	60	100	
19AEC201	Environmental Studies	Ι	0	3	0	0	3	40	60	100	
	Semester Total			22	1	7	26	280	420	700	
	SEMI	ESTE	R – III								
19MMU301	PDE and Systems of ODE	I,II	a, 1	4	0	0	4	40	60	100	
19MMU302	Group Theory I	II	d, m	6	2	0	6	40	60	100	
19MMU303A	Logic and Sets	Ι	f	4	2	0	4	40	60	100	
19MMU303B	Computer Graphics	Ι	b, k	4	2	0	4	40	60	100	
19MMU304	Introduction to Accounting	III	i	6	2	0	6	40	60	100	
19MMU311	PDE and Systems of ODE – Practical	Π	1	0	0	4	2	40	60	100	
Semester Total				20	6	4	22	200	300	500	
	SEMI		$\mathbf{R} - \mathbf{IV}$								
<b>19MMU401</b>	MMU401 Numerical Methods			4	0	0	4	40	60	100	
191010401 Inumerical Methods   19MMU402 Group Theory II			f	6	2	0	6	40	60	100	
<b>19MMU403A</b> Graph Theory			k			~					
19MMU403B	Operating System: Linux	Ι	k	4	2	0	4	40	60	100	
19MMU404	Cost and Management Accounting	III	i	6	2	0	6	40	60	100	
19MMU411	Ι	h, j	0	0	4	2	40	60	100		
	Semester Total			20	6	4	22	240	360	600	

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	SEM	ESTE	$\mathbf{R} - \mathbf{V}$							
19MMU501A	Multivariate Calculus	II	e, g	6	2	0	6	40	60	100
19MMU501B	Theory of Real Functions	Ι	e	0	Z	0	0	40	60	100
19MMU502A	Ring Theory and Linear algebra I	II	m	6	2	0	6	40	60	100
19MMU502B	Industrial Mathematics	I,II	a, b		2	U	0	-10	00	100
19MMU503A	Probability and Statistics	Ι	a							
19MMU503B	Boolean Algebra and Automata Theory	Ι	k	6	2	0	6	40	60	100
19MMU504A	Number Theory	II	j	1	2	0	1	40	60	100
19MMU504B	Portfolio Optimization	II,	i	4	2	0	4	40	00	100
			22	8	0	22	160	240	400	
	ESTE	$\mathbf{R} - \mathbf{VI}$								
19MMU601A	IMU601AMetric Spaces and Complex Analysis				2	0	6	40	60	100
19MMU601B	Riemann Integration and Series of Functions	Ι	с	0	2	0	0	40	00	100
19MMU602A	Ring Theory and Linear algebraII	II	m	6	2	0	6	40	60	100
19MMU602B	Linear Programming	I,II	a, i							
19MMU603A	Mathematical Modeling	I,II	a, b	1	2	0	1	40	60	100
19MMU603B	Ι	e	4	2	0	4	40	00	100	
19MMU691	II	n	8	0	0	6	40	60	100	
ECA / NCC / NSS / Sports / General interest etc							Good			
	Semester Total			24	6	0	22	160	240	400
	Grand Total			130	28	22	140	1320	1980	3300

#### DEPARTMENT OF MATHEMATICS FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.Sc. Mathematics (2019–2020 Batch and onwards)

#### **PROGRAM OUTCOMES (POs)**

- **a.** Familiarize the student's physical intuition and thinking process through the understanding of the theory and application of this knowledge to the solution of practical problems.
- **b.** Acquire insight into the classifications of mathematical models stating examples and the features of good models.
- c. Analyze the motion of particles under the influence of various forces.
- d. Gear up with rigorous mathematical proofs of basic results in analysis.
- e. Acquire knowledge about the line integral and its geometrical applications.
- f. Familiarize some fundamental results and techniques from the theory of groups.
- g. Application of integration in various fields.
- **h.** Understanding of common numerical methods and how they are used to obtain approximate solutions to intractable mathematical problems.
- i. Analyze and resolve the conflicts of economic situations.
- j. Estimates and check mathematical results for reasonableness.
- **k.** Ability to formulate mathematical structure for computer and communication systems.
- **I.** Acquire knowledge about differential equations and integrating factor, separable equations and its applications.
- m. Enrich the facts on functions, relations and systems of linear equations.
- **n.** An ability to function effectively on teams to accomplish a common goal.
- o. An understanding of professional, ethical, legal, security and social issues and responsibilities.
- **p.** An ability to communicate effectively with a range of audiences.

#### PROGRAM SPECIFIC OUTCOMES (PSOs)

- q. Ability to solve diverse situation problems in physics, engineering and other science fields.
- **r.** Ability to think in a conceptual, analytical and logical manner.
- s. Formulation and evaluation of appropriate mathematical models to optimize the real life problems.

#### **PROGRAM EDUCATIONAL OUTCOMES (PEOs)**

**PEO I:** To enrich the students to solve numerous of physical problems in engineering and biological models.

**PEO II** : To stimulate the skills needed to pursue careers in education, business and / or industry.

**PEO III** : To develop the professional and managerial skills, especially in areas requiring the application of quantitative skills.

POs	a	b	c	d	e	f	g	h	i	j	k	1	m	n	0	р	q	r	S
PEO I	Х	Х	Х				Х	Х	Х					Х	Х	Х	Х		Х
PEO II				Х	Х	Х				Х		Х	Х		Х		Х		
<b>PEO III</b>	Χ								Χ	Χ	Χ					Х		Χ	Χ

### DEPARTMENT OFMICROBIOLOGY

#### FACULTY OF ARTS, SCIENCES AND HUMANITIES

#### UG PROGRAM (CBCS) – B.Sc.

#### Microbiology (2019–2022 Batch)

Course		Objectiv outcol	re and mes	Inst hou	truct rs / v	ion veek	lit(s)	Max	imum 1	Marks
code	Name of the course	PEO s	POs	L	Т	Р	Cred	CIA 40	ESE 60	Total 100
	S	EMESTI	ER-I		l					
19LSU101	Language – I	VII	e	4	0	0	4	40	60	100
19ENU101	English	VII	e	4	0	0	4	40	60	100
19MBU101	Introduction to Microbiology and Microbial Diversity	Ι	а	3	1	0	4	40	60	100
19MBU102	Bacteriology	Ι	g	4	0	0	4	40	60	100
19MBU103	Biochemistry - I	Ι	g	4	0	0	4	40	60	100
19MBU111	Basic Microbiology - Practical	VI	b	0	0	3	2	40	60	100
19MBU112	Bacteriology - Practical	VI	b	0	0	3	2	40	60	100
19MBU113	Basic Biochemistry - I- Practical	VI	b	0	0	4	2	40	60	100
	Semester total			19	1	10	26	320	480	800
	SEI	MESTER	R-II							
19LSU201	Language –II	VII	E	4	0	0	4	40	60	100
19MBU201	Biochemistry – II	Ι	G	4	0	0	4	40	60	100
19MBU202	Microbial Physiology and Metabolism	II	G	4	0	0	4	40	60	100
19MBU203	Microbial genetics	IV	G	4	1	0	5	40	60	100
19MBU211	Biochemistry – II - Practical	VI	В	0	0	3	2	40	60	100
19MBU212	Microbial Physiology and Metabolism - Practical	VI	В	0	0	3	2	40	60	100
19MBU213	Microbial Genetics - Practical	VI	В	0	0	4	2	40	60	100
19AEC201	Environmental Studies	IV	F	3	0	0	3	40	60	100
	Semester total			19	1	10	26	320	480	800
	SEMEST	<u>rer – III</u>								
19MBU301	Virology	Ι	g	4	0	0	4	40	60	100
19MBU302	Food and Dairy Microbiology	IV	h	4	0	0	4	40	60	100
19MBU303	Industrial Microbiology	IV	g	4	0	0	4	40	60	100
19MBU304A	Microbial Quality Control in Food and Pharmaceutical Industries	IV	h	3	0	0	3	40	60	100
19MBU304B	Microbial Diagnosis in Health Clinic									
19MBU311	Virology - Practical	VI	b	0	0	4	2	40	60	100
19MBU312	Food and Dairy Microbiology - Practical	IV	h	0	0	4	2	40	60	100
19MBU313	Industrial Microbiology - Practical	IV	g	0	0	4	2	40	60	100
19MBU3144	Microbial Quality Control in Food and									
Pharmaceutical Industries - Practical		III	b,h	0	0	3	1	40	60	100
19MBU314B     Microbial Diagnosis in Health Clinic -Practical										
Semester total				15	0	15	22	320	480	800
	SEMES		7							
19MBU401	101 Immunology		h	4	0	0	4	40	60	100
19MBU402	02 Medical Microbiology		j	4	0	0	4	40	60	100
19MBU403	Environmental Microbiology	Ι	g	4	0	0	4	40	60	100
19MBU404A	Biofertilizers and Biopesticides	<b>T</b> 7	1.	2	0	0	2	40	<i>(</i> )	100
19MBU404A Biolefulizers and Biopesticides			n,g,1	3	0	0	5	40	60	100

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19MBU411	Immunology - Practical	Ι	h	0	0	4	2	40	60	100
19MBU412	Medical Microbiology - Practical	IV	j	0	0	4	2	40	60	100
19MBU413	Environmental Microbiology - Practical	Ι	b,g	0	0	4	2	40	60	100
19MBU414A	Biofertilizers and Biopesticides - Practical	π.	1	0	0	2	1	40	(0)	100
19MBU414B	Recombinant DNA Technology – Practical	IV	n,g,1	0	0	3	1	40	60	100
	Semester total						22	320	480	800
	SEMES	TER – V							•	
19MBU501A	Management of Human Microbial Diseases	Ι	т	4	0	0	4	40	(0)	100
19MBU501B	Microbiological Analysis of air and water	IV	J	4	0	0	4	40	00	100
19MBU502A	Biomathematics and Biostatistics	ad	4	0	0	4	40	60	100	
19MBU502B	Bioinformatics	VII	c,a	4	0	0	4	40	00	100
19MBU503A	Instrumentation and Biotechniques	πı		4	0	0	4	40	60	100
19MBU503B	Plant Pathology	1V	a,j	4	0	0	4	40	00	100
19MBU504A	Microbial Biotechnology	IV	~	2	0	0	2	40	(0)	100
19MBU504B	Inheritance Biology	VI	g	3	0	0	3	40	00	100
10MDI 1511 A	Management of Human Microbial Diseases -									
ISMIDUJIIA	Practical	Ι	;	0	0	4	2	40	60	100
10MBU511B	Microbiological Analysis of air and water -	IV	J	0	0	4	2	40	00	100
19WID0311D	Practical									
19MBU512A	Biomathematics and Biostatistics - Practical	V	d	0	0	4	2	40	60	100
19MBU512B	Bioinformatics - Practical VII d				0	-	2	40	00	100
19MBU513A	Instrumentation and Biotechniques - Practical				0	4	2	40	60	100
19MBU513B	Plant Pathology - Practical				0	4	4	40	00	100
19MBU514A	ABU514A Microbial Biotechnology - Practical IV				0	3	1	40	60	100
19MBU514B	Inheritance Biology - Practical	VI	g	U	•	5	1	40	60	100
	Semester total			15	0	15	22	320	480	800
	SEMEST	FER – VI	[	I			1	n	1	
19MBU601A	Mushroom Cultivation	ш	h	4	0	0	4	40	60	100
19MBU601B	Food Fermentation Techniques			-				-10		100
19MBU602A	Biosafety and Intellectual Property Rights	V								
19MBU602B	Microbes in Sustainable Agriculture and	īV	а	4	0	0	4	40	60	100
1)MBC002D	Development	1,								
19MBU603A	Cell Biology	VI	h	3	0	0	3	40	60	100
19MBU603B	Molecular Biology		Ŭ	5	Ŭ	0	5		00	100
19MBU611A	Mushroom Cultivation - Practical	ш	h	0	0	4	2	40	60	100
19MBU611B	Food Fermentation Techniques - Practical			Ŭ	Ŭ				00	100
19MBU612A	Biosafety and Intellectual Property Rights -									
	Practical	V	a.i	0	0	4	2	40	60	100
19MBU612B	MBU612B Microbes in Sustainable Agriculture and IV a,1						-	10	00	100
Development –Practical										
19MBU613A	19MBU613A Cell Biology - Practical VI b					3	1	40	60	100
19MBU613B	Molecular Biology - Practical									
19MBU691	Project	IV	b,g	0	0	8	6	40	60	100
ECA / NCC / NSS / Sports / General interest etc						4.5			Good	
	Semester total			11	0	19	22	280	420	700
	COURSE TOTAL		94	2	84	140	1880	2820	4700	

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	Ability Enhancement Courses (AEC)									
Semester	<b>Course Code</b>	Name of the Course								
Ι	19LSU101	Language –I								
	19ENU 101	English								
II	19LSU201	Language –II								
	19AEC201	Environmental Studies								

	Generic Elective Courses (GE) / Allied Courses									
Semester	Semester Course Code Name of the Course									
Ι	19MBU103	Biochemistry – I								
	19MBU113	Biochemistry – I - Practical								
II	19MBU201	Biochemistry – II								
	19MBU211	Biochemistry – II – Practical								

		Core Courses (CC)
Semester	<b>Course Code</b>	Name of the Course
Ι	19MBU101	Introduction to Microbiology and Microbial Diversity
	19MBU102	Bacteriology
	19MBU111	Basic Microbiology – Practical
	19MBU112	Bacteriology – Practical
II	19MBU202	Microbial Physiology and Metabolism
	19MBU203	Microbial genetics
	19MBU212	Microbial Physiology and Metabolism - Practical
	19MBU213	Microbial Genetics – Practical
III	19MBU301	Virology
	19MBU302	Food and Dairy Microbiology
	19MBU303	Industrial Microbiology
	19MBU311	Virology - Practical
	19MBU312	Food and Dairy Microbiology – Practical
	19MBU313	Industrial Microbiology – Practical
IV	19MBU401	Immunology
	19MBU402	Medical Microbiology
	19MBU403	Environmental Microbiology
	19MBU411	Immunology - Practical
	19MBU412	Medical Microbiology - Practical
	19MBU413	Environmental Microbiology – Practical
VI	19MBU691	Project

Skill Enhancement Courses(SEC)							
Semester	<b>Course Code</b>	Name of the Course					
III	19MBU304A	Microbial Quality Control in Food and Pharmaceutical Industries					
	19MBU304B	Microbial Diagnosis in Health Clinic					
III	19MBU314A	Microbial Quality Control in Food and Pharmaceutical Industries - Practical					
	19MBU314B	Microbial Diagnosis in Health Clinic -Practical					
IV	19MBU404A	Biofertilizers and Biopesticides					
	19MBU404B	Recombinant DNA Technology					
IV	19MBU414A	Biofertilizers and Biopesticides - Practical					
	19MBU414B	Recombinant DNA Technology – Practical					
V	19MBU501A	Management of Human Microbial Diseases					
	19MBU501B	Microbiological Analysis of air and water					
	19MBU502A	Biomathematics and Biostatistics					
	19MBU502B	Bioinformatics					

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V	19MBU511A	Management of Human Microbial Diseases - Practical						
	19MBU511B	Microbiological Analysis of air and water - Practical						
	19MBU512A	Biomathematics and Biostatistics - Practical						
	19MBU512B	Bioinformatics - Practical						
VI	19MBU601A	Mushroom Cultivation						
	19MBU601B	Food Fermentation Techniques						
VI	19MBU611A	Mushroom Cultivation – Practical						
	19MBU611B	Food Fermentation Techniques - Practical						

Discipline Specific Elective Courses (DSE)						
Semester	<b>Course Code</b>	Name of the Course				
V	19MBU503A	Instrumentation and Biotechniques				
	19MBU503B	Plant Pathology				
	19MBU504A	Microbial Biotechnology				
	19MBU504B	Inheritance Biology				
V	19MBU513A	Instrumentation and Biotechniques - Practical				
	19MBU513B	Plant Pathology – Practical				
	19MBU514A	Microbial Biotechnology – Practical				
	19MBU514B	Inheritance Biology – Practical				
	19MBU602A	Biosafety and Intellectual Property Rights				
VI	19MBU602B	Microbes in Sustainable Agriculture and Development				
	19MBU603A	Cell Biology				
	19MBU603B	Molecular Biology				
	19MBU612A	Biosafety and Intellectual Property Rights - Practical				
	19MBU612B	Microbes in Sustainable Agriculture and Development -Practical				
	19MBU613A	Cell Biology – Practical				
	19MBU613B	Molecular Biology - Practical				

## **Undergraduate Programme – B.Sc Microbiology**

**Programme Outcomes of UG Microbiology**: Students of all undergraduate microbiology degree Programmes at the time of graduation will be able to

a. <u>Scientific Knowledge</u>: Microbiology majors able to make observations, develop hypotheses, and design and execute experiments using advanced methods. Able to discuss science and scientific methodology. They will have a good knowledge of Intellectual Property Rights.

b. <u>Laboratory Skills</u>: Microbiology students will master the following laboratory skills: aseptic culture techniques, microscopy, use of appropriate methods to identify microorganisms and to use high laboratory equipments. They are able to practice safe microbiology, using appropriate protective and emergency procedures.

c. Data analysis skills: Systematically collect, record, and analyze data, identify sources of error, interpret the results, and reach logical conclusions.

d. <u>Problem-Solving Skills</u>: Microbiology students will be able to analyze and interpret results from a variety of microbiological methods, and apply these methods to analogous situations. Use mathematical and graphing skills and reasoning to solve problems in microbiology.

e. <u>Communication Skills</u>: Microbiology majors will demonstrate competence in written and oral communication.

f. <u>Cooperation/Social Responsibility</u>: Microbiology majors able to understand and appreciate the value of cooperating and working effectively with peers and be able to demonstrate a commitment to the process of developing such skills.

g. Able to understand the importance of microorganisms in various industries such as pharmaceuticals, food, biofertilizers and biopesticidesetc, Students will have a major knowledge on concepts of immunology, biotechnology, molecular biology, biochemistry, genetics. Able to explain the beneficial and harmful role of microorganisms in environment.

## **Programme Specific Outcomes (PSOs)**

h. Students will have a major knowledge on concepts of immunology, biotechnology, molecular biology, biochemistry, genetics. Able to explain the beneficial and harmful role of microorganisms in environment. Able to understand the importance of microorganisms in various industries such as pharmaceuticals, food, biofertilizers and biopesticidesetc,

i Describe how microorganisms are used as model systems o study basic biology, genetics, metabolism and ecology.

j. Identify ways microorganisms' play an integral rolein disease, and microbial and immunological methodologies are used in disease treatment and prevention.

#### PROGRAMME EDUCATIONAL COURSE OBJECTIVES (PEOs)

**Programme Educational COURSE OBJECTIVES of UG Microbiology**: The major COURSE OBJECTIVES of the undergraduate course is

**PEO-I**: To impart knowledge on basic concepts of microbiology. To understand the beneficial and harmful role of microorganisms in theenvironment.

**PEO-II**: To understand the fundamentals of physiological reactions including metabolic pathways and biochemical reactions inmicroorganisms.

**PEO-III**: To develop human resource and entrepreneurs in Microbiology with the ability to independently start their own ventures or small biotech units in the field of biotechnology.

**PEO-IV**: Understand modern microbiology - practices and approaches with an emphasis in technology application in pharmaceutical, medical, industrial, environmental and agricultural areas.

**PEO-V**: Become familiar with public policy, bio-safety, and intellectual property rights issues related to microbiology applications nationally and globally

**PEO-VI**: Gain experience with standard bioinstrumentations and molecular tools and approaches utilized: manipulate genes, gene products and organisms.

**PEO-VII**: To demonstrate the written and oral communication skill .To develop the problem solving and data interpretation skills.

POs	a	b	c	d	e	F	g	h	i	j
PEO I	Х	Х						Х		Х
PEO II	Х	Х						Х	Х	
PEO III	Х	Х		Х			Х	Х		
PEO IV		Х		Х			Х		Х	
PEO V	Х					Х				Х
PEO VI		Х	Х	Х				Х	Х	Х
PEO VII	Х	Х	Х	Х	Х	Х	Х			Х

Bachelor of Science, Microbiology, Karpagam Academy of Higher Education (Deemed to be University), Coimbatore - 641 021

## **B.Sc. PHYSICS**

### **CHOICE BASED CREDIT SYSTEM (CBCS)**

## Curriculum

Students admitted from 2019 onwards



(Deemed to be University) (Established Under Section 3 of UGC Act, 1956 )

#### **DEPARTMENT OF PHYSICS**

### **KARPAGAMACADEMY OF HIGHER EDUCATION**

(Deemed to be University Established Under Section 3 of UGC Act, 1956)

Eachanari Post, Coimbatore – 641 021, INDIA. Phone: 0422-6453777, 6471113-5, 2980011-2980018; Fax No: 0422 – 2980022, 2980023

Email: info@karpagam.com

Web: www.kahedu.edu.in

#### PREAMPLE

#### The B.Sc. Physics course is conducted with the following objectives:

- To update the knowledge of the students in one of the most important basic sciences, namely PHYSICS.
- To update the knowledge of a person in the latest fields of science like Atomic and Nuclear Physics, Laser Physics, Materials Science, Nano Technology, Astrophysics etc.
- To motivate and support young talented researchers in their research activities.
- To prepare the students to fit into National Laboratories like CSIR laboratories and National Physical Laboratories etc., as working personnel. Also to make them to work in Universities and colleges as teachers.
- To enhance the knowledge of the structure and evolution of the Universe, fundamental properties of matter and energy through the support of leading edge research.
- To provide efficient and resourceful hands to help in inter-disciplinary areas where basic and advanced knowledge in physics is utilized.
# **DEPARTMENT OF PHYSICS**

# FACULTY OF ARTS, SCIENCE AND HUMANITIES

# UG PROGRAM (CBCS) – B.Sc. Physics

# (2019–2020 Batch and onwards)

		Obj	ectives	Inst	ruct	ion		Maximum Marks			
	Name of the course	and or	ut comes	ho	ours	/	(s)				
Course code							redit	V	E	B	
		EOs	POs	L	Т	Р		CI	ES	Tot I	
								40	60	100	
	SEM	ESTE	$\mathbf{R} - \mathbf{I}$			-	-				
19LSU101	Language – I	2	Ι	4	-	-	4	40	60	100	
19ENU101	English	2	G	4	-	-	4	40	60	100	
19PHU101	Mechanics	1,3	А	5	-	-	5	40	60	100	
19PHU102	Properties Of Matter And Acoustics	1,6	А	5	-	-	5	40	60	100	
19PHU103	Mathematics –I	5	e,h	4	-	-	4	40	60	100	
19PHU111	Mechanics Practical	1,6	E	-	-	2	1	40	60	100	
19PHU112	Properties Of Matter And Acoustics Practical	6	Е	-	-	2	1	40	60	100	
19PHU113	Mathematics Practical-I	4,5	Е	-	-	4	2	40	60	100	
	Semester Total			22		8	26	320	480	800	
	SEM	ESTER	R – II	1	1			1	1	1	
19LSU201	Language –II	2	Ι	4	-	-	4	40	60	100	
19PHU201	Electricity and Magnetism	1,3	A	6	-	-	6	40	60	100	
19PHU202	Analog Systems and Applications	2	A	5	-	-	5	40	60	100	
19PHU203	Mathematics – II	5	Н	4	-	-	4	40	60	100	
19PHU211	Electricity and Magnetism Practical	1,6	Е	-	-	2	1	40	60	100	
19PHU212	Analog Systems and Applications Practical	5	E	-	-	2	1	40	60	100	
19PHU213	Mathematics Practical–II	4	Е	-	-	4	2	40	60	100	
19AEC201	Environmental Studies	3	D	3	-	-	3	40	60	100	
	Semester Total			22		8	26	320	480	800	

	SEMI	ESTER	– III							
19PHU301	Thermal Physics and Statistical Mechanics	3	a,c	4	-	-	4	40	60	100
19PHU302	Physics of Electronic Devices and Circuits	1	a,e	4	-	-	4	40	60	100
19PHU303A	Renewable Energy and Energy harvesting	7	e,f	03	-	-	3	40	60	100
19PHU303B	Physics Workshop skill	7	e, f							
19PHU304	Chemistry –I	7	Ι	4	-	-	4	40	60	100
19PHU311	Thermal Physics and Statistical Mechanics -Practical	6	a,e	-	-	4	2	40	60	100
19PHU312	Physics of Electronic Devices and Circuits Practical	6	a,e	-	-	4	2	40	60	100
19PHU313A	Renewable Energy and Energy harvesting Practical	6	e	-	-	3	1	40	60	100
19PHU313B	Physics Workshop skill Practical	6	e							
19PHU314	Chemistry Practical–I	6	e	-	-	4	2	40	60	100
	Semester total			15		15	22	320	480	800
I	SEM	IESTER	-4							
19PHU401	Waves and optics	3	a,c	4	-	-	4	40	60	100
19PHU401 19PHU402	Waves and optics Nuclear and Particle physics	3 1	a,c j	4	-	-	4	40 40	60 60	100 100
19PHU401           19PHU402           19PHU403A	Waves and optics Nuclear and Particle physics Basic Instrumentation Skill	3 1 2	a,c j f	4	-	-	4	40 40 40	60 60	100 100
19PHU401         19PHU402         19PHU403A         19PHU403B	Waves and optics Nuclear and Particle physics Basic Instrumentation Skill Radiation Safety	3 1 2 1	a,c j f a	4 4	-	-	4 4 3	40 40 40	60 60 60	100 100 100
19PHU401         19PHU402         19PHU403A         19PHU403B         19PHU404	Waves and optics Nuclear and Particle physics Basic Instrumentation Skill Radiation Safety Chemistry –II	3 1 2 1 7	a,c j f a i	4 4 4 3 4			4 4 3 4	40 40 40 40	60 60 60 60	100 100 100 100
19PHU401         19PHU402         19PHU403A         19PHU403B         19PHU404         19PHU404	Waves and opticsNuclear and Particle physicsBasic Instrumentation SkillRadiation SafetyChemistry –IIWave and Optics Practical	3 1 2 1 7 6	a,c j f a i e	4 4 3 4 -	- - - -	- - - 04	4 4 3 4 2	40 40 40 40 40 40	60 60 60 60 60	100 100 100 100 100
19PHU401         19PHU402         19PHU403A         19PHU403B         19PHU404         19PHU411         19PHU412	Waves and opticsNuclear and Particle physicsBasic Instrumentation SkillRadiation SafetyChemistry –IIWave and Optics PracticalNuclear and Particle PhysicsPractical	3 1 2 1 7 6 6	a,c j f a i e j,f	4 4 3 4 -	-	- - - 04 04	4 4 3 4 2 2	40 40 40 40 40 40	60 60 60 60 60 60	100 100 100 100 100
19PHU401         19PHU402         19PHU403A         19PHU403B         19PHU404         19PHU411         19PHU412         19PHU413A	Waves and opticsNuclear and Particle physicsBasic Instrumentation SkillRadiation SafetyChemistry –IIWave and Optics PracticalNuclear and Particle PhysicsPracticalBasic Instrumentation SkillPractical	3 1 2 1 7 6 6 6	a,c j f a i e j,f e	4 4 - -	-	- - - 04 04 3	4 4 3 4 2 2 1	40 40 40 40 40 40 40 40	60 60 60 60 60 60	100 100 100 100 100 100
19PHU401         19PHU402         19PHU403A         19PHU403B         19PHU404         19PHU404         19PHU411         19PHU412         19PHU413A         19PHU413A         19PHU413B	Waves and opticsNuclear and Particle physicsBasic Instrumentation SkillRadiation SafetyChemistry –IIWave and Optics PracticalNuclear and Particle PhysicsPracticalBasic Instrumentation SkillPracticalRadiation Safety PracticalRadiation Safety Practical	3 1 2 1 7 6 6 6 6	a,c j f a i e j,f e e	4 4 - -	-	- - - 04 04 3	4 4 3 4 2 2 1	40 40 40 40 40 40 40 40	60 60 60 60 60 60	100 100 100 100 100 100
19PHU401         19PHU402         19PHU403A         19PHU403B         19PHU404         19PHU404         19PHU411         19PHU412         19PHU413A         19PHU413B         19PHU414	Waves and opticsNuclear and Particle physicsBasic Instrumentation SkillRadiation SafetyChemistry –IIWave and Optics PracticalNuclear and Particle PhysicsPracticalBasic Instrumentation SkillPracticalRadiation Safety PracticalChemistry PracticalChemistry PracticalChemistry Practical	3 1 2 1 7 6 6 6 6 6 6	a,c j f a i e j,f e e e	4 4 - - -	-	- - - 04 04 3 04	4 4 3 4 2 2 1 2	40 40 40 40 40 40 40 40 40	60 60 60 60 60 60 60	100 100 100 100 100 100 100

	SEMESTER – 5													
19PHU501	Mathematical Physics-I	5	c,h	04	-	-	4	40	60	100				
/19PHU502	Electromagnetic Wave Propagation	3	a,h	4	-	-	4	40	60	100				
19PHU503A	Elements of Modern Physics	1	c,h	04			4	40	60	100				
19PHU503B	Medical Physics	2	с	04	-	-	4	40	00	100				
19PHU504A	Computational Skill	1	D	03			3	40	60	100				
19PHU504B	Weather Forecasting	1	D	03	-	-	5	40	00	100				
19PHU511	Mathematical Physics – I Practical	4	h	-	-	4	2	40	60	100				
19PHU512	Electromagnetic wave Propagation Practical	6	е	-	-	04	2	40	60	100				
19PHU513A	Elements of Modern Physics Practical	6	е	-	-	04	2	40	60	100				
19PHU513B	Medical Physics Practical	6	f											
19PHU514A	Computational Skill Practical	6	f	_	_	03	1	40	60	100				
19PHU514B	Weather Forecasting Practical	6	e,f			05	1	-10	00	100				
	Semester total			15		15	22	320	480	800				
	SEM	ESTER	<u>k – 6</u>											
19PHU601	Mathematical Physics-II	5	c,h	04	-	-	4	40	60	100				
19PHU602	Solid State Physics	7	с	4	-	-	4	40	60	100				
19PHU603A	Nano Materials and Applications	2	f	4	_	_	1	40	60	100				
19PHU603B	<b>Biological Physics</b>	3	f		-	-	+	40	00	100				
19PHU611	Mathematical Physics Practical - II	5	e,h	-	-	04	2	40	60	100				
19PHU612	Solid State Physics Practical	1	e	-	-	04	2	40	60	100				
19PHU613A	Nano Materials and Applications Biological Practical	6	e,f	-	-	04	2	40	60	100				
19PHU613B	Biological Physics Practical	6	f											
19PHU691	Project	8	a,e,g	06	-	-	4	40	60	100				
	Semester total			18		12	22	280	420	700				
	ECA / NCC / NSS / Sports / General													
	interest etc													
	G. Total						140	1880	2820	4700				

Ability Enhancement Courses (AEC)							
Semester	Course Code	Name of the Course					
Ι	19LSU101	Language –I					
	19ENU 101	English					
II	19LSU201	Language –II					
	19AEC201	Environmental Studies					

	Gene	eric Elective Courses (GE) / Allied Courses
Semester	<b>Course Code</b>	Name of the Course
Ι	19PHU103	Mathematics –I
	19PHU113	Mathematics Practical-I
II	19PHU203	Mathematics – II
	19PHU213	Mathematics Practical– II
III	19PHU304	Chemistry –I
	19PHU314	Chemistry Practical–I
IV	19PHU404	Chemistry –II
	19PHU414	Chemistry Practical–II

		Core Courses (CC)
Semester	Course Code	Name of the Course
	19PHU101	Mechanics
т	19PHU102	Properties Of Matter And Acoustics
I	19PHU111	Mechanics Practical
	19PHU112	Properties Of Matter And Acoustics Practical
	19PHU201	Electricity and Magnetism
т	19PHU202	Analog Systems and Applications
11	19PHU211	Electricity and Magnetism Practical
	19PHU212	Analog Systems and Applications Practical
III	19PHU301	Thermal Physics and Statistical Mechanics
	19PHU302	Physics of Electronic Devices and Circuits
	19PHU311	Thermal Physics and Statistical Mechanics -Practical
	19PHU312	Physics of Devices and Communication Practical
	19PHU401	Waves and optics
137	19PHU402	Nuclear and Particle physics
1 V	19PHU411	Wave and Optics Practical
	19PHU412	Nuclear and Particle Physics Practical
	19PHU501	Mathematical Physics-I
	19PHU502	Electromagnetic Wave Propagation

$\mathbf{V}$	19PHU511	Mathematical Physics – I Practical
	19PHU512	Electromagnetic wave Propagation Practical
	19PHU601	Mathematical Physics-II
	19PHU602	Solid State Physics
VI	19PHU611	Mathematical Physics Practical - II
	19PHU612	Solid State Physics Practical
	19PHU691	Project

		Skill Enhancement Courses (SEC)							
Semester	<b>Course Code</b>	Name of the Course							
тт	19PHU303A	Renewable Energy and Energy harvesting							
111	19PHU303B	Physics Workshop skill							
ш	19PHU313A	Renewable Energy and Energy harvesting Practical							
111	19PHU313B	Physics Workshop skill Practical							
IV	19PHU403A	Basic Instrumentation Skill							
1 V	19PHU403B	Radiation Safety							
IV	19PHU413A	Basic Instrumentation Skill Practical							
1 V	19PHU413B	Radiation Safety Practical							
V	19PHU504A	Computational Skill							
v	19PHU504B	Weather Forecasting							
<b>V</b> 7	19PHU514A	Computational Skill (Practical)							
v	19PHU514B	Weather Forecasting (Practical)							
	Di	scipline Specific Elective Courses (DSE)							
Semester	<b>Course Code</b>	Name of the Course							
V	19PHU503A	Elements of Modern Physics							
v	19PHU503B	Medical Physics							
V	19PHU513A	Elements of Modern Physics Practical							
v	19PHU513B	Medical Physics Practical							
VI	19PHU603A	Nano Materials and Applications							
V I	19PHU603B	Biological Physics							
VI	19PHU613A	Nano Materials and Applications Practical							
V I	19PHU613B	Biological Physics Practical							

# PROGRAMME OUTCOMES (POs)

## At the end of the programme, the students will

a) Understood the basic concepts, fundamental principles, and the scientific theories related

to various scientific phenomena and their relevancies in the day-to-day life.

**b**) Realized that knowledge of subjects in other faculties such as humanities, performing arts, social sciences etc. can have greatly and effectively influence which inspires in evolving new scientific theories and inventions.

c) Demonstrate a rigorous understanding of the core theories & principles of physics, which includes mechanics, electromagnetism, thermodynamics, & quantum mechanics.

**d**) Be able to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

e) Gain skill in the acquisition of data using different laboratory instruments and in the analysis and interpretation of data using various algorithms.

**f**) Realized how developments in any science subject helps in the development of other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments.

**g**) Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently.

**h**) Students will demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.

i) Work and communicate efficiently in inter-disciplinary environment.

j) Understand the relationship between particles & atom, as well as their creation & decay.

#### PROGRAMME SPECIFIC OUTCOMES (PSOs)

**k**) Enhance the employable skills towards seeking appointments in the relevant areas.

**I)** Able to use advanced mathematical tools and algorithms to elucidate the practical problems.

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

**PEO1:** To create strong interest in physics so as students can further develop themselves through self-study.

**PEO 2:** To prepare the students to successfully compete for employment in Electronics, Manufacturing and Teaching and to offer a wide range of experience in research methods, data analysis to meet the industrial needs.

**PEO 3:** To equip the students with the ability to utilize the concepts of Physics such as optics, electricity, Magnetism, Thermodynamics etc and their applications in addressing the practical and heuristic issues.

**PEO 4:** Basic computer programming skills like C, C++, Scilab used in Physics can be used to solve laboratory data analysis.

**PEO 5:** basic mathematical tools commonly used in physics, including differential and integral calculus, vector calculus, ordinary differential equations, partial differential equations, and linear algebra to solve advanced problems encountered in the fields of applied physics and engineering.

**PEO 6:** Use basic laboratory equipments and data analysis techniques, including, propagating errors, and also representing data graphically.

**PEO 7:** To develop strong student competencies in Physics and its applications in a technology-rich, interactive environment.

**PEO 8:** Make measurements on physical systems understanding the limitations of the measurements and the limitations of models used to interpret the measurements, computationally model the behavior of physical systems, and understand the limitations of the algorithm and the machine.

Pos	a	b	C	d	e	f	g	h	i	j	k	1
PEO1	Х	Х		Х		Х				Х		
PEO2							Х		Х			
PEO3			Х			Х		Х			Х	Х
PEO4				Х	Х					Х		
PEO5	Х		Х		Х			Х			Х	
PEO6		Х		Х		Х						
PEO7			Χ					X		X		
PEO8	Х				Х		Х					

## DEPARTMENT OF COMPUTER SCIENCE FACULTY OF ARTS, SCIENCE AND HUMANITIES UG PROGRAM (CBCS) – B.Sc. Computer Science(Cognitive Systems) (2019–2020 Batch and onwards) CURRICULUM

#### **PROGRAM OUTCOMES:**

#### The program must enable students to attain by the time of graduation

- a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
- b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- c) An ability to design, implement and evaluate a computer-based system, process, component or program to meet desired needs.
- d) An ability to function effectively on teams to accomplish a common goal
- e) An understanding of professional, ethical, legal, security and social issues and responsibilities
- f) An ability to communicate effectively with a range of audiences
- g) An ability to use current techniques, skills and tools necessary for computing practice
- h) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking and web systems and technologies
- i) An ability to effectively integrate IT-based solutions into the user environment
- j) An understanding of best practices and standards and their application

#### **PROGRAM SPECIFIC OUTCOME (PSOs)**

- k) Understand analyze and develop computer programs in the areas related to Database systems and Big data Analytics, cloud computing, soft computing, IoT, Image processing, Green computing, web designing, mobile computing and networking for efficient design of computer based system of varying complexity.
- Apply standard software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality for business success.
- m) Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.

n) An ability to produce cost effective, quality and maintainable software products and solutions (services) meeting the global standards and requirements with the knowledge acquired and using the emerging techniques, tools and software engineering methodologies and principles and able to comprehend and write effective project reports in multidisciplinary environment in the context of changing technologies.

#### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

- PEO I : To be a working Information Technology (IT) professional with core competencies that can be used on multi-disciplinary projects
- PEO II : To understand the importance of relationship building within the IT industry
- PEO III : To understand the need for lifelong learning in the exploration and journey in IT
- PEO IV : To understand, evaluate and practice ethical behavior within the IT industry
- PEO V : To be cognizant of security issues and their impacts on industry

POs	a	В	С	d	e	f	F	h	i	j	k	1	m	n
PEO I	Х	Х	Х				Х	Х	Х				Х	
PEO II				Х	Х	Х								Х
PEO III	Х	Х						Х		Х	Х			
PEO IV			Х	Х	Х				Х			Х		
PEO V					Х					Х		Х		

**MAPPING of PEOs and POs** 

#### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Coimbatore-21 Faculty of Arts, Science and Humanities Department of Computer Science UG Curriculum (CBCS)- (2019 – 2022) Batch

Program: B.Sc Computer Science (Cognitive Systems)

Course code	Name of the course	Ob ar	jectives nd out	Inst bo	ruct	ion /		Maximum Marks			
		c u	omes	v	veek		t(s)				
		PEOS	PEOs POs		Τ	Р	Credi	CIA	ESE	Total	
						40	60	100			
101 011101	SEMI	ESTE	<u>R - I</u>	0.4	1	1	4	40	60	100	
19LSU101	Language –I	IV	d,e	04	-	-	4	40	60	100	
19CGU101	Programming Fundamentals using C / C++		a,b,c	05	-	-	5	40	60	100	
19CGU102	Operating Systems	Ι	b,c,g	04	-	-	4	40	60	100	
19CGU103	Computer Fundamentals	III	h,j	04	-	-	4	40	60	100	
19CGU111	Programming Fundamentals using C / C++ - Practical	Ι	a,b,c,g	-	-	04	2	40	60	100	
19CGU112	Operating Systems – Practical	Ι	a,c,g	-	-	03	2	40	60	100	
19CGU113	Problem solving using worksheets – Practical	III	b,h,j	-	-	03	2	40	60	100	
19AEC101	Environmental Studies	IV	d,e	03	-	-	3	40	60	100	
	Semester Total			20	-	10	26	320	480	800	
	SEME	STE	R – II								
19LSU201	Language – II	IV	d,e	04	-	-	4	40	60	100	
19ENU201	English	II	d,f	04	-	-	4	40	60	100	
19CGU201	Computer Networks	Ι	c,h,i	04	-	-	4	40	60	100	
19CGU202	Discrete Structures	IV	e,i	04	-	-	4	40	60	100	
19CGU203	Information Technology Information Library	III	a,b	04	-	-	4	40	60	100	
19CGU211	Computer Networks – Practical	Ι	a,c,h,i	1	-	04	2	40	60	100	
19CGU212	Discrete Structures – Practical	IV	c,e	-	-	03	2	40	60	100	
19CGU213	Web Technologies - Practical	III	a,b,j	-	-	03	2	40	60	100	
	Semester Total			20	-	10	26	320	480	800	
	SEME	STEF	<u>R – III</u>		1	1					
19CGU301	Data Structures	Ι	a,b,g, h	04	-	-	4	40	60	100	
19CGU302	Python Programming	III	a,b,h, k	04	-	-	4	40	60	100	
19CGU303	Virtualization and Cloud	III	a,b,j,k	04	-	-	4	40	60	100	
19CGU304A	Infrastructure Management	Ι	a,b,c, m	03	-	-	3	40	60	100	

3

19CGU304B	XML Programming	IV	c,d,e,i					40	60	100
19CGU311	Data Structures – Practical	Ι	a,b,g, h	-	-	04	2	40	60	100
19CGU312	Python Programming- Practical	III	a,b,h, k	-	-	04	2	40	60	100
19CGU313	Virtualization and Cloud – Practical	III	a,b,j,k	-	-	04	2	40	60	100
19CGU314A	Infrastructure Management – Practical	Ι	a,b,c,	-	-	03	1	40	60	100
19CGU314B	XML Programming – Practical	IV	cdei	_	_	03	1	40	60	100
	Semester Total	11	0,0,0,1	15	-	15	22	320	480	800
	Semester Total SEME	STEF	R – IV	10		10		020	400	000
19CGU401	Programming in IAVA	I	abc							
10000000			m	04	-	-	4	40	60	100
19CGU402	Database Management System	IV	c,d,e,l	04	-	-	4	40	60	100
19CGU403	Cognition and Problem Solving	Ι	a,b,g, h	04	-	-	4	40	60	100
19CGU404A	Process Management	III	a,b,h,j							
			,k	03	_	_	3	40	60	100
19CGU404B	Programming in MATLAB	III	a,b,h,j	05			5	10	00	100
			,k							
19CGU411	Programming in JAVA – Practical	Ι	a,b,c, m	-	-	04	2	40	60	100
19CGU412	Database Management System –	IV	c,d,e,l			0.4	2	40	(0)	100
	Practical			-	-	04	2	40	60	100
19CGU413	Design and Analysis of Algorithms –	Ι	a,b,g,	_	_	04	2	40	60	100
	Practical		h	_	_	04	~	40	00	100
19CGU414A	Devops tools – Practical	III	a,b,h,j							
			,k			03	1	40	60	100
19CGU414B	Programming in MATLAB	III	a,b,h,j			05	1	-10	00	100
			,k							
	Semester Total			15	-	15	22	320	480	800
	SEME	STE	R –V					1	1	
19CGU501A	Introduction to Digital Technology	Ι	b,e,m	04	-	-	1	40	60	100
19CGU501B	Machine Learning	III	a,b,h,j		-	-	4	40	00	100
19CGU502A	Software Testing	II	a,b,h,j							
				04	-	-	4	40	(0)	100
19CGU502B	Information Security and Cyber	Ι	c,g				4	40	60	100
	Laws		_							
19CGU503A	Data Mining	Ι	a,b,h	04	-	-	4	40	60	100
19CGU503B	Introduction to Data Science	II	d,e,f		-	-				
19CGU504A	Client Relationship Management	IV	c,e,i,l							
19CGU504B	Programming in Visual Basic/Gambas	III	b,h,j,k	03	-	-	3	40	60	100
19CGU511A	Introduction to Digital Technology	T	hem							<u> </u>
100000111	Practical	1	0,0,111	-	-	04	2	40	60	100
19CGU511B	Machine Learning - Practical		a,b,h,j	-	-					
19CGU512A	Software Testing - Practical	III	a,b,h,j			<u> </u>		10		100
19CGU512B	Information Security and Cyber Laws– Practical		c.g	-	-	04	2	40	60	100

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19CGU513A	Data Mining – Practical	III	a,b,h	-	-	04	2	40	60	100		
19CGU513B	Introduction to Data Science –	II	d,e,f			04	2	40	00	100		
	Practical			-	-							
19CGU514A	Client Relationship Management-	IV	c,e,i,l									
	Practical			_	_	03	1	40	60	100		
19CGU514B	Programming in Visual	III	b,h,j,k	-	-	05	1	-0	00	100		
	Basic/Gambas– Practical											
	Semester Total			15 - 15 22 320 480 800								
	SEME	STE	R –VI	1		1	1	1	1	1		
19CGU601A	PHP Programming	III	a,b,h,j									
			,k	03	_	_	3	40	60	100		
19CGU601B	Unix/Linux Programming	IV	c,d,e	00			0		00	100		
19CGU602A	Digital Image Processing	Ι	a,c,g,									
		_	m	04								
19CGU602B	Computer Graphics	I	a,d,g,		-	-	4	40	60	100		
100011000			m									
19CGU603A	Artificial Intelligence	V	e,j,l	04	-	_	4	40	60	100		
19CGU603B	System Programming	I	a,b,h,i				-					
19CGU611A	PHPProgramming	III	a,b,h,j									
	– Practical		,k	-	-	03	1	40	60	100		
19CGU611B	Unix/Linux Programming– Practical	IV	c,d,e									
19CGU612A	Digital Image Processing – Practical	Ι	a,c,g,	-	_		-					
		_	m			04	2	40	60	100		
19CGU612B	Computer Graphics - Practical	Ι	a,d,g,	-	_				00	100		
			m									
19CGU613A	Artificial Intelligence – Practical	V	e,j,l	_	_	04	2	40	60	100		
19CGU613B	System Programming – Practical	Ι	a,b,h,i			0.	_		00	100		
19CGU691	Project	II	d,e,f,n	08	-	-	6	40	60	100		
	ECA / NCC / NSS / Sports / General			Good								
	interest etc								I			
	Semester Total			15	-	15	22	280	420	700		
	Grand Total			100	-	80	140	1880	2820	4700		

\* Instruction Hours / Week

		Ability Enhancement Courses (AEC)
Semester	<b>Course Code</b>	Name of the Course
Ι	19LSU101	Language –I
	19AEC101	Environmental Studies
II	19LSU201	Language –II
	19ENU201	English
IV	19CGU403	Cognition and Problem Solving

Generic Elective Courses (GE) /Allied Courses									
Semester Course Code Name of the Course									
II	19CGU202	Discrete Structures							
	19CGU212	Discrete Structures – Practical							

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		Core Courses (CC)
Semester	<b>Course Code</b>	Name of the Course
Ι	19CGU101	Programming Fundamentals using C / C++
	19CGU102	Operating Systems
	19CGU103	Computer Fundamentals
	19CGU111	Programming Fundamentals using C / C++ - Practical
	19CGU112	Operating Systems – Practical
	19CGU113	Problem solving using worksheets – Practical
II	19CGU201	Computer Networks
	19CGU203	Information Technology Information Library
	19CGU211	Computer Networks – Practical
	19CGU212	Web Technologies - Practical
III	19CGU301	Data Structures
	19CGU302	Python Programming
	19CGU303	Virtualization and Cloud
	19CGU311	Data Structures – Practical
	19CGU312	Python Programming- Practical
	19CGU313	Virtualization and Cloud – Practical
IV	19CGU401	Programming in JAVA
	19CGU402	Database Management System
	19CGU411	Programming in JAVA – Practical
	19CGU412	Database Management System – Practical
	19CGU413	Design and Analysis of Algorithms – Practical
V	19CGU501A	Introduction to Digital Technology
	19CGU501B	Machine Learning
	19CGU511A	Introduction to Digital Technology – Practical
	19CGU511B	Machine Learning - Practical
VI	19CGU603A	Artificial Intelligence
	19CGU603B	System Programming
	19CGU613A	Artificial Intelligence – Practical
	19CGU613B	System Programming – Practical
	19CGU691	Project

		Skill Enhancement Courses(SEC)
Semester	<b>Course Code</b>	Name of the Course
III	19CGU304A	Infrastructure Management
	19CGU304B	XML Programming
	19CGU314A	Infrastructure Management – Practical
	19CGU314B	XML Programming – Practical
IV	19CGU404A	Process Management
	19CGU404B	Programming in MATLAB
	19CGU414A	Devops tools – practical
	19CGU414B	Programming in MATLAB
V	19CGU502A	Software Testing
	19CGU502B	Information Security and Cyber Laws
	19CGU512A	Software Testing - Practical

	19CGU512B	Information Security and Cyber Laws– Practical
VI	19CGU601A	PHP Programming
	19CGU601B	Unix / Linux Programming
	19CGU611A	PHP Programming –Practical
	19CGU611B	Unix / Linux Programming – Practical

	D	iscipline Specific Elective Courses (DSE)
Semester	<b>Course Code</b>	Name of the Course
V	19CGU503A	Data Mining
	19CGU503B	Introduction to Data Science
	19CGU504A	Client Relationship Management
	19CGU504B	Programming in Visual Basic/Gambas
V	19CGU513A	Data Mining – Practical
	19CGU513B	Introduction to Data Science – Practical
	19CGU514A	Client Relationship Management– Practical
	19CGU514B	Programming in Visual Basic/Gambas-Practical
VI	19CGU602A	Digital Image Processing
	19CGU602B	Computer Graphics
	19CGU612A	Digital Image Processing– Practical
	19CGU612B	Computer Graphics – Practical

## **B.E. AUTOMOBILE ENGINEERING**

(For the regular programme students admitted during 2019-2020 and onwards)

## CURRICULUM

### SEMESTER I

Course Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total	Hours / Week
19BEAE101	Mathematics - I (Calculus and Linear Algebra for Mechanical and Automobile Engineering)	2	1,4	3	1	0	4	40	60	100	4
19BEAE141	Engineering Physics	1,2	4	3	1	3	5	40	60	100	7
19BEAE142	Basic Electrical Engineering	2,4	11	3	1	2	5	40	60	100	6
19BEAE111	Engineering Graphics and Design	2	3,4	1	0	4	3	40	60	100	5
Total					3	9	17	160	240	400	22

### **SEMESTER II**

Course Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total	Hours / Week
19BEAE201	Mathematics - II (Calculus, Ordinary Differential Equations and Complex Variable for Mechanical and Automobile Engineering)	2	1	3	1	0	4	40	60	100	4
19BEAE202	English	4	12	2	0	2	3	40	60	100	4
19BEAE241	Chemistry - I	1	1	3	1	3	6	40	60	100	7
19BEAE242	Programming for Problem Solving	2	1,2	3	0	4	5	40	60	100	7
19BEAE211	Workshop/Manufacturing Practice Laboratory	2	2,9	1	0	4	3	40	60	100	5

19BI	EAE251	Constitution of India	1	7	1	0	0	-	100	0	100	1	
				13	2	13	21	300	300	600	28		
SEMESTER III													
Co	ourse Code	Title of the Course	PEO	Ю	L	Т	Р	С	CIA	ESE	Total	Hours / Week	
19BE	EAE301	Mathematics - III (PDE, Probability and Statistics)	2	1,4	3	1	0	4	40	60	100	4	
19BE	EAE302	Engineering Mechanics	2	2,4	3	1	0	4	40	60	100	4	
19BE	EAE303	Applied Thermodynamics	2	2,3	3	0	0	3	40	60	100	3	
19BE	EAE304	Automotive Engines	2,3	2,3	3	0	0	3	40	60	100	3	
19BE	EAE305	Engineering Metrology and Measurements	2,3	2,3	3	0	0	3	40	60	100	3	
19BE	EAE306	Biology for Engineers	4	6	3	0	0	3	40	60	100	3	
19BE	EAE311	Automotive Engine Components and	2,3	2,3	0	0	3	2	40	60	100	3	

#### SEMESTER IV

2,3

2,3

2,3,4

2,3

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Measurements Laboratory Computer Aided Machine

Total

Drawing Laboratory Thermal Engineering

Laboratory

Soft Skills

19BEAE312

19BEAE313

19BEAE351

Course Code	Title of the Course	PEO	Od	L	Т	Р	С	CIA	ESE	Total	Hours / Week
19BEAE401	Fluid Mechanics and Heat Transfer	2	1,3	3	1	0	4	40	60	100	4
19BEAE402	Strength of Materials	2,3	1,3,4	3	1	0	4	40	60	100	4
19BEAE403	Theory of Machines	2,3	1,3,4	3	1	0	4	40	60	100	4
19BEAE404	Engineering Materials and Metallurgy	2,3	1,3	3	0	0	3	40	60	100	3

19BEA	AE441	Automotive Chassis and Transmission	2,3	2,3,4	3	0	3	5	40	60	100	6
19BEA	AE442	Automotive Electrical and Electronics Systems	2,4	2	3	0	3	5	40	60	100	6
19BEA	AE411	Fluid Mechanics and Strength of Materials Laboratory	2,3	2,3	0	0	3	2	40	60	100	3
19BEA	AE451	Course Oriented Project - I	2,4	1,4,8,9	0	0	1	I	100	0	100	1
19BEA	AE452	Fuels and Lubricants	2	1,6	1	0	0		100	0	100	1
Total					19	3	10	27	480	420	900	32

### SEMESTER V

Cou Co	ırse de	Title of the Course	PEO	РО	L	Т	Р	С	CIA	ESE	Total	Hours / Week
19BEA	E501	Design of Machine Elements	2,3	1,2,3,4	3	1	0	4	40	60	100	4
19BEA	E502	IC Engine Design	2,3	1,2,3,4	3	1	0	4	40	60	100	4
19BEA	E503	Vehicle Dynamics	2,3	1,2,4	3	0	0	3	40	60	100	3
19BEA	E504	Environmental Sciences	1,4	1,2,6,9	3	0	0	3	40	60	100	3
19BEA _	E5E_	Professional Elective - I	2	2,9	3	0	0	3	40	60	100	3
19B	_OE_	Open Elective - I	2,4	2,11	3	0	0	3	40	60	100	3
19BEA	E511	Dynamics and Mechatronics Laboratory	2,3	1,2,3	0	0	3	2	40	60	100	3
19BEA	E551	Course Oriented Project - II	2,4	1,4,8,9	0	0	1	_	100	0	100	1
19BEA	E552	Technical Presentation	4	11	0	0	1	_	100	0	100	1
19BEA	E553	In-plant Training	2,4	1,4,8,9	0	0	0	_	100	0	100	_
		Total			18	2	5	22	580	420	1000	25

### SEMESTER VI

Course Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total	Hours / Week
19BEAE601	Automotive Chassis Components Design	2,3	1,2,3,4	3	1	0	4	40	60	100	4

19BEAE602	Engineering Economics and Financial Management	1,4	8	3	0	0	3	40	60	100	3
19BEAE641	Manufacturing Technology	2,3	1,2,3,4	3	0	3	5	40	60	100	6
19BEAE6E_	Professional Elective - II	2	2,9	3	0	0	3	40	60	100	3
19BOE_ 	Open Elective - II	2,4	2,11	3	0	0	3	40	60	100	3
19BOE_ 	Open Elective - III	2,4	2,11	3	0	0	3	40	60	100	3
19BEAE611	Vehicle Maintenance Laboratory	2,3	1,2,3	0	0	3	2	40	60	100	3
19BEAE651	Mini Project	2,4	1,4,8,9	0	0	2	1	100	0	100	2
19BEAE652	Engine and Vehicle Management System	2	2,9	1	0	0	_	100	0	100	1
19BEAE653	Essence of Indian Traditional Knowledge	1	11	1	0	0	_	100	0	100	1
	Total			20	1	8	24	580	420	1000	29

## SEMESTER VII

Co	ourse Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total	Hours / Week
19BE	EAE701	Total Quality Management	1,3	7,10, 11,12	3	0	0	3	40	60	100	3
19BE	EAE7E_	Professional Elective - III	2	2,9	3	0	0	3	40	60	100	3
19BE	EAE7E_	Professional Elective - IV	2	2,9	3	0	0	3	40	60	100	3
19BE	EAE7E_	Professional Elective - V	2	2,9	3	0	0	3	40	60	100	3
19B_	OE_	Open Elective - IV	2,4	2,11	3	0	0	3	40	60	100	3
19BE	EAE711	Computer Aided Design Analysis Laboratory	2,3	1,2,3,4,5	0	0	3	2	40	60	100	3
19BE	EAE751	Industrial Robotics	2	2,9	1	0	0	_	100	0	100	1
19BE	EAE791	Project Phase - I	2,4	1,4,8,9	0	0	4	2	100	0	100	4
		Total			16	0	7	19	440	360	800	23

## SEMESTER VIII

C	ourse Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total	Hours / Week
19BI	EAE801	Professional Ethics and Entrepreneurship Development	1,3	7,10, 11,12	3	0	0	3	40	60	100	3
19BE	EAE8E_	Professional Elective - VI	2	2,9	3	0	0	3	40	60	100	3
19BI	EAE891	Project Phase - II	2,4	1,4,8,9	0	0	12	6	120	180	300	12
		Total			6	0	12	12	200	300	500	18

TOTAL CREDITS FOR THE PROGRAMME = 168

Course Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total
	Professional Elective - ]	(Sem	ester V)							
19BEAE5E01	Automotive Emissions and NVH Control	1,2	2,6	3	0	0	3	40	60	100
19BEAE5E02	Vehicle Body Engineering	2,3	1,2, 3,4	3	0	0	3	40	60	100
19BEAE5E03	Two and Three Wheeler Technology	2,3	2,9	3	0	0	3	40	60	100
19BEAE5E04	Tractor and Farm Equipments	2,3	2,9,10	3	0	0	3	40	60	100
19BEAE5E05	Vibration and Noise Control	2,3	2,3,4	3	0	0	3	40	60	100
19BEAE5E06	Composite Materials	2,3	2,3	3	0	0	3	40	60	100
	Professional Elective - I	(Sem	ester VI)		•	•	•	•		
19BEAE6E01	Advanced Theory of IC Engines	2,3	2,3,4	3	0	0	3	40	60	100
19BEAE6E02	Automotive Air Conditioning	2,3	2,9	3	0	0	3	40	60	100
19BEAE6E03	Automotive Safety	2,3	2,9	3	0	0	3	40	60	100
19BEAE6E04	Off-Road Vehicles	2,3	2,9,10	3	0	0	3	40	60	100
19BEAE6E05	Design for Manufacture and Assembly	2,3	2,3,5	3	0	0	3	40	60	100
19BEAE6E06	Industrial Engineering and Operations Research	2,3	1,,2,8	3	0	0	3	40	60	100
	Professional Elective - III	[ (Sem	ester VII)							
19BEAE7E01	Automotive Aerodynamics	2,3	1,2,3,4	3	0	0	3	40	60	100
19BEAE7E02	Automotive Testing	2,3	2,9,10	3	0	0	3	40	60	100
19BEAE7E03	Alternate Fuels and Energy Systems	2,3	2,6,8,10	3	0	0	3	40	60	100
19BEAE7E04	Applied Hydraulics and Pneumatics	2,3	2,3,4	3	0	0	3	40	60	100
19BEAE7E05	Optimization for Engineering Design	2,3	2,5,8	3	0	0	3	40	60	100
19BEAE7E06	Mechatronics	2,3	2,5,9	3	0	0	3	40	60	100
	Professional Elective - IV	(Sem	ester VII)							
19BEAE7E07	Modern Vehicle Technology	2,3	2,9,10	3	0	0	3	40	60	100
19BEAE7E08	Intelligent Vehicle Technology	2,3	2,9,10	3	0	0	3	40	60	100
19BEAE7E09	Manufacturing of Automotive Components	2,3	2,3,9	3	0	0	3	40	60	100

## LIST OF PROFESSIONAL ELECTIVE COURSES

19BEAE7E10	Computational Fluid Dynamics	2,3	2,4,5	3	0	0	3	40	60	100
19BEAE7E11	New Product Development	2,3	2,8,10,12	3	0	0	3	40	60	100
19BEAE7E12	Lean Manufacturing	2,3	2,8	3	0	0	3	40	60	100
Course Code	Title of the Course			L	Т	Р	С	CIA	ESE	Total
	Professional Elective - V	(Sem	ester VII)							
19BEAE7E13	Finite Element Analysis	2,3	2,3,4,5	3	0	0	3	40	60	100
19BEAE7E14	Hybrid Vehicle Technology	2,3	2,6,9,10	3	0	0	3	40	60	100
19BEAE7E15	Fuel Cell Technology	2,3	2,6,9,10	3	0	0	3	40	60	100
19BEAE7E16	Process Planning and Cost Estimation	2,3	2,8	3	0	0	3	40	60	100
19BEAE7E17	Product Lifecycle Management	2,3	2,8	3	0	0	3	40	60	100
19BEAE7E18	Computer Integrated Manufacturing	2,3	2,5,8	3	0	0	3	40	60	100
	Professional Elective - VI	(Sem	ester VIII)							
19BEAE8E01	Vehicle Maintenance	2,3	2,6,9,12	3	0	0	3	40	60	100
19BEAE8E02	Fleet Management	2,3	2,9	3	0	0	3	40	60	100
19BEAE8E03	Non-Destructive Testing	2,3	2,9	3	0	0	3	40	60	100
19BEAE8E04	Non-Traditional Machining Processes	2,3	2,9	3	0	0	3	40	60	100
19BEAE8E05	Quality Control and Reliability Engineering	2,3	2,8	3	0	0	3	40	60	100
19BEAE8E06	Intellectual Property Rights	2,3	2,12	3	0	0	3	40	60	100

# LIST OF OPEN ELECTIVE COURSES

Course Code	Title of the Course	PEO	Ю	L	Т	Р	С	CIA	ESE	Total
	BIOMEDICAL ENGIN	NEER	RING		I	I	I	1		
19BEBMEOE01	Robotics in Medicine	2, 4	9,11	3	0	0	3	40	60	100
19BEBMEOE02	Virtual Reality and Augmented Reality	2,4	11	3	0	0	3	40	60	100
19BEBMEOE03	Artificial Organs and Implants	2,4	9,11	3	0	0	3	40	60	100
	BIOTECHNOLO	OGY								
19BTBTOE01	Bioreactor Design	2, 4	11	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	2,4	9	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	2,4	9	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of Nanobiotechnology	2, 4	9,11	3	0	0	3	40	60	100
	CHEMICAL ENGIN	EERI	NG							
19BTCEOE01	Energy Management in Chemical Industries	2, 4	6,9	3	0	0	3	40	60	100
19BTCEOE02	Fertilizer Technology	2,4	9,10	3	0	0	3	40	60	100
19BTCEOE03	Industrial Wastewater Treatment	2,4	9,10	3	0	0	3	40	60	100
19BTCEOE04	Solid and Hazardous Waste Management	2, 4	9,10	3	0	0	3	40	60	100
	CIVIL ENGINEE	RING	ŕ							
19BECEOE01	Housing, Plan and Management	2, 4	9,10	3	0	0	3	40	60	100
19BECEOE02	Building Services	2,4	9,10	3	0	0	3	40	60	100
19BECEOE03	Repair and Rehabilitation of Structures	2,4	9,10	3	0	0	3	40	60	100
19BECEOE04	Computer Aided Civil Engineering Drawing	2, 4	11	3	0	0	3	40	60	100
	COMPUTER SCIENCE EN	NGIN	EERING	Ţ						
19BECSOE01	Internet Programming	2, 4	5	3	0	0	3	40	60	100
19BECSOE02	Multimedia and Animation	2,4	5	3	0	0	3	40	60	100
19BECSOE03	PC Hardware and Troubleshooting	2,4	5	3	0	0	3	40	60	100
19BECSOE04	Java Programming	2, 4	5	3	0	0	3	40	60	100

19BECSOE05	Machine Learning	2,4	5	3	0	0	3	40	60	100
	ELECTRICAL AND ELECTRON	ICS	ENGINE	ERI	NG					
19BEEEOE01	Electric Hybrid Vehicle	2, 4	2,9,10	3	0	0	3	40	60	100
19BEEEOE02	Energy Management and Energy Auditing	2,4	9,10	3	0	0	3	40	60	100
19BEEEOE03	Programmable Logic Controller	2,4	5	3	0	0	3	40	60	100
19BEEEOE04	Renewable Energy Resources	2, 4	7,9	3	0	0	3	40	60	100

Course Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total
	ELECTRONICS AND COMMUNIC	ATIO	N ENGI	NEE	RINO	G	•	•		
19BEECOE01	Real Time Embedded Systems	2, 4	2,3,4,	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	2,4	11	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	2,4	9,11	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	2, 4	9,11	3	0	0	3	40	60	100
19BEECOE05	Principles of Modern Communication System	2,4	9,11	3	0	0	3	40	60	100
	FOOD TECHNOL	.OGY	7							
19BTFTOE01	Processing of Food Materials	2, 4	9,11	3	0	0	3	40	60	100
19BTFTOE02	Nutrition and Dietetics	2,4	9,11	3	0	0	3	40	60	100
19BTFTOE03	Ready to Eat Foods	2,4	9,11	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste and Byproducts Utilization	2, 4	9,11	3	0	0	3	40	60	100
	MECHANICAL ENGL	NEEI	RING							
19BEMEOE01	Computer Aided Design	2, 4	2,3,4,5	3	0	0	3	40	60	100
19BEMEOE02	Industrial Safety and Environment	2,4	9	3	0	0	3	40	60	100
19BEMEOE03	Transport Phenomena	2,4	2	3	0	0	3	40	60	100
19BEMEOE04	Introduction to Biomechanics	2, 4	11	3	0	0	3	40	60	100
	SCIENCE AND HUM	ANI	TIES							
19BESHOE01	Solid Waste Management	2, 4	9	3	0	0	3	40	60	100
19BESHOE02	Green Chemistry	2,4	6	3	0	0	3	40	60	100
19BESHOE03	Applied Electrochemistry	2,4	6	3	0	0	3	40	60	100
19BESHOE04	Industrial Chemistry	2, 4	6	3	0	0	3	40	60	100
19BESHOE05	Technical Writing	2,4	11	3	0	0	3	40	60	100
19BESHOE06	Geophysics	2,4	9	3	0	0	3	40	60	100
19BESHOE07	Engineering Acoustics	2, 4	2,9	3	0	0	3	40	60	100
19BESHOE08	Industrial Mathematics - I	2,4	1,9	3	0	0	3	40	60	100

19BESHOE09	Industrial Mathematics - II	2,4	1,9	3	0	0	3	40	60	100
19BESHOE10	Fuzzy Mathematics	2, 4	1,9	3	0	0	3	40	60	100
19BESHOE11	Mathematical Physics	2,4	1,2	3	0	0	3	40	60	100
19BESHOE12	Linear Algebra	2,4	1	3	0	0	3	40	60	100

LIST OF OPEN ELECTIVE COURSES OFFERED BY THE DEPARTMENT OF AUTOMOBILE ENGINEERING FOR THE STUDENTS OF OTHER PROGRAMS

Course Code	Title of the Course	PEO	PO	L	Т	Р	С	CIA	ESE	Total
19BEAEOE01	Automobile Engineering	2, 4	2	3	0	0	3	40	60	100
19BEAEOE02	Two and Three Wheeler Technology	2,4	2	3	0	0	3	40	60	100
19BEAEOE03	Vehicle Maintenance	2,4	2,9	3	0	0	3	40	60	100
19BEAEOE04	Modern Vehicle Technology	2, 4	2,9	3	0	0	3	40	60	100
19BEAEOE05	Fleet Management	2,4	2,11	3	0	0	3	40	60	100

#### **PROGRAMME EDUCATIONAL OBJECTIVES (PEO'S)**

- 1: Graduates will more conscious about their profession with social awareness and responsibility.
- 2: Graduates will be engineering experts, who would help solve industry's technological problems.
- **3:** Graduates will be engineering professionals, consultants or entrepreneurs engaged in technology development.
- 4: Graduates will interact with their peers in other disciplines in industry and society and contribute to the economic growth of the country.

#### PROGRAMME OUTCOMES (PO'S)

- 1: Ability to apply knowledge of mathematics and science in solving engineering problems.
- 2: In-depth knowledge on the fundamental principles, construction and auxiliary systems of automobiles.
- **3:** To understand the principles involved in evaluating the structural, functional and safety requirements of automotive systems.
- 4: Hands on knowledge to develop analytical skills for designing and analyzing various automobile components and processes.
- **5:** To understand and apply appropriate techniques and IT tools for the design and analysis of automotive systems.
- 6: Understanding the mechanism of pollutant formation and its control techniques.
- 7: Understanding of human and ethical responsibilities towards the profession and society.
- 8: Ability to understand the economics and cost analysis in order to take economically sound decisions.
- 9: Ability to apply modem techniques and tools necessary for engineering practice with appropriate considerations for public health, safety, cultural and environmental limitations.
- **10:** Understand the impact of engineering solutions in a societal context and to be able to respond effectively to the needs for sustainable development.
- **11:** Function effectively as an individual, and as a member or a leader in diverse teams, and in multi-disciplinary situations.
- 12: To recognize the need for, and have the ability to engage in independent and lifelong learning.

#### PROGRAMME SPECIFIC OUTCOMES (PSO'S)

• 13: Ability to design automobile system, component, or process to meet desired needs of the nation, industries, institutions within realistic constraints such as economic, environmental, social, political, ethical, health care, and safety, manufacturability, and

sustainability.

- 14: Ability to develop and use of software tools and Information Technology for automobile engineering domain.
- **15:** Ability to perform effectively first level managerial responsibilities for large or medium engineering organizations.

Programme Educational		Programme Objectives													
Objectives	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1			~			~	~	~	~	~			~		
2	✓	✓	✓	$\checkmark$	✓				✓					~	
3	✓	✓	✓	✓	~				~		~	✓		~	
4								✓			~				✓



#### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University Established Under Section 3 of UGC Act 1956) FACULTY OF ENGINEERING B.Tech ( BIOTECHNOLOGY) COURSE OF STUDY AND SCHEME OF EXAMINATION (2019 BATCH ONWARDS)

# 2019 – 2020 BATCH

	SEMESTER I											
		Object Outco	ives & omes	Inst hou	tructi rs/we	on æk	s	Max	imum M	arks		
Course Code	Course Title	РЕО	РО	L	Т	Р	Credit	CIA	ESE	Total		
				1	_	_		40	ESE         60	100		
19BTBT101	Mathematics-I	2,3	a,b,e,h,I,m	3	1	0	4	40	60	100		
19BTBT141	Chemistry-I	2,3	a,b,c,d, e,f,i,k,m	3	1	3	6	40	60	100		
19BTBT142	Basic Electrical Engineering	2,3	a,b,c,e,i ,k,m	3	1	2	5	40	60	100		
19BTBT111	Engineering Graphics & Design	2	a,d,e,m	1	0	4	3	40	60	100		
	TOTAL			10	3	9	18	160	240	400		
		SEM	IESTER II									
		Objec	ctives &	Inst	tructi	on		Max	imum M	arks		
Course	Course Title	Out		nou	Irs/we	ek	edits	СІА	FSF	Total		
Code		PEO	РО	L	Т	Р	Cr			100		
								40	60	100		
19BTBT201	Mathematics –II	2,3	a,b,e,h ,I,m	3	1	0	4	40	60	100		
19BTBT202	English	1,2,3	h,i,k,l,m	2	0	2	3	40	60	100		
19BTBT241	Engineering Physics	2,3	a,b,c,e, h,i,k,m	3	1	3	5	40	60	100		
19BTBT242	Programming for Problem Solving	1	a,b,d,m	3	0	4	5	40	60	100		
19BTBT243	Biochemistry I	1,2	a,b,c,e,m	3	1	3	6	40	60	100		

SEMESTER III											
		Obje Ou	ectives & tcomes	Inst hou	ructi rs/we	on æk	ts	Maximum Marks			
Course Code	Course Title	PFO	PO	т	т	Р	Credi	CIA	ESE	Total	
		TEO	10	Ľ	1	•		40	60	100	
19BTBT301	Transforms and partial differential equation	1,3	a,b,m	3	1	0	4	40	60	100	
19BTBT302	Cell Biology	1,3	a,b,d,m	3	0	0	3	40	60	100	
19BTBT303	Microbiology	1,3	a,b,c, g,I,m	3	0	0	3	40	60	100	
19BTBT304	Principles of Chemical Engineering	1,3	a,b,d,m,n	3	0	0	3	40	60	100	
19BTBT305	Biochemistry II	1,3	a,b,c,m	3	0	0	3	40	60	100	
19BTBT341	Instrumental Methods of analysis	1,3	a,b,c, d,m,n	3	0	2	4	40	60	100	
19BTBT311	Cell Biology and Microbiology Lab	1,3	a,b,c, d,g,m,n	0	0	4	2	40	60	100	
19BTBT351	Constitution of India	1,2	h,l,m	1	0	0	-	100	-	100	
19BTBT352	Synthesis of Organic molecules	1,3	a,b,c,f,n	0	0	1	-	100	-	100	
	TOTAL			19	1	7	22	480	420	900	
		SEM	ESTER IV								
		Obje Ou	ectives & tcomes	Ins hou	tructi rs/w	ion eek	ts	Max	imum M	larks	
Course Code	Course Title	PEO	РО	L	Т	Р	Credi	CIA	ESE	Total	
		_					_	40	60	100	
19BTBT401	Probability and Biostatistics	1,3	a,b,m	3	1	0	4	40	60	100	
19BTBT402	Unit operations	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100	
19BTBT403	Chemical Thermodynamics	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100	
19BTBT404	Basics of Industrial Biotechnology	1,2,3	a,b,c,f, g,m,n	3	0	0	3	40	60	100	
19BTBT405	Molecular Biology	1,3	a,b,c,d ,e,f,m	3	0	0	3	40	60	100	
19BTBT406	Environmental Studies	1,3	f,g,h,l,m,o	3	0	0	3	40	60	100	
19BTBT411	Chemical Engineering Lab	1,2,3	a,b,c,d ,f,m,n	0	0	4	2	40	60	100	
19BTBT451	Production of commercially valuable bioproducts	1,3	a,f,g,n,o	0	0	1	-	100	-	100	
	TOTAL			18	1	5	21	380	420	800	

	SEMESTER V										
<u> </u>		Objec Outo	tives & comes	Inst hou	tructi rs/we	on ek	ts	Max	timum M	arks	
Course Code	Course Title	РЕО	РО	L	Т	Р	Credi	CIA	ESE	Total	
			10		-	-		40	60	100	
19BTBT501	Bioprocess Principles	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100	
19BTBT502	Genetic Engineering	1,2,3	a,b,c,d, e,f,m,n	3	0	0	3	40	60	100	
19BTBT503	Biopharmaceutical Technology	1,2,3	a,b,c,d, f,m,n	3	0	0	3	40	60	100	
19BTBT504	Cancer Biology	1,3	a,b,c,d, e,f,m	3	0	0	3	40	60	100	
19BTBT541	Bioinformatics	1,3	a,b,c,d, e,m,o	3	0	2	4	40	60	100	
19BTBT5E	Professional Elective I	-	-	3	0	0	3	40	60	100	
19BTBT511	Molecular biology and genetic Engineering lab	1,2,3	a,b,c,d, e,f,m,n, o	0	0	4	2	40	60	100	
19BTBT551	Separation of Bioactive compounds from plant material	1,2	a,f,g,n,o	0	0	1	-	100	-	100	
	TOTAL			18	0	7	21	380	420	800	
		SEM	ESTER VI								
G		Objec Outo	tives & comes	Ins hou	tructi ırs/we	on eek	its	Maximum Marks			
Course Code	Course Title	РЕО	РО	L	Т	Р	Credi	CIA	ESE	Total	
								40	60	100	
19BTBT601	Mass Transfer Operations	1,2,3	a,b,c,d,m,n	3	1	0	4	40	60	100	
19BTBT602	Immunology	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100	
19BTBT603	Bioprocess Engineering	1,2,3	a,b,c,d, e,f,m,n	3	0	0	3	40	60	100	
19BTBT604	Enzymology & Enzyme technology	1,3	a,b,c,d, f,m	3	0	0	3	40	60	100	
19 <u>6</u> E	Open Elective I	-	-	3	0	0	3	40	60	100	
19BTBT6E	Professional Elective II	-	-	3	0	0	3	40	60	100	
19BTBT611	Immunology Lab	1,3	a,b,c,d,n,o	0	0	4	2	40	60	100	
19BTBT612	Bioprocess Lab	1,2,3	a,b,c,d, e,f	0	0	4	2	40	60	100	
19BTBT651	Technical Presentation & Seminar	1,2,3	i,j,k,l,m,n,o	0	0	1	-	100	-	100	
	TOTAL			18	1	9	23	420	480	900	

G T 11			<b>T</b> 7 <b>T</b>	· ··
Summer Internship	/ Mini project –	During Summer	Vacation $-N$	on credit course

	SEMESTER VII										
		Object Outco	ives & omes	Inst hou	tructi rs/we	on eek	ţs	Max	imum M	larks	
Course Code	<b>Course Title</b>	PFO	PO	L	т	р	Credit	CIA	ESE	Total	
		TEO	10	L	•	•	Ŭ	40	60	100	
19BTBT701	Professional Ethics, Principles of Management and Entrepreneurship development	1,2,3	f,h,I,j, k,l,m	3	0	0	3	40	60	100	
19BTBT702	Downstream Processing	1,2,3	a,b,c, d,e,f,m,n	3	1	0	4	40	60	100	
19 <u>7</u> E	Open Elective - II	-	-	3	0	0	3	40	60	100	
19BTBT7E	Professional Elective III	-	-	3	0	0	3	40	60	100	
19BTBT7E	Professional Elective IV	-	-	3	0	0	3	40	60	100	
19BTBT711	Downstream Processing Lab	1,3	a,b,c, d,e,f,m,n,o	0	0	4	2	40	60	100	
	TOTAL			15	1	10	21	280	420	700	

SEMESTER VIII										
		Objectives & Outcomes		Inst hou	ructio rs/we	on ek	ts	Max	imum Ma	arks
Course Code	<b>Course Title</b>	PFO	PO	т	т	р	Credi	CIA	ESE	Total
			10	L	L	1	0	40	60	100
19BTBT8E	Professional Elective V	-	-	3	0	0	3	40	60	100
19BTBT8E	Professional Elective VI	-	-	3	0	0	3	40	60	100
	TOTAL			6	0	22	16	200	300	500

	Name of the course	Objectives and out comes		Instruction hours / week			its	Maximum Marks			
Course code	Name of the course	EOs	0s	L	Т	Р	Credi	CIA	ESE	Total	
		P	H					40	60	100	
	SEME	STER	$-\mathbf{V}$								
19BTBT5E01	Environmental Biotechnology	1,3	a,b,f, g,m,o	3	0	0	3	40	60	100	
19BTBT5E02	Developmental Biology	1,3	a,b,c,m	3	0	0	3	40	60	100	
19BTBT5E03	Bioorganic Chemistry	1,3	a,b,c ,d,m	3	0	0	3	40	60	100	
19BTBT5E04	Biomass energy	1,3	a,b,c ,d,f,g,m	3	0	0	3	40	60	100	
19BTBT5E05	Molecular Pathogenesis	1,3	a,b,c ,d,m	3	0	0	3	40	60	100	
19BTBT5E06	Human Anatomy and Physiology	1	a,b,m	3	0	0	3	40	60	100	

# **Professional Elective – II & III**

	Name of the course		Objectives and out comes		Instruction hours / week			Maximum Marks			
Course code		PEOs	POs	L	Т	Р	Cred	CIA	ESE	Total	
								40	60	100	
	SEMI	ESTER	- VI								
19BTBT6E01	Recombinant enzyme and therapeutic agents production	1,2, 3	a,b,c ,d,e,fm,n	3	0	0	3	40	60	100	
19BTBT6E02	Biological Wastewater Treatment	1,2, 3	a,b,c ,d,f,m,n	3	0	0	3	40	60	100	
19BTBT6E03	Food Biotechnology	1,3	a,b,f, g,m	3	0	0	3	40	60	100	
19BTBT6E04	Good Manufacturing Practice	1,2, 3	f,g,h,m	3	0	0	3	40	60	100	
19BTBT6E05	Nanobiotechnology	1,3	a,b,m	3	0	0	3	40	60	100	
19BTBT6E06	IPR and ethical issues in biotechnology	1,2, 3	f,g,h ,I,m	3	0	0	3	40	60	100	
19BTBT6E07	Phytochemicals and Herbal Medicine	1,3	a,b,f, g,m	3	0	0	3	40	60	100	
19BTBT6E08	Programming in Bioinformatics	1,3	a,b,c,m,o	3	0	0	3	40	60	100	

19BTBT6E09	Industrial safety and Hazards Management	1,2, 3	f,g,h ,I,m	3	0	0	3	40	60	100
19BTBT6E10	Plant Biotechnology	1,3	a,b,c,m	3	0	0	3	40	60	100
19BTBT6E11	Introduction to Data Analytics	1,3	a,b,c,m	3	0	0	3	40	60	100
19BTBT6E12	Entrepreneurship in Biotechnology	1,2, 3	f,g,h ,i,j,k ,l,n,o	3	0	0	3	40	60	100

## **Professional Elective - IV**

	Nome of the course	Objectives and out comes		Instruction hours / week			ts	Maximum Marks			
Course code	Name of the course	EOs	Pos	L	Т	Р	Credi	CIA	ESE	Total	
		I						40	60	100	
	SEME	STER	– VII								
19BTBT7E01	Protein Engineering	1,3	a,b,c, d,m	3	0	0	3	40	60	100	
19BTBT7E02	Recombinant DNA technology	1,3	a,b,c, d,e,m,n	3	0	0	3	40	60	100	
19BTBT7E03	Molecular Diagnostics	1,3	a,b,c, d,m,n	3	0	0	3	40	60	100	
19BTBT7E04	Chemical Reaction Engineering	1,3	a,b,c, d,f,m	3	0	0	3	40	60	100	
19BTBT7E05	Immunotechnology	1,3	a,b,c, d,m	3	0	0	3	40	60	100	
19BTBT7E06	Animal Biotechnology	1,2, 3	a,b,c, d,f,m	3	0	0	3	40	60	100	

## **Professional Elective – V & VI**

			Objectives and out comes		Instruction hours / week			Maximum Marks		
Course code	Name of the course	PEOs	POs	L	Т	Р	Credi	CIA	ESE	Total
								40	60	100
SEMESTER - VIII										
19BTBT8E01	Agriculture Biotechnology	1,3	a,b,c,d ,f,g,m	3	0	0	3	40	60	100
19BTBT8E02	Stem cell Technology	1,2, 3	a,b,c,d ,e,f,m	3	0	0	3	40	60	100

19BTBT8E03	Tissue Engineering	1,2, 3	a,b,c,d ,e,f,m	3	0	0	3	40	60	100
19BTBT8E04	Marine Biotechnology	1,3	a,b,c,f,m	3	0	0	3	40	60	100
19BTBT8E05	Genomics and Proteomics	1,3	a,b,cd, e,m	3	0	0	3	40	60	100
19BTBT8E06	Structural Biology	1,3	a,b,c,d,m	3	0	0	3	40	60	100
19BTBT8E07	Clinical Trial and management	1,2, 3	a,b,f,g ,h,I,m	3	0	0	3	40	60	100
19BTBT8E08	Introduction to systems Biology	1,2, 3	a,b,c,d,m	3	0	0	3	40	60	100
19BTBT8E09	Genome informatics and Big data analysis	1,3	a,b,c,d ,e,m	3	0	0	3	40	60	100
19BTBT8E10	Health informatics	1,2, 3	a,b,c,d ,e,f,m	3	0	0	3	40	60	100
19BTBT8E11	Molecular Modeling	1,3	a,b,c,d ,e,m	3	0	0	3	40	60	100
19BTBT8E12	Neurobiology and cognitive science	1,3	a,b,c,d,m	3	0	0	3	40	60	100

### **OPEN ELECTIVES**

#### COURSES OFFERED BY OTHER DEPARTMENTS

SUB. CODE	TITLE OF THE COURSE	PEO	РО	L	Т	Р	С	CIA	ESE	TOTAL	
SCIENCE AND HUMANITIES											
19BTSHOE01	Solid Waste Management	1,2	a,b,c,d,f,m	3	0	0	3	40	60	100	
19BTSHOE02	Green Chemistry	1,2,3	a,b,c,d,e,f,	3	0	0	3	40	60	10	
19BTSHOE03	Applied Electrochemistry	2,3	a,b,c,d,e,f,	3	0	0	3	40	60	10	
19BTSHOE04	Industrial Chemistry	2,3	a,b,c,d,f,g, I.m	3	0	0	3	40	60	100	
19BTSHOE05	Technical Writing	2,3	a,h,i,j,l	3	0	0	3	40	60	10 0	
19BTSHOE06	Geophysics	2,3	a,b,c,e, k m	3	0	0	3	40	60	10 0	
19BTSHOE07	Engineering Acoustics	2,3	a,b,c,d,m	3	0	0	3	40	60	10	
19BTSHOE08	Industrial Mathematics – I	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100	
19BTSHOE09	Industrial Mathematics – Ii	2,3	a,b,e,h,i,m	3	0	0	3	40	60	10 0	
19BTSHOE10	Fuzzy Mathematics	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100	
19BTSHOE11	Mathematical Physics	2,3	a,b,e,h,i,m	3	0	0	3	40	60	10 0	
19BTSHOE12	Linear Algebra	2,3	a,b,m	3	0	0	3	40	60	10 0	
COMPUTER S	SCIENCE AND ENGINEERING		II								
19BECSOE01	Internet Programming	2,3	a,b,c,d,e,m	3	0	0	3	40	60	10 0	
19BECSOE02	Multimedia and Animation	2,3	a,b,c,d,e,m	3	0	0	3	40	60	10 0	
19BECSOE03	PC Hardware and Trouble shooting	2,3	a,b,c,d,e,m	3	0	0	3	40	60	10 0	
19BECSOE04	Java Programming	2,3	a,b,c,d,e,m	3	0	0	3	40	60	10 0	
ELECTRICAL AND ELECTRONICS ENGINEERING											
19BEEEOE01	Electric Hybrid Vehicle	2	a,b,m	3	0	0	3	40	60	10 0	
19BEEEOE02	Energy Management & Energy Auditing	2	a,b,f,g,m	3	0	0	3	40	60	10 0	
19BEEEOE03	Programmable Logic Controller	2	a,b	3	0	0	3	40	60	10 0	
19BEEEOE04	Renewable Energy Resources	1,2	a,b,c,e,f,g, m	3	0	0	3	40	60	10 0	

ELECTRONICS	S AND COMMUNICATION E	NGI	NEERIN	IG						
19BEECOE01	Real Time Embedded Systems	1	a,b	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	1	a,b	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	1	a,b,m	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	1	a,b	3	0	0	3	40	60	100
<b>AUTOMOBILE</b> 1	ENGINEERING									•
19BEAEOE01	Automobile Engineering	1	a,b	3	0	0	3	40	60	100
19BEAEOE02	Two And Three Wheeler Technology	1	a,b	3	0	0	3	40	60	100
19BEAEOE03	Vehicle Maintenance	1	a,b	3	0	0	3	40	60	100
19BEAEOE04	Modern Vehicle Technology	1	a,b	3	0	0	3	40	60	100
CIVIL ENGINE	ERING				I		L			<u> </u>
19BECEOE01	Housing Plan And Management	1	a,b,c,m	3	0	0	3	40	60	100
19BECEOE02	Building Services	1	a,b	3	0	0	3	40	60	100
19BECEOE03	Repair And Rehabilitation Of Structures	1	a,b	3	0	0	3	40	60	100
19BECEOE04	Computer Aided Civil Engineering Drawing	1,3	a,b,e,m ,0	3	0	0	3	40	60	100
MECHANICAL	ENGINEERING						1			•
19BEMEOE01	Computer Aided Design	1,3	a,b,e,m	, 3	0	0	3	40	60	100
19BEMEOE02	Industrial Safety and Environment	1,3	a,b,c,f,g m	g, 3	0	0	3	40	60	100
19BEMEOE03	Transport Phenomena	1	a,b	3	0	0	3	40	60	100
19BEMEOE04	Introduction to Biomechanics	1,3	a,b,c,e,r	n 3	0	0	3	40	60	100
CHEMICAL EN	GINEERING				I					<u> </u>
19BTCEOE01	Energy management in chemical industries	1,3	a,b,c,c	1, 3	0	0	3	40	60	100
19BTCEOE02	Fertilizer technology	1,3	a,b,c,c f m	1, 3	0	0	3	40	60	100
19BTCEOE03	Industrial wastewater	1,2,3	a,b,c,c	1, 3	0	0	3	40	60	100
19BTCEOE04	Solid and hazardous waste management	1,2,3	a,b,c,c f,g,m,	l, 3	0	0	3	40	60	100
FOOD TECHNO	LOGY			•	•	-	•			·
19BTFTOE01	Processing of Food Materials	1,3	a,b,c,m	3	0	0	3	40	60	100
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19BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,m	3	0	0	3	40	60	100
19BTFTOE03	Ready to Eat Foods	1,3	a,b,c,m	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste	1,3	a,b,c,d,							
	and Byproducts		g,m	3	0	0	3	40	60	100
	Utilization									
BIOMEDICAL E	NGINEERING									
19BEBMEOE01	Robotics In Medicine	1	a,b,c,e, m	3	0	0	3	40	60	100
19BEBMEOE02	Virtual Reality And Augmented Reality	1	a,b,c,e, m	3	0	0	3	40	60	100
19BEBMEOE03	Artificial Organs And Implants	1,3	a,b,c,e, h,m,o	3	0	0	3	40	60	100
BIOTECHNOLO	GY									
19BTBTOE01	Bioreactor Design	1,2,3	a,b,c,d, m	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	1	a,b,c,g, m	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	1,3	a,b,c,d, e,m,n	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of Nanobiotechnology	1,3	a,b,m	3	0	0	3	40	60	100

# **B.TECH BIOTECHNOLOGY**

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- 1. Acquire vast knowledge in biotechnology, groom with technical inputs and professionally strong to meet the competency and contribute in research and pursue higher education.
- 2. Effectively design, implement and improve the challenging issues and serve as an interface to build or lead cross-functional teams, upholding the responsibilities and confer ethical commitment.
- 3. Benchmark the significance of Biotechnology in lifelong learning thereby contributing to the core domain, exhibit professionalism and to address the societal issues for sustainable development.

## **PROGRAM OUTCOME (PO)**

The graduates of Biotechnology (B.Tech) will be able to

- a. **Engineering Knowledge:** Apply knowledge of mathematics, basic sciences and Engineering fundamentals that forms the basics of biotechnology and serves as solutions for intricate engineering problems.
- b. **Problem Analysis:** Utilizing principles of mathematics, basic sciences and Engineering fundamentals to identify, analyze and formulate solutions for the engineering problems.
- c. **Design/development of solutions:** Design an integrated system with appropriate considerations to develop solutions for complex engineering problems, public health and safety, cultural and societal benefits.
- d. **Conduct investigations of complex problems:** Conduct investigations by implementing research knowledge and research oriented techniques inclusive of experimental designs, analysis and data interpretation to produce valid information to solve complex problems.
- e. **Modern tool usage:** Formulate and apply relevant research tools, IT and contemporary engineering tools to significantly provide solutions for engineering problems thereby understanding the complexity.

- f. **The engineer and the society:** Understand the process of harnessing value based bioproducts which help in serving the society and demonstrate the need to address the safety, legal and cultural issues.
- g. **Environment and sustainability:** Impart professional engineering solutions for sustainable environmental development.
- h. **Ethics:** Apply and understand the ethical principles to commit oneself to professional ethics and behold the engineering practices and responsibilities.
- i. **Individual and team work:** Cultivate the efficiency to work individually, in a team and to participate in multidisciplinary settings.
- j. **Communication**: Communicate the engineering concepts in the engineering society with an effectiveness to design, formulate, interpret data and documentation, to efficiently deliver presentations and make appropriate reports with apparent information.
- k. **Project management and finance**: Demonstrate the knowledge in order to manage projects, lead a team and perform multi tasks in a challenging environment.
- 1. **Lifelong learning:** Distinguish the importance of the concepts to engage in enduring learning with suitable technological changes.

### PROGRAMME SPECIFIC OUTCOMES (PSO)

At the end of the B.Tech Biotechnology program, the graduates will be able to

- m. Acquire a strong knowledge in biological sciences and chemical engineering subjects relevant to biotechnology.
- n. Apply skills of biotechnology to design and develop products, process and techniques for medical, food and environmental sectors.
- o. Innovate new ideas and to design practical solutions to mitigate the challenges in the society.

	a	b	c	d	e	f	g	h	i	j	k	1	m	n	0
PEO1	~	~	<ul> <li>✓</li> </ul>	~	✓	~	~						~	~	V
PEO2							~	~	~	~	~			~	~
PEO3		~	✓			~	~					~	~	~	~

<u>PEO –</u>	PO	&	<u>PSO</u>	<b>Mapping</b>	



#### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University Established Under Section 3 of UGC Act 1956) FACULTY OF ENGINEERING B.E (BIOMEDICAL ENGINEERING) COURSE OF STUDY AND SCHEME OF EXAMINATION (2019 BATCH ONWARDS)

SEMESTER I												
		Obje Out	ctives & tcomes	Ins hou	truct ırs/w	ion eek	ts	Maximum Marks				
Course ode	Course Course Title ode PEO F		РО	L	Т	Р	Credi	CIA	ESE	Total		
								40	60	100		
19BEBME101	Mathematics-I	1,2,4	a,f,h,j,k	3	1	0	4	40	60	100		
19BEBME141	Chemistry-I	4	a,b,h,j,k	3	1	3	6	40	60	100		
19BEBME142	Basic Electrical Engineering	1,4	a,c,h,j,k	3	1	2	5	40	60	100		
19BEBME143	Programming			3	0	4	5	40	60	100		
	For Problem	1,4	a,b,d,e,j									
	Solving											
	TOTA				3	9	20	160	240	400		

SEMESTER II												
Course	Course Title	Obje Ou	ectives & tcomes	Ins hou	truct irs/w	tion eek	dits	Maxi	imum I	Marks		
Code		РЕО	РО	L	Т	Р	Cre	CIA	ESE	Total		
		120	- 0	L 3 2	-	-		40	60	100		
19BEBME201	Mathematics-II	1,4	a,f,h,j,k	3	1	0	4	40	60	100		
19BEBME202	English	1,4 f,g,h,j,l		2	0	2	3	40	60	100		
19BEBME203	Introduction To Biomedical Engineering	1,2,4	a,b,d,e,h,j,k	3	0	0	3	40	60	100		
19BEBME241	Engineering Physics	2,4	a,c,f,h,j,l	3	1	3	5	40	60	100		
19BEBME242	Electronic Devices And Circuits	1,2,3,4,	a,b,e,h,j,k	3	1	2	5	40	60	100		
	TOTAL		•	14	3	7	20	200	300	500		

SUB. CODE	TITLE OF THE COURSE	Sub. Area	РО	PE O	L	Т	Р	С	CI A	ES E	TOTA L	CONTAC T HOURS / WEEK
SUB. CODETITLE OF THE COURSESub. AreaPOPE OLTPCCCAETOTAL TOTAL THOURS / WEEKCOURAC THOURS / WEEKSUB. CODESUB. CODESub. OURSESub. OURSECOURSE												
THEORY												
19BEBME301 A/ 19BEBME301 B	Optimization and Calculus of Variables /Linear Algebra and Special Functions	BS	a,b,c,d ,f,g,j	i,ii, iv	3	1	0	4	40	60	100	5
19BECC302	Digital electronics	РСН	a,b,d ,f,,j	i,ii, iv	3	0	0	3	40	60	100	3
19BEBME303	C++ and Data Structures	ESC	a,b,c,d ,f,g,j	i,ii, iv	3	0	0	3	40	60	100	3
19BEBME304	Medical Physics	PCS	a,b,c,d ,f,g,	i,ii, iv	3	0	0	3	40	60	100	3
19BEBME305	Fundamentals of Biochemistry	PCS	a,b,c,d ,f,g,j	i,ii, iv	3	0	0	3	40	60	100	3
19BEBME306	Anatomy and Human Physiology	PCS	a,b,c,d ,f,g,j	i,ii,	3	0	0	3	40	60	100	3
PRACTICALS												
19BEBME311	Bio Chemistry & Human Physiology Laboratory	PCS	h,I,j,l	i,ii	0	0	4	2	40	60	100	3
19BEBME312	Digital Electronics Laboratory	PC H	h,I,j,l	i,ii	0	0	4	2	40	60	100	3
19BEBME313	Course Oriented project-I	PC	h,I,j,l, n	i,ii	0	0	2	1	100	-	100	2
	TOTA L				1 8	1	1 0	2 4	420	480	900	28
VALUE ADDE	D COURSE											
19BEBME351	Soft skills for Bio-Medical Entrepreneurs	M C			1	0	0	-	100	0	100	1
TOTAL CONT. PER WEEK	ACT HOURS							29				

SUB. CODE	TITLE OF THE COURSE	Sub. Area	РО	PE O	L	Т	Р	С	CI A	ES E	TOTA L	CONTAC T HOURS / WEEK
	L		SEMES	STER	IV							
THEORY												
19BEBME4 01	Probability and Statistics	BS	a,b,d,j	i,ii, iv	3	1	0	4	40	60	100	4
19BEBME4 02	LinearIntegratedCirc uits	PCH	a,b,c,d,g ,j	i,ii, iii	3	0	0	3	40	60	100	3
19BEBME4 03	Biosensors and Transducers	РСН	a,b,c,d,g ,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
19BEBME4 04	Microprocessor and Microcontroller	PCH	a,b,c,d,g ,j	i,ii, iii	3	0	0	3	40	60	100	3
19BEBME4 05	Environmental science and Engineering	ESC	a,b,c,d,g ,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
19BEBME4 06	Analog & Digital Communication	PCH	a,b,c,d,g ,j	i,ii, iii	3	0	0	3	40	60	100	3
PR	ACTICALS											
19BEBME4 11	Microprocessor and Microcontroller Laboratory	PC H	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
19BEBME4 12	Biosensors and Transducers Lab	PC H	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
	TOTAL				1 8	2	9	2 3	32 0	48 0	800	25
VALUE ADDED COURSE												
19BEBME45 1	Hands on training in Biomedical equipments	M C	h,I,j,l	i,ii	0	0	1	_	10 0	0	100	1
TOTAL CON WEEK	NTACT HOURS PER			<u>.</u>	-	-	-	26				

SUB. CODE	TITLE OF THE COURSE	Su b. A re a	РО	P E O	L	Т	Р	C	CI A	ES E	TO TAL	CONT ACT HOU RS / WEE K
			S V	EMF	EST	ER	ł					
THEOR	Y											
19BEB ME501	Bio Control System	P C H	a,b,c, d,g,j	i,i i, iii	3	1	0	3	40	60	100	5
19BEB ME502	Biomedical Instrumentation	P C H	a,b,c, d,g,j	i,i i, iii , iv	3	0	0	3	40	60	100	3
19BEB ME503	Biomedical Signal Processing	P C H	a,b,c, d,g,j	i,i i, iii	3	0	0	3	40	60	100	3
19BEC C504	ProfessionalEthics,PrinciplesofManagem entandEntrepreneurshipdevelopment	H S	j,h,g, k	i, iv	3	0	0	3	40	60	100	3
19BEB ME5E	Professional Elective I	P E	a,b,c, d,g,j	i,i i, iii	3	0	0	3	40	60	100	3
19BEB ME5E	Professional Elective II	P E	a,b,c, d,g,j	i,i i, iii	3	0	0	3	40	60	100	3
PRACT	ICALS											
19BEB ME511	Biomedical Instrumentation & Signal Processing Lab	P C H	h,I,j,l	i,i i	0	0	3	2	40	60	100	3
19BEB ME512	Course Oriented project-II	P C H	h,I,j,l ,n	i,i i	0	0	3	1	40	60	100	3
	TOTAL				1 8	1	6	2 1	32 0	48 0	800	26
VALUE	ADDED COURSE											
19BECFundamentals of Marketing for Bio-C551Medical Entrepreneurs		H S	h,I,j,l	i,i i	1	0	0	-	10 0	0	100	1
TOTAL	CONTACT HOURS PER WEEK							27				

SUB. CODE	TITLE OF THE COURSE	Sub. Area	РО	PEO	L	Т	Р	С	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
			S	EMEST	TER V	<b>I</b>						
THEORY												
19BEBME601	Bio-Medical Image processing	РСН	a,b,c,d,g,j,m	i,ii, iii	3	0	0	3	40	60	100	3
19BEBME602	Biomechanics	PCH	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
19BEBME603	Diagnostic and Therapeutic Equipment – I&II	РСН	a,b,c,d,g,j,m	i,ii, iii	3	0	0	3	40	60	100	3
19BECC604	Healthcare and Hospital Management	PCS	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
19BEBME6E	Professional Elective-III	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
19BEBME6E	Professional Elective-IV	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
PRAC	CTICALS											
19BEBME611	Bio-Medical Image processing Lab	РСН	h,I,j,l,m	i,ii	0	0	3	2	40	60	100	3
19BEBME612	Diagnostic and Therapeutic Equipments Lab	РСН	h,I,j,l,m	i,ii	0	0	3	2	40	60	100	3
	TOTAL				18	0	6	22	320	480	800	24
VALUE AD	DED COURSE											
19BEBME651	Mini Project	MC	h,I,j,l,n	i,ii	0	0	1	-	100	0	100	1
19BEBME652	Problem solving and Python Programming	MC	h,I,j,l	i,ii	0	0	1	-	100	0	100	1
TOTAL CONTA WEEK	ACT HOURS PER						20	5				

SUB. CODE	TITLE OF THE COURSE	Sub. Area	РО	PEO	L	Т	Р	С	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
			SEM	ESTE	R VI	I					-	
THEORY												
19BEBME701	Virtual Bioinstrumentatior	PCH	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
19BEBME702	Rehabilitation engineering	PC H	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
19OE	Open Elective-1	OE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
19OE	Open Elective-2	OE	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
19BEBME7E	Professional Elective-V	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
PRACTICALS												
19BEBME711	Virtual Bioinstrumentation Lab	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
19BEBME712	Hospital Training	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
19BEBME791	Project Work Phase I	PW	h,I,j,l,n	i,ii	0	0	8	4	40	60	100	8
	TOTAL				15	0	14	23	320	480	800	29
TOTAL CONTA WEEK	ACT HOURS PER								29			
SUB. CODE	TITLE OF THE COURSE	Sub. Area	РО	PEO	L	Т	Р	С	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
			SEM	ESTE	R VI	II						
			Т	HEOF	RY							
19BEBME801	Artificial organs and Implants	РСН	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
19BEBME8E_	Professional Elective-VI	PE	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
19BEBME8E	Professional Elective-VII	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
			PRA	ACTIC	CALS	5						
19BEBME891	Project Work Phase II and VivaVoce	PW a	a,b,c,d,g,j,n	i,ii, iii,iv	0	0	32	16	120	180	300	32
ТО				9	0	32	25	240	360	600	41	
TOTAL CONTA PER WEEK	FOTAL CONTACT HOURS PER WEEK								41			

# LIST OF ELECTIVES PROFESSIONAL ELECTIVES

#### SEMESTER V

### Elective I & II

SUB. CODE	TITLE OF THE COURSE	РО	PEO	L	Т	Р	С	CIA	ESE	TOTAL
19BEBME5E01	Ergonomics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME5E02	Biometric Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME5E03	Medical Optics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME5E04	Biomaterials	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME5E05	Internet of things	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

#### SEMESTER VI

Elective III & IV

SUB. CODE	TITLE OF THE COURSE	РО	PEO	L	Т	Р	С	CIA	ESE	TOTAL
19BEBME6E01	Physiological Modelling	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME6E02	Telehealth Technology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME6E03	Cancer Biology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME6E04	Bio signal Conditioning Circuits	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME6E05	Hospital waste management	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

#### SEMESTER VII

Elective V

SUB. CODE	TITLE OF THE COURSE	РО	PEO	L	Т	Р	С	CIA	ESE	TOTAL
19BEBME7E01	Neural engineering	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME7E02	Lasers and Fiber Optics in Medicine	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME7E03	Patient and Devices Safety	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME7E04	Radiological equipments	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

SUB. CODE	TITLE OF THE COURSE	РО	PEO	L	Т	Р	С	CIA	ESE	TOTAL
19BEBME8E01	Biological Spectroscopy	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E02	Robotics in medicine	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E03	Nanotechnology in Medicine	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E04	Virtual Reality and Augmented Reality	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E05	Speech Processing	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E06	Rapid Prototyping	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E07	Bio MEMS	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E08	Intellectual Property Rights	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E09	Artificial Intelligence and Expert Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEBME8E10	Neural Networks and Applications	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

# SEMESTER VIII Elective VI & VII

### OPEN ELECTIVES SEMESTER VII & SEMESTER VIII

SUB. CODE	TITLE OF THE COURSE	РО	PEO	L	Т	Р	C	CIA	ESE	TOTAL
SCIENCE ANI	HUMANITIES							L		
19BESHOE01	Probability and Random Process	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BESHOE02	Fuzzy Mathematics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BESHOE03	Linear Algebra	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BESHOE04	Engineering Acoustics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BESHOE05	Solid Waste Management	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BESHOE06	Green Chemistry	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BESHOE07	Applied Electrochemistry	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BESHOE08	Industrial	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

	Chemistry									
19BESHOE09	English for Technocrats	a,b,c,d,g,j	i,ii, iii	1	4	0	3	40	60	100
COMPUTER S	CIENCE AND ENGI	NEERING		1					1	L
19BECSOE01	Internet Programming	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BECSOE02	Multimedia and Animation	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BECSOE03	PC hardware and Troubleshooting	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BECSOE04	Java Programming	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
ELECTRICAL	AND ELECTRONIC	CS ENGINI	EERIN	G						
19BEEEOE01	Electric Hybrid Vehicles	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEEEOE02	Energy Management and Energy Auditing	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEEEOE03	Programmable Logic Controller	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEEEOE04	Renewable Energy Resources			3	0	0	3	40	60	100
ELECTRONIC	CS AND COMMUNIC	CATION EN	NGINE	ERIN	NG					L
19BEECOE01	Real Time Embedded Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
BIOTECHNOI	LOGY									
19BTBTOE01	Bioreactor Design	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BTBTOE02	Food Processing	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

	and Preservation									
19BTBTOE03	Basic Bioinformatics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of Nano Biotechnology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
MECHANICA	L ENGINEERING									
19BEMEOE01	Computer Aided design	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEMEOE02	Industrial safety and Environment	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEMEOE03	Transport Phenomena	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEMEOE04	Introduction to Bio mechanics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
AEROSPACE	ENGINEERING		•		•					
19BTAROE01	Non-Destructive Testing	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BTAROE02	Unmanned Aerial Vehicle Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BTAROE03	Air Transportation and Aerodrome Design	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BTAROE04	Avionics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
AUTOMOBIL	E ENGINEERING									
19BEAEOE01	Automobile Engineering	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEAEOE02	Basics of Two and Three Wheelers	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEAEOE03	Automobile Maintenance	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
19BEAEOE04	Introduction to Modern Vehicle Technology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

CIVIL ENGINEERING											
19BECEOE01	Housing, Plan and Management	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	
19BECEOE02	Building Services	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	
19BECEOE03	Management of irrigation systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	
19BECEOE04	Advanced construction technology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	

### **B.E - BIOMEDICAL ENGINEERING**

# PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- i. To design, implement and analyze the emerging discipline of biomedical engineering to address the healthcare challenges and opportunities.
- To develop a biomedical engineer with an adequate technical and soft skills to solve the complex problems in the field of biomedical industry, Health care industry, Biomedical Research, medicine, academia, and consulting.
- iii. To build and lead cross-functional biomedical equipments upholding the professional responsibilities & ethical values.
- iv. Engage in continuing education and life-long learning to be competitive and enterprising.

### PROGRAMME OUTCOME (PO)

- a. Apply knowledge of mathematics, basic sciences, engineering fundamentals and specialization to solve Health care problems
- b. Identify, design, formulate analyze& interpret data
- c. Design an integrated system with due considerations to public health, safely, societal and environment
- d. Investigate, formulate and solve Health care industry problems
- e. Acquire skills to use modern engineering tools and software to solve complex engineering problems
- f. Apply societal and cultural issues in professional engineering practice.
- g. Understand the impact of engineering solutions in global and societal context
- h. Function as a member of multidisciplinary team

- i. Communicate effectively both orally and in writing
- j. Recognize the need for ability to engage in lifelong learning
- k. Understand the project management and finance
- 1. Acquire knowledge to design, develop, predict and model a biomedical system with professional responsibility

#### PROGRAMME SPECIFIC OUTCOMES (PSOs)

- m) To continuous update knowledge in the field of Diagnostic and Therapeutic Equipments and Bio-imaging techniques
- n) To develop biomedical entrepreneurs with innovative products useful to our country

PEO/PO	a	b	c	d	e	f	g	h	i	j	k	1
i	~	~	~	~	~					~		
ii		~	V	~		V	V	V				
iii				~					~		~	
iv		~		~					~		~	~

#### **PEO – PO MAPPING**

# PEO – PSO MAPPING

PEO/PSO	m	n
i	~	$\checkmark$
ii		$\checkmark$
iii	~	
iv		$\checkmark$

# FACULTY OF ENGINEERING DEGREE OF BACHELOR OF TECHNOLOGY IN CHEMICAL ENGINEERING

# DEPARTMENT OF CHEMICAL ENGINEERING

# (REGULAR PROGRAMME)

# **CURRICULUM (2019 – 2020)**



# **KARPAGAM ACADEMY OF HIGHER EDUCATION**

# **Faculty of Engineering**

# **Department of Chemical Engineering**

(Deemed University Established Under Section 3 of

UGC Act 1856) Pollachi Main Road, Eachanari

Post, Coimbatore- 641 021, India.



### KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University Established Under Section 3 of UGC Act 1856)

FACULTY OF ENGINEERING

### **B.Tech (CHEMICAL ENGINEERING)**

#### COURSE OF STUDY AND SCHEME OF EXAMINATION(2019 BATCH ONWARDS)

			S	SEI	MESTE	<b>२ ।</b>							
Course Code		Course Title	Obj & Oi	jec utc	tives comes	ln: ho	stru ours/	ctio we	on ek	dits	Ма	ximum	Marks
			DEC	h	PO			т	D	Cre	CIA	ESE	Total
				<u> </u>	FU	L		•	Г	0	40	60	100
19BTCE101	Ma	athematics-I	3		1,2,4,8 ,11	3	1		0	4	40	60	100
19BTCE102	Pł	iysics	2,3		1,2,5,6 ,8,10,1 1	3	1		3	5	40	60	100
19BTCE103	Er	nglish	1,2,3	3	9,11	2	0		2	3	40	60	100
19BTCE104	Cł	nemistry-l	2,3		1,2,3,5 ,6,7, 8, 11	3	1		0	4	40	60	100
19BTCE105	Er	ngineering Graphics	1,2		1,3	1	0		4	3	40	60	100
					TOTAL	12	3		9	18	200	300	500
			S	SEN	MESTER	RII							
Course Code		Course Title			Objectiv & Outcoi	ves mes	Ins n ho k	stru urs	ictio /wee		Ма	aximum	Marks
					PFO	PO		Т	P	edits	CIA	ESE	Total
										ບັ	40	6 0	100
19BTCE201		Mathematics-II		3		1,2,4, 8,10	3	1	0	4	40	60	100
19BTCE202		Chemistry –II		2	,3	1,2,3, 5,6, 7, 8,11	3	1	0	4	40	60	100
19BTCE203		Electrical And Electronics Enginee	ring	1	,2	1,2,3 ,5,6	3	1	2	5	40	60	100
19BTCE204		Electronics Engineering Thermodynamics-I		1	,2	1,3,5, 6	3	1	0	4	40	60	100

19BTCE205	Programming for Problem Solving	1	1,2,3	3	0	4	5	40	60	100
19BTCE206	Chemistry Lab	1,3	1,4,6, 7,8,1 1	0	0	3	2	40	60	100
			TOTAL	15	4	9	24	240	360	600

#### DEPARTMENT OF CHEMICAL ENGINEERING FACULTY OF ENGINEERING UG PROGRAM (CBCS) – B.Tech – CHEMICAL ENGINEERING (FULL TIME) (2019–2020 Batch and onwards)

Course ande	Name of the course		Objectives and out comes			ion /	t(s)	Maximum Marks			
Course code	Name of the course	PEOs	Os&PEOs	L	Т	Р	Credi	CIA	ESE	Total	
			Р					40	60	100	
	SEMEST	ER – II	I				1	1	1		
19BTCE301	Heat Power Engineering	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100	
19BTCE302	Fluid Mechanics	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100	
19BTCE303	Chemical Process Calculations	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100	
19BTCE304	Mechanical Operations	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100	
19BTCE305	Thermodynamics – II	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100	
19BTCE311	Engineering Workshop	1,2	1,2,3,4, 5,6,7,8,	1	0	4	3	40	60	100	

			9,1011, 12							
	Semester Total			1 6	5	4	2 3	2 4 0	3 6 0	6 0 0
	SEMEST	ER – IV	-					-		
19BTCE401	Heat Transfer	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100
19BTCE402	Mass Transfer-I	1,2	1,2,3,4, 5,6,7,11 ,12	3	0	0	3	40	60	100
19BTCE403	Chemical Process Industries	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100
19 BTCE404	Materials Technology	1,2	1,2,3,4, 5,6,7,11 ,12	3	0	0	3	40	60	100
19BTCE405	HASS – II (Engineering Economics and Financial Management)	1,2	1,2,3,4, 5,6,7,11 ,12	3	0	0	3	40	60	100
19BTCE406	Environmental Science	1,2	1,2,3,4, 5,6,7,11 ,12	3	0	0	3	40	60	100
19BTCE411	Numerical Methods in Chemical Engineering	1,2	1,2,3,4, 5,6,7,8, 9,10,11, 12	2	0	2	3	40	60	100
19BTCE412	Unit Operations Lab – I (Fluid Mechanics and Mechanical Operations lab)	1,2	1,2,3,4, 5,6,7,11 ,12	0	0	4	2	40	60	100
	Semester Total Program Total			2 0 36	2	6	2 5 48	3 2 0	4 8 0 720	8 0 0

		Objec out	tives and comes	Ins hou	tructi rs / w	on eek	s)	Max	Maximum Marks			
Course code	Name of the course	PEOs	Os&PEO s	L	Т	Р	Credit(	CIA	ESE	Total		
	CE.							40	60	100		
	SEI	VIESTER	$\frac{12345}{12345}$	1								
19BTCE501	Chemical Reaction Engineering – I	1,2	6,7,11,12	3	1	0	4	40	60	100		
19BTCE502	Mass Transfer-II	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		
19BTCE5PE1	Core Elective- I	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		
19BTCE5OE	Open Elective-I	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		
19BTCE504	HASS- III (Professional Ethics in Engineering)	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		
19BTCE505	Process Modelling and Simulation	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		
19BTCE511	Unit Operations Laboratory – II (Heat &Mass Transfer Laboratory)	1,2	1,2,3,4,5, 6,7,11,12	0	0	4	2	40	60	100		
19BTCE512	Constitution of India / Essence of Indian knowledge Tradition	1,2	1,2,3,4,5, 6,8,7,11, 12	0	0	0	0	100	0	100		
	Semester Total			18	1	4	24	38 0	420	800		
100000001	SEI	MESTER	-VI	1		1						
19BTCE601	Chemical Reaction Engineering – II	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		
19BTCE602	Process Economics	1,2	1,2,3,4,5,           6,7,11,12	3	0	0	3	40	60	100		
19BTCE6PE2	Professional Core Elective – II	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		
19BTCE603	Process Control	1,2	1,2,3,4,5, 6,7,11,12	3	0	0	3	40	60	100		

19BTCE604	HASS – IV (Principles of Management)	1,2	1,2 6,7	2,3,4,5, 7,11,12	3		0	0	3	40	60	100	
19BTCE6OE	Open Elective – II	1,2	1,2 6,7	2,3,4,5, 7,11,12	3		0	0	3	40	60	100	
19BTCE611	Chemical Reaction Engineering Laboratory	Reaction ng Laboratory 1,2					0	4	2	40	60	100	
19BTCE612	Internship	ip				)	0	0	0	100	0	100	
	Semester Total				18		0	4	20	380	420	800	
	Program Total	al			36		1	8	44	760	840	1600	
Course code	Nome of the course	n Total				Ins h	truct ours week	ion /	t(s)	]	Maximum Marks		
Course code		PEOs	POs&PSOs		L	Т	Р	Credi	CIA	ESE	Total		
	SEN	IESTI	$\mathbf{E}\mathbf{R} - \mathbf{V}$	П						40	60	100	
19BTCE701	Transport Phenomena		1,2	1,2,3,4 5,6,7,1 ,12	4, 11	3	0	0	) 3	40	60	100	
19BTCE7PE3	Professional Core Elective –	3	1,2	1,2,3,4 5,6,7,5 ,12	4, 11	3	0	0	) 3	40	60	100	
19BTCE7PE4	Professional Core Elective -4		1,2	1,2,3,4 5,6,7,7 ,12	4, 11	3	0	0	) 3	40	60	100	
19BTCE7OE	Open Elective-3		1,2	1,2,3,4 5,6,7,4 ,12	4, 11	3	0	0	) 3	40	60	100	
19BTCE7OE	Open Elective-4		1,2	1,2,3,4 5,6,7,7 ,12	4, 11	3	0	0	) 3	40	60	100	
19BTCE711	Design and Simulation Laboratory	1,2	1,2,3,4 5,6,7,8	4, 8,	1	0	4	3	40	60	100		

			12							
19BTCE712	Instrumentation and control Laboratory	1,2	1,2,3,4, 5,6,7,8, 9,10,11, 12	1	0	4	3	40	60	100
19BTCE761	1,2	1,2,3,4, 5,6,7,8, 9,10,11, 12	0	0	6	3	8 0	1 2 0	2 0 0	
	Semester Total			14	0	1 4	24	360	540	900
	SEMEST	ER – VII	Ι							
19BTCE801	Project Stage-II	1,2	1,2,3,4, 5,6,7,8, 9,10,11, 12	-	_	-	12	40	60	100
	Semester Total				0	0	12	40	60	100
			14	0	14	36	400	600	1000	

**TOTAL CREDITS = 152** 

S. No	Course Code	Course Title	L	Т	Р	С
1.	19BTCEPE1	Water Conservation and Management	3	0	0	3
2.	19BTCEPE2	Sustainability Engineering	3	0	0	3
3.	19BTCEPE3	Interfacial Engineering	3	0	0	3
4.	19BTCEPE4	Nanoscience and Nanotechnology	3	0	0	3
5.	19BTCEPE5	Advanced Separation Processes	3	0	0	3
6	19BTCEPE6	Polymer Science and Engineering	3	0	0	3
7	19BTCEPE7	Environmental Pollution and Control	3	0	0	3
8	19BTCEPE8	Renewable Energy	3	0	0	3
9	19BTCEPE9	Optimization Methods	3	0	0	3

# LIST OF PROFESSIONAL ELECTIVES

# LIST OF OPEN ELECTIVES

#### **COURSE OFFERED BY OTHER DEPARTMENT**

SUB. CODE	TITLE OF THECOURSE	L	Т	Ρ	С	CIA	ESE	TOTAL
SCIENCE AND H	UMANITIES							
19BTSHOE01	Solid Waste Management	3	0	0	3	40	60	100
19BTSHOE02	Green Chemistry	3	0	0	3	40	60	100
19BTSHOE03	Applied Electrochemistry	3	0	0	3	40	60	100
19BTSHOE04	Industrial Chemistry	3	0	0	3	40	60	100
19BTSHOE05	Technical writing	3	0	0	3	40	60	100
19BTSHOE06	Geophysics	3	0	0	3	40	60	100
19BTSHOE07	Engineering Acoustics	3	0	0	3	40	60	100
19BTSHOE08	Industrial Mathematics I	3	0	0	3	40	60	100
19BTSHOE09	Industrial Mathematics II	3	0	0	3	40	60	100
19BTSHOE10	Fuzzy Mathematics	3	0	0	3	40	60	100
19BTSHOE11	Mathematical Physics	3	0	0	3	40	60	100
19BTSHOE12	Linear Algebra	3	0	0	3	40	60	100

COMPUTER SCIE	INCE AND ENGINEERING							
19BECSOE01	Internet Programming	3	0	0	3	40	60	100
19BECSOE02	Multimedia and Animation	3	0	0	3	40	60	100
19BECSOE03	PC Hardware and Trouble shooting	3	0	0	3	40	60	100
19BECSOE04	Java Programming	3	0	0	3	40	60	100
ELECTRICAL AN	D ELECTRONICS ENGINEER	ING						
19BEEEOE01	Electric Hybrid Vehicles	3	0	0	3	40	60	100
19BEEEOE02	Energy Management & Energy Auditing	3	0	0	3	40	60	100
19BEEEOE03	Programmable Logic Controller	3	0	0	3	40	60	100
19BEEEOE04	Renewable Energy Resources	3	0	0	З	40	60	100
ELECTRONICS A	ND COMMUNICATION ENGI	NEEF	RING					
19BEECOE01	Real Time Embedded Systems	3	0	0	3	40	60	100
19EECOE02	Consumer Electronics	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	3	0	0	3	40	60	100
19BEECOE05	Principles of Modern Communication System	3	0	0	3	40	60	100
AUTOMOBILE EN	GINEERING							
19BEAEOE01	Automobile Engineering	3	0	0	3	40	60	100
19BEAEOE02	Basics of Two and Three Wheelers	3	0	0	3	40	60	100
19BEAEOE03	Automobile Maintenance	3	0	0	3	40	60	100
19BEAEOE04	Introduction to Modern Vehicle	3	0	0	3	40	60	100
	Technology							
CIVIL ENGINEER	ING							
19BECEOE01	Housing, Plan and Management	3	0	0	3	40	60	100
19BECEOE02	Building Services	3	0	0	3	40	60	100
19BECEOE03	Repair and Rehabilitation of Structures	3	0	0	3	40	60	100
19BECEOE04	Computer Aided Civil Engineering Drawing	3	0	0	3	40	60	100

MECHANICAL E	NGINEERING							
19BEMEOE01	Computer Aided Design	3	0	0	3	40	60	100
19BEMEOE02	Industrial Safety and Environment	3	0	0	3	40	60	100
19BEMEOE03	Transport Phenomena	3	0	0	3	40	60	100
19BEMEOE04	Introduction to Biomechanics	3	0	0	3	40	60	100
CHEMICAL ENG	INEERING							
19BTCEOE01	Energy Management in Chemical Industries	3	0	0	3	40	60	100
19BTCEOE02	Fertilizer Technology	3	0	0	3	40	60	100
19BTCEOE03	Industrial wastewater treatment	3	0	0	3	40	60	100
19BTCEOE04	Solid and Hazardous waste management	3	0	0	3	40	60	100
BIOTECHNOLOG	GY							
19BTBTOE01	Bioreactor Design	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of nano biotechnology	3	0	0	3	40	60	100
FOOD TECHNO	DLOGY							
19BTFTOE01	Processing of Food Materials	3	0	0	3	40	60	100
19BTFTOE02	Nutrition and Dietetics	3	0	0	3	40	60	100
19BTFTOE03	Ready to Eat Foods	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste and	3	0	0	3	40	60	100
	Byproducts Utilization							
AUTOMOBILE EN	NGINEERING			-	-			
19BEAEOE01	Automobile Engineering	3	0	0	3	40	60	100
	Basics of Two and Three	3	0	0	3	40	60	100
19DEAEOE02	Wheelers							
19BEAEOE03	Automobile Maintenance	3	0	0	3	40	60	100
Introduction to Modern			0	0	3	40	60	100
19BEAEOE04	Vehicle Technology							

**PROGRAM OUTCOMES:**On successful completion of the programme,

to the solution of complex engineering problems	
	ization
2 <b>Problem analysis:</b> Identify, formulate, review research literatu	re, and
conclusions using first principles of mathematics, natural scienc	es, and
engineering sciences	,
<b>3 Design/development of solutions:</b> Design solutions for a	complex
engineering problems and design system components or process	ses that
health and safety, and the cultural, societal, and enviro	nmental
considerations	
4 <b>Conduct investigations of complex problems:</b> Use research	based
analysis and interpretation of data and synthesis of the informa	tion to
provide valid conclusions	
5 Modern tool usage: Create calent and apply appropriate took	niquos
resources, and modern Engineering and IT tools including predict	ion and
modeling to complex engineering activities with an understanding	g of the
limitations.	
6 The engineer and society: Apply reasoning informed by the con- knowledge to assess societal health safety legal and cultural	ntextual
and the consequent responsibilities relevant to the profe	ssional
engineering practice	
7 Environment and sustainability: Understand the impact of the	
professional engineering solutions in societal and environmental	ahle
development	4010
8 Ethics: Apply ethical principles and commit to professional ethics	and
responsibilities and norms of the engineering practice	and as
a member or leader in diverse teams, and in multidisciplinary setti	ngs
10 Communications Communicate offectively on communications	
activities with the engineering community and with society at large	neenng e. such
as, being able to comprehend and write effective reports and	design
documentation, make effective presentations, and give and receive	e clear
Instructions	o and
understanding of the Engineering and management principles and	d apply
these to one's own work, as a member and leader in a team, to r	nanage
projects and in multidisciplinary environments	
12 Life-long learning: Recognize the need for, and have the prepara	ation
broadest context of technological change	

# **PROGRAM SPECIFIC OUTCOMES:**

13	Graduates will apply knowledge in physics, chemistry and biology in the field of transfer processes for effective separation and purification of petrochemicals, pharmaceuticals and health care products
14	Graduates will automate and control processes by applying mathematics, process control, instrumentation, simulation and process modeling

# PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1	Graduates pursue profession in chemical & allied engineering
PEO 2	Graduates will pursue higher education & research

# **MAPPING:**

PEO\PO	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PEO1	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	✓	✓	✓	✓	√	✓	✓	$\checkmark$
PEO2	✓	~	~	~	~	~	$\checkmark$		✓	✓	$\checkmark$	✓		$\checkmark$



# KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act 1956) FACULTY OF ENGINEERING B.E (CIVIL ENGINEERING) COURSE OF STUDY AND SCHEME OF EXAMINATION (2019 BATCH ONWARDS)

# PROGRAM OUTCOMES (POs)

# Engineering Graduates will be able to:

**PO-1Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO-2 Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO-3 Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO-4 Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO-5 Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO-6 The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO-7 Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO-8 Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO-9 Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO-10Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO-11 Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO-12 Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

# PROGRAMME SPECIFIC OUTCOMES (PSO)

The B.E. Degree Programme in Civil Engineering is offered in the department with the following programme specific COURSE OUTCOMES(COs):

**PSO-13** The Graduates of this Programme with proficiency in mathematics and physical sciences will excel in the core areas of civil engineering such as structural, environmental and water resources engineering.

**PSO-14** Utilize principles, methods, software's and codes of practices to excel in the areas of planning, analysis and designs related to Civil Engineering systems.

**PSO-15** Prepare detailed drawings, cost estimates, reports, walk through views, interact with clients, manage workers, work in a team and executes construction works.

# PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The Civil Engineering education at KAHE, Coimbatore, mainly based on practical oriented learning. The courses offered are focused on training the students to make them adaptable to any type of role in different fields of Civil Engineering.

The B.E. Degree Programme in Civil Engineering is offered in the department with the following educational objectives:

**PEO-1** To equip the graduates with sufficient knowledge and experience to become leaders in industry and academia

PEO-2 To offer platform for research and development

PEO-3 To impart professional ethics with a commitment to the society and environment

# **PEO-PO mapping**

	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2
PEO1	~	~	~		~			~	~		~	~
PEO2	~	~		~	~		~		~	~	~	~
PEO3			~		~	~	~	~		~	~	~

# **PEO-PSO mapping**

	PSO1	PSO2	PSO3
PEO1	~	$\checkmark$	$\checkmark$
PEO2	$\checkmark$	$\checkmark$	$\checkmark$
PEO3		$\checkmark$	~

# **SEMESTER I**

Course Course Title		Objec & Outco	Objectives & Outcomes			ction week	dits	Max	Maximum Marks		
Code	Course Thie	PEO	РО	L	Т	Р	Cre	CIA	ESE	Total	
								40	60	100	
19BECE101	Mathematics-I	1	1	3	1	0	4	40	60	100	
	(Calculus, Multivariable										
	Calculus & Linear Algebra)										
19BECE141	Chemistry-I	1	1	3	1	3	6	40	60	100	
19BECE142	Basic Electrical Engineering	1	1	3	1	2	5	40	60	100	
19BECE111	Engineering Graphics &	1	1	1	0	4	3	40	60	100	
	Design										
TOTAL				10	3	9	18	160	240	400	

# **SEMESTER II**

~		Objec Out	Objectives & Outcomes			ion eek	ts	Maximum Marks			
Course Code	Course Title	PEO	РО	L	Т	Р	Credi	CIA	ESE	Total	
								40	60	100	
19BECE201	Mathematics-II	1	11	3	1	0	4	40	60	100	
	(Differential Equations)										
19BECE241	Mechanics and Mechanics	1,2	3	3	1	3	5	40	60	100	
	of Solids										
19BECE242	English	1	10	2	0	2	3	40	60	100	
19BECE243	Programming For Problem	1	2	3	0	4	5	40	60	100	
	Solving										
19BECE211	Workshop / Manufacturing	1	1	1	0	4	3	40	60	100	
	Practices Laboratory										
TOTAL				12	2	13	20	200	300	500	

#### SEMESTER III

Course	<b>Course Title</b>	<b>Objectives &amp;</b>		Inst	ructio	on	Credits	Ma	Maximum Mark		
Code		Out	comes	hours/week							
		PEO	PO	L	Т	P		CIA	ESE	Total	
19BECE301	Mathematics- III (Transform & Discrete	1	1	3	1	0	4	40	60	100	

	Mathematics)									
19BECE302	Biology for Engineers	1	1	3	0	0	3	40	60	100
19BECE303	Energy Science & Engineering	1	1	1	1	0	2	40	60	100
19BECE304	Introduction to Civil Engineering	1	1	2	0	0	2	40	60	100
19BECE305	Engineering Mechanics	1	1	3	1	0	4	40	60	100
19BECE306	Effective Technical Communication	1	10	3	0	0	3	40	60	100
19BECE341	Basic Electronics	1	1	2	0	2	3	40	60	100
19BECE311	Computer- aided Civil Engineering Drawing	1	4,5,9,10	1	0	2	2	40	60	100
TOTAL				18	3	4	23	320	480	800

#### **SEMESTER IV**

Course	<b>Course Title</b>	Objectives		Inst	ructi	on	Credits	Μ	Maximum Marks		
Code		&	:	hou	rs/we	ek					
		Outco	omes								
		PEO	PO	L	Т	Р		CIA	ESE	Total	
19BECE401	Introduction to	1		2	1	0	3	40	60	100	
	Mechanical										
	Engineering		1								
19BECE402	Engineering	1,2	2	2	0	0	2	40	60	100	
	Geology										
19BECE403	Disaster	1,2	1,4	1	1	0	2	40	60	100	
	Preparedness &										
	Planning										
	Management										
19BECE404	Introduction	1	3	2	0	0	2	40	60	100	
	to Solid										
	Mechanics										
19BECE441	Instrumentation	1,2	1,4	1	1	2	3	40	60	100	
	& Sensor										
	Technologies for										
	Civil										
	Engineering										
	Applications										
19BECE442	Introduction	1	3	2	0	2	3	40	60	100	
	to Fluid										
	Mechanics										

19BECE443	Surveying &	1	6	1	1	2	3	40	60	100
	Geomatics									
19BECE444	Materials, Testing	1,2	4,9	2	0	3	4	40	60	100
	&Evaluation									
19BECE451	Civil Engineering	1,3	8	2	0	0	2	40	60	100
	- Societal &									
	Global Impact									
TOTAL				15	4	9	24	360	540	900

#### SEMESTER V

Course	<b>Course Title</b>	Objectives		Inst	tructi	on	Credits	Μ	Maximum Marks		
Code		&	;	hou	rs/we	eek					
		Outco	omes								
		PEO	PO	L	Т	P		CIA	ESE	Total	
19BECE501	Mechanics of Materials	1	3	3	0	0	3	40	60	100	
19BECE502	Structural Engineering	1,2	2	2	1	0	3	40	60	100	
19BECE503	Hydrology & Water Resources Engineering	1,3	7	2	1	0	3	40	60	100	
19BECE504	Environmental Engineering	1,3	7	3	0	0	3	40	60	100	
19BECE505	Transportation Engineering	1,3	6	3	0	0	3	40	60	100	
19BECE506	Professional Practice, Law & Ethics	3	8	2	0	0	2	40	60	100	
19BECE541	Hydraulic Engineering	1	3	2	0	2	3	40	60	100	
19BECE542	Geotechnical Engineering	1,2	2,3	2	0	2	3	40	60	100	
TOTAL				19	2	4	23	320	480	800	

#### **SEMESTER VI**

Course	<b>Course Title</b>	<b>Objectives &amp;</b>		Inst	ructi	on	Credits	Ma	Maximum Marks		
Code		Out	comes	hour	:s/we	ek					
		PEO	PO	L	Т	Р		CIA	ESE	Total	
19BECE601	Construction Engineering & Management	1	9,11	2	1	0	3	40	60	100	
19BECE641	Engineering Economics, Estimation & Costing	1	11	2	1	4	5	40	60	100	
19BECE6E	Elective-I	1	6,12	3	0	0	3	40	60	100	
19BECE6E	Elective-II	1	6,12	3	0	0	3	40	60	100	
19BECE6E	Elective-III	1	6,12	3	0	0	3	40	60	100	
19BECE6E	Elective- IV	1	6,12	3	0	0	3	40	60	100	
TOTAL				16	2	4	20	240	360	600	

### **SEMESTER VII**

Course	<b>Course Title</b>	Obje	ectives &	I	nstru	iction	Credits	Maxi	Maximum Mark		
Code		Ou	tcomes	h	ours	/week					
		PEO	РО	L	Т	Р		CIA	ESE	Total	
19BECE7E	Elective V	1	6,12	3	0	0	3	40	60	100	
19BECE7E	Elective-VI	1	6,12	3	0	0	3	40	60	100	
	Open Elective-I (Metro System and Engineering)	1	6	3	0	0	3	40	60	100	
	Open Elective-II	1	6	3	0	0	3	40	60	100	
19BECE791	Project Work-1	1,2,3	4,5,9,11	0	0	12	6	80	120	200	
TOTAL				12	0	12	18	240	360	600	

#### SEMESTER VIII

Course	<b>Course Title</b>	<b>Objectives &amp;</b>		Inst	ucti	ion	Credits	Credits   Maximum Marl		
Code		Outo	comes	hour	s/w	eek				
		PEO	PO	L	Τ	Р		CIA	ESE	Total
19BECE8E	Elective VII	1	6,12	3	0	0	3	40	60	100
19BECE8E	Elective VIII	1	6,12	3	0	0	3	40	60	100
	Open Elective- III	1	6	3	0	0	3	40	60	100
	Open Elective- IV	1	6	3	0	0	3	40	60	100
19BECE891	Project Work-2 (Continued from VI I Semester)	1,2,3	4,5,9,11	0	0	12	6	80	120	200
TOTAL	L		1	12	0	12	18	240	360	600
ТС	TAL NO OF	CREDI	TS=164							

L: Lecture Hour T: To

T: Tutorial Hour

CIA: Continuous InternalAssessment

P: Practical Hour C: Credit

ESE: End semester Examination

#### LIST OF ELECTIVES

# **PROFESSIONAL ELECTIVES (PE)**

The Professional Elective Courses (PEC-CE) are shown indifferent tracks

Track	Professional Electives
Ι	Structural Engineering
II	Geotechnical Engineering
III	Environmental Engineering
IV	Construction Engineering & Management

#### STRUCTURAL ENGINEERING

Course	<b>Course Title</b>		PEO	PO	Instruction			Credits	Maximum Marks		
Code		Pre-			hour	s/w	eek				
		requisite			L	Т	Р		CIA	ESE	Total
19BECEE01	StructuralAnalysis-I	Nil	1	2,3	3	0	0	3	40	60	100
19BECEE02	StructuralAnalysis- II	19BECEE01	1	2,3	3	0	0	3	40	60	100
19BECEE03	Advanced StructuralAnalysis	19BECEE02	1	2,3	3	0	0	3	40	60	100
19BECEE04	StructuralMechanics	19BECEE03	1,2	3,4	3	0	0	3	40	60	100
19BECEE05	ReinforcedConcrete	19BECEE06	1	2,3	3	0	0	3	40	60	100
19BECEE06	ConcreteTechnology	Nil	1	2	3	0	0	3	40	60	100
19BEEE07	Design of ConcreteStructures-I	19BECEE05	1	2,3	3	0	0	3	40	60	100
19BECEE08	Design of ConcreteStructures- II	19BECEE07	1	2,3	3	0	0	3	40	60	100
19BECEE09	PrestressedConcrete	19BECEE08	1,2	1,9,12,15	3	0	0	3	40	60	100
19BECEE10	Design of SteelStructures	19BECEE08	1,2	1,2,3	3	0	0	3	40	60	100
19BECEE11	Concrete Materials	19BECEE06	1,2	2,3,4	3	0	0	3	40	60	100

#### **GEOTECHNICAL ENGINEERING**

Course	<b>Course Title</b>	Course TitlePEOPOInstruction		on	Cre	Maximum Marks					
Code		Pre-		hours/week			dits				
		requisite		L	Τ	Р		CIA	ESE	Total	
19BECEE12	SoilMechanics-I	Nil	1	3	3	0	0	3	40	60	100
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19BECEE13	SoilMechanics-	19BECEE12	1	3	3	0	0	3	40	60	100
	II										
19BECEE14	FoundationEngi	19BECEE13	1,2	2,3	3	0	0	3	40	60	100
	neering			,4							
19BECEE15	EnvironmentalG	Nil	1,2	2,3	3	0	0	3	40	60	100
	eo-technology			,4							

**ENVIRONMENTAL ENGINEERING** 

Course Code	Course Title		PE	PO	Insti	ruct	ion	Cr	Max	imum	Marks
		Pre-	0		hour	s/w	eek	edi			
		requisite			L	T	Р	ts	CIA	ES E	Total
19BECEE16	Ecological Engineering	Nil	1,2	3.6.12	3	0	0	3	40	60	100
19BECEE17	Transport of Water and Wastewater	Nil	1,2	4.7.11. 14	3	0	0	3	40	60	100
19BECEE18	Physico-Chemical Processes for Water and Wastewater Treatment	19BECEE1 7	1,2	7.8.12	3	0	0	3	40	60	100
19BECEE19	Biological Processes for ContaminantRem oval	19BECEE1 9	1,2	1.9.12	3	0	0	3	40	60	100
19BECEE20	Rural Water Supply and Onsite SanitationSystems	19BECEE1 9	1,2	4.7.11. 14	3	0	0	3	40	60	100
19BECEE21	Solid and Hazardous WasteManagemen t	Nil	1,2	4.7.11. 14	3	0	0	3	40	60	100
19BECEE22	Air and Noise Pollution andControl	Nil	1,2	3.4.5.7	3	0	0	3	40	60	100
19BECEE23	Environmental Impact Assessment and Life CycleAnalyses	19BECEE2 2	1,2	4.7. <u>11.</u> 14	3	0	0	3	40	60	100

**CONSTRUCTION ENGINEERING & MANAGEMENT** 

Course	Course Title		PEO	PO	Instruction		tion	С	Max	imum N	<b>Aarks</b>
Code		Pre-			hou	rs/w	veek	re			
		requisite			L	Τ	Р	di ts	CIA	ESE	Tota l
19BECEE2 4	Building Construction Practice	19BECEE1 1	1,2	3,4, 5,7	3	0	0	3	40	60	100
19BECEE2 5	Construction Project Planning &Systems	19BECEE2 5	1,2	3,4, 5,7	3	0	0	3	40	60	100
19BECEE2 6	Sustainable Construction Methods	19BECEE2 5	1,2	3,4, 5,7	3	0	0	3	40	60	100
19BECEE2 7	Construction Engineering Materials.	Nil	1,2	3,4, 5,7	3	0	0	3	40	60	100
19BECEE2 8	Contracts Management	19BECEE2 5	1,2	3,4, 5,7	3	0	0	3	40	60	100
19BECEE2 9	Construction Equipment& Automation	19BECEE2 5	1,2	3,4, 5,7	3	0	0	3	40	60	100
19BECEE3 0	Repairs & Rehabilitation of Structures	19BECEE2 5	1,2	4.5. 7.1 2	3	0	0	3	40	60	100

#### LIST OF OPEN ELECTIVES

#### COURSES OFFERED BY OTHER DEPARTMENTS

<b>Course Code</b>	Course Title	PE	РО	Ins	struc	ction	Cr	Max	ximum N	Marks
		0		ho	urs/v	veek	edi			
				L	Т	Р	ts	CIA	ESE	Total
SCIENCE AND	<b>HUIMANITIES</b>									
19BESHOE01	Solid Waste	1,	7,11,	3	0	0	3	40	60	100
	Management	2	14							
19BESHOE02	Green Chemistry	1, 2	1,3,5	3	0	0	3	40	60	100
19BESHOE03	Applied	1,	1,3,5	3	0	0	3	40	60	100
	Electrochemistry	2								
19BESHOE04	Industrial Chemistry	1, 2	1,3,5	3	0	0	3	40	60	100
19BESHOE05	Technical Writing	1	9,10, 12	3	0	0	3	40	60	100
19BESHOE06	Geophysics	1, 2	1,3,4	3	0	0	3	40	60	100
19BESHOE07	Engineering Acoustics	1, 2	1,3,4	3	0	0	3	40	60	100
19BESHOE08	Industrial Mathematics - I	1	1	3	0	0	3	40	60	100
19BESHOE09	Industrial Mathematics - II	1	1	3	0	0	3	40	60	100
19BESHOE10	Fuzzy Mathematics	1	1	3	0	0	3	40	60	100
19BESHOE11	Mathematical Physics	1	1	3	0	0	3	40	60	100
19BESHOE12	Linear Algebra	1	1	3	0	0	3	40	60	100
<b>COMPUTER S</b>	CIENCE ENGINEERI	NG								
19BECSOE01	Internet Programming	1, 2	1,3	3	0	0	3	40	60	100
19BECSOE02	Multimedia and Animation	2	1,3	3	0	0	3	40	60	100
19BECSOE03	PC hardware and Troubleshooting	2	5,6	3	0	0	3	40	60	100
19BECSOE04	Java Programming	1, 2	1,3	3	0	0	3	40	60	100
ELECTRICAL	& ELECTRONICS EN	NGINH	EERING	T						
19BEEEOE01	Electric Hybrid	1,	1,5	3	0	0	3	40	60	100
	Vehicle	2								
19BEEEOE02	Energy Management & Energy Auditing	1, 2	1,6,7	3	0	0	3	40	60	100
19BEEEOE03	Programmable Logic Controller	1	1,4	3	0	0	3	40	60	100

19BEEEOE04	Renewable Energy	1,	1,6,7	3	0	0	3	40	60	100
	Resources	2								
ELECTRONIC	CS & COMMUNICATI	ON EI	IGINE	ERINO	Ĵ					
19BEECOE01	Real TimeEmbeddedSyst ems	1, 2	1,2	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	1	1	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	1, 2	1,5	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	1, 2	1,5	3	0	0	3	40	60	100
19BEECOE05	Principles of Modern Communication System	1, 2	1,6	3	0	0	3	40	60	100
BIOTECHNOI	LOGY									
19BTBTOE01	Bioreactor design	1, 2	1,3 ,6	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	1	1	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	1	1	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of	1, 2	1	3	0	0	3	40	60	100
		-								
		1	1246	2	0	0	2	40	60	100
19BEMEOE01	DESIGN	1, 2	1,3,4,6	3	0	0	3	40	60	100
19BEMEOE02	INDUSTRIAL SAFETY AND ENVIRONMENT	1, 2	1,3,12	3	0	0	3	40	60	100
19BEMEOE03	TRANSPORT PHENOMENA	1, 2	1,3,5	3	0	0	3	40	60	100
19BEMEOE04	INTRODUCTION TO BIOMECHANICS	1	1,2	3	0	0	3	40	60	100
AUTOMOBILI	E ENGINEERING									
19BEAEOE01	Automobile Engineering	1	1,2	3	0	0	3	40	60	100
19BEAEOE02	Basics of Two and Three Wheelers	1	1,5	3	0	0	3	40	60	100
19BEAEOE03	Automobile Maintenance	1	1,1 2	3	0	0	3	40	60	100
19BEAEOE04	Introduction to Modern Vehicle Technology	1	1,1 2	3	0	0	3	40	60	100
19BEAEOE05	Commercial Fleet Operation	1	1,1 2	3	0	0	3	40	60	100

CHEMICAL E	NGINEERING									
19BTCEOE01	Energy Management	1,	1,6,9	3	0	0	3	40	60	100
	In Chemical	2								
	Industries									
19BTCEOE02	Fertilizer Technology	1, 2	1,6,9	3	0	0	3	40	60	100
19BTCEOE03	Industrial Wastewater	1,	4,7,1	3	0	0	3	40	60	100
	Treatment	2	1,1 4							
19BTCEOE04	Solid and Hazardous	1,	4,7,1	3	0	0	3	40	60	100
	Waste Management	2	1,1 4							
FOOD TECHN	OLOGY			•			•			· · · · ·
19BTFTOE01	Processing of Food	1,	1,12,	3	0	0	3	40	60	100
	Materials	2	15							
19BTFTOE02	Nutrition and	1,	1,6,9	3	0	0	3	40	60	100
	Dietetics	2								
19BTFTOE03	Ready to Eat Foods	1, 2	1,6,9	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste	1,	4,7,1	3	0	0	3	40	60	100
	and Byproducts	2	4							
	Utilization									
BIOMEDICAL	ENGINEERING									
19BEBMEOE0	Robotics in	1,2	1,2	3	0	0	3	40	60	100
1	medicine			5	0	0	5	40	00	100
19BEBMEOE0	Virtual Reality and	1,2	1,2	3	0	0	3	40	60	100
2	Augmented Reality			5	0	0	5	40	00	100
19BEBMEOE0	Artificial organs and	1,2	1,2	3	0	0	3	40	60	100
3	Implants			5	0	0	5	+0	00	100
60110656										

COURSES OFFERED TO OTHER DEPARTMENT

SUB. CODE	TITLE OF THE PAPER	PEO	PO	L	Т	Р	C	CIA	ESE	TOTAL
19BECEOE01	Housing, Plan and Management	1,2	5,9,6	3	0	0	3	40	60	100
19BECEOE02	Building Services	1,2	8	3	0	0	3	40	60	100
19BECEOE03	Repair and Rehabilitation of Structures	1,2	7,9,11	3	0	0	3	40	60	100
19BECEOE04	Computer Aided Civil Engineering Drawing	1,2	3,4,5,7	3	0	0	3	40	60	100



KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act 1956) FACULTY OF ENGINEERING Department of Computer Science and Engineering

#### List of PEOs, POs and PSOs

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- I. To perform well in their professional career by acquiring enough knowledge in the domain of Computer Science and Engineering.
- II. To improve communication skills, follow professional ethics and involve in team work in their profession.
- III. To update with evolving technology and use it for career advancement.

#### PROGRAMME OUTCOMES (POs)

#### Engineering Graduates will be able to:

a) **Engineering Knowledge**: Apply the knowledge of mathematics, science, engineeringfundamentals, and an engineering specialization to the solution of complex engineering problems.

b) **Problem Analysis**: Identify, formulate, review research literature, and analysecomplex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

c) **Design/ Development of Solutions**: Design solutions for complex engineeringproblems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

d) **Conduct Investigations of Complex Problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

e) **Modern Tool Usage**: Create, select, and apply appropriate techniques, resources, andmodern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

f) **The Engineer and Society**: Apply reasoning informed by the contextual knowledge toassess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

g) **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

h) **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

i) **Individual and Team Work**: Function effectively as an individual, and as a member orleader in diverse teams, and in multidisciplinary settings.

j) **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

k) **Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

1) **Life-long Learning**: Recognize the need for, and have the preparation and abilityto engage in independent and life-long learning in the broadest context of technological change.

#### **PROGRAM SPECIFIC OUTCOMES (PSOs):**

m1) The ability to apply, analyse, design and develop the application software that meet the automation needs of society and industry.

m2) The ability to understand the evolutionary changes in computing, apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success, real world problems and meet the challenges of the future.

PO, PSO PEO	a	b	с	d	e	f	g	h	i	j	k	1	m1	m2
PEO1	✓	✓	✓	$\checkmark$	$\checkmark$	$\checkmark$	✓					$\checkmark$	✓	✓
PEO2	✓	$\checkmark$	✓	$\checkmark$	✓			✓	✓	✓				$\checkmark$
PEO3	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	✓	√		✓	√		✓	✓

#### PEO\ PO, PSO MAPPING:



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#### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act 1956) FACULTY OF ENGINEERING B.E (COMPUTER SCIENCE and ENGINEERING) COURSE OF STUDY AND SCHEME OF EXAMINATION (2019 BATCH ONWARDS)

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SEMESTER I

COURSE	COURSE TITLE	COURS	S Objectives &		Inst	ructi	ion		Maximum Marks				
CODE		E	Outco	omes	hou	rs/we	eek	Ś					
CODE		AREA	PEO	PO,	L	Τ	P	edit	CIA	ESE	TOTAL		
				PSO				Ċ					
									40	60	100		
19BECS101	Mathematics-I				3	1	0	4	40	60	100		
	(Calculus and												
	Linear Algebra for												
	Computer Science												
	Engineers)	BS	I,III	a,f,i,j									
19BECS102	English	HS	II	f,g,i	2	0	2	3	40	60	100		
19BECS141	Semiconductor			a,d,f,	3	1	3	5	40	60	100		
	Physics			h,i,j,									
		BS	Ι	k									
19BECS142	Programming For			a,j,k,	3	0	4	5	40	60	100		
	Problem Solving	ES	Ι	m1									
			Т	OTAL	11	2	9	17	160	240	400		
			SEME	STER II	[								
		SEMESTER I				II Instruction				Maximum Marks			
COURSE	COURSE TITLE	COURSE	Object	ives &	Ins	truct	ion		Μ	laximum	n Marks		
COURSE CODE	COURSE TITLE	COURSE AREA	Object Outco	ives & omes	Ins hou	truct irs/w	ion eek	ţs	Μ	laximum	n Marks		
COURSE CODE	COURSE TITLE	COURSE AREA	Object Outco PEO	ives & omes PO,	Ins hou L	truct irs/w T	ion eek P	edits	M CIA	laximum ESE	n Marks TOTAL		
COURSE CODE	COURSE TITLE	COURSE AREA	Object Outco PEO	ives & omes PO, PSO	Ins hou L	truct irs/w T	ion eek P	Credits	M CIA	laximum ESE	n Marks TOTAL		
COURSE CODE	COURSE TITLE	COURSE AREA	Object Outco PEO	ives & omes PO, PSO	Ins hou L	truct irs/w T	ion eek P	Credits	M CIA 40	Iaximum ESE 60	n Marks TOTAL 100		
COURSE CODE 19BECS201	COURSE TITLE Probability and	COURSE AREA	Object Outco PEO	ives & omes PO, PSO a,h,i,	Ins hou L	truct irs/w T	ion eek P	+ Credits	M CIA 40 40	ESE 60 60	<ul> <li>Marks</li> <li>TOTAL</li> <li>100</li> </ul>		
COURSE CODE	COURSE TITLE COURSE TITLE Probability and Statistics	COURSE AREA BS	Object Outco PEO	ives & omes PO, PSO a,h,i, j	Ins hou L	truct rs/w T	ion eek P	+	M CIA 40 40	<b>ESE</b> 60 60	n Marks TOTAL 100 100		
COURSE CODE 19BECS201 19BECS241	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I	COURSE AREA BS	Object Outco PEO I,III	ives & omes PO, PSO a,h,i, j a,b,c	Ins hou L 3 3	truct urs/w T 1	ion eek P 0 3	6 Credits	M CIA 40 40	<b>ESE</b> 60 60 60	Marks           TOTAL           100           100           100		
COURSE CODE 19BECS201 19BECS241	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I	COURSE AREA BS	Object Outco PEO I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f	Ins hou L 3 3	truct urs/w T 1	ion eek P 0 3	9 Credits	M CIA 40 40	ESE 60 60 60	Marks           TOTAL           100           100           100		
COURSE CODE 19BECS201 19BECS241	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I	COURSE AREA BS BS	Object Outco PEO I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k	Ins hou L 3 3	truct urs/w T 1 1	ion eek P 0 3	9 Credits	M CIA 40 40	ESE 60 60 60	Marks           TOTAL           100           100           100		
COURSE CODE	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I Basic Electrical	COURSE AREA BS BS	Object Outco PEO I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k	Ins hou L 3 3	truct Irs/w T 1 1	ion eek P 0 3 2	Credits	M CIA 40 40 40	ESE           60           60           60           60           60           60           60	Marks           TOTAL           100           100           100           100		
COURSE CODE 19BECS201 19BECS241 19BECS242	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I Basic Electrical Engineering	COURSE AREA BS BS ES	Object Outco PEO I,III I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k j,l	Ins hou L 3 3	truct urs/w T 1 1 1	ion eek P 0 3 2	Credits	M CIA 40 40 40	ESE           60           60           60           60           60           60	Marks           TOTAL           100           100           100           100		
COURSE CODE 19BECS201 19BECS241 19BECS242 19BECS211	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I Basic Electrical Engineering Workshop/	COURSE AREA BS BS ES	Object Outco PEO I,III I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k j,l	Ins hou L 3 3 3	truct irs/w T 1 1 1 0	ion eek P 0 3 2 4	Credits	M CIA 40 40 40 40	ESE           60           60           60           60           60           60           60           60	Marks           TOTAL           100           100           100           100           100           100		
COURSE CODE 19BECS201 19BECS241 19BECS242 19BECS211	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I Basic Electrical Engineering Workshop/ Manufacturing	COURSE AREA BS BS ES	Object Outco PEO I,III I,III I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k j,l	Ins hou I 3 3 1	truct urs/w T 1 1 1 0	ion eek P 0 3 2 4	Credits	M CIA 40 40 40 40	ESE           60           60           60           60           60           60           60           60	Marks           TOTAL           100           100           100           100           100           100		
COURSE CODE 19BECS201 19BECS241 19BECS242 19BECS211	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I Basic Electrical Engineering Workshop/ Manufacturing Practices	COURSE AREA BS BS ES ES	Object Outco PEO I,III I,III I,III I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k j,l c,i,j	Ins hou L 3 3 3	truct Irs/w T 1 1 1 0	ion eek P 0 3 2 4	4 6 5 3	M CIA 40 40 40 40	ESE           60           60           60           60           60           60           60	Marks         TOTAL         100         100         100         100         100         100         100		
COURSE CODE 19BECS201 19BECS241 19BECS242 19BECS211 19BECS212	COURSE TITLE COURSE TITLE Probability and Statistics Chemistry-I Basic Electrical Engineering Workshop/ Manufacturing Practices Engineering	COURSE AREA BS BS ES ES	Object Outco PEO I,III I,III I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k j,l c,i,j	Ins hou L 3 3 1 1	truct urs/w T 1 1 1 0 0	ion eek P 0 3 2 4 4	Credits	M CIA 40 40 40 40 40 40	ESE           60           60           60           60           60           60           60           60           60           60           60           60           60           60           60           60	Marks           TOTAL           100           100           100           100           100           100           100		
COURSE CODE 19BECS201 19BECS241 19BECS242 19BECS211 19BECS212	COURSE TITLE Probability and Statistics Chemistry-I Basic Electrical Engineering Workshop/ Manufacturing Practices Engineering Graphics& Design	COURSE AREA BS BS ES ES ES ES	Object Outco PEO I,III I,III I,III I,III	ives & omes PO, PSO a,h,i, j a,b,c ,d,e,f ,i,j,k j,l c,i,j g,j,k	Ins hou L 3 3 3 1 1	truct Irs/w T 1 1 1 0 0	ion eek P 0 3 2 4 4	Credits	M CIA 40 40 40 40 40 40	ESE           60           60           60           60           60           60           60           60           60           60           60           60	Marks           TOTAL           100           100           100           100           100           100           100		

SEMESTER -III													
COURSE CODE	COURSE TITLE	COURObjectives &SEOutcomesAREAPEOPO PSO		Ins hou	truct irs/w	ion eek	dits	Maximum Marks					
		AREA	PEO	PO,PSO	L	Т	P	Cre	CIA	ESE	TOTAL		
									40	60	100		
19BECS301	Mathematics-III (Differential Calculus)	BS	Ι	a,b,c,d,f	3	1	0	4	40	60	100		
19BECS302	Environmental Studies	HS	II	f,g,h	3	0	0	3	40	60	100		
19BECS311	ITWorkshop (SCILAB Programs)	PC	Ι	a,b,c,d,e	1	0	4	3	40	60	100		
19BECS341	Analog Electronic Circuits	ES	Ι	a,b,c	3	0	4	5	40	60	100		
19BECS342	Datastructure& Algorithms	PC	I,III	a,b,c,d,m 1	3	0	4	5	40	60	100		
19BECS343	Digital Electronics	PC	Ι	a,b,c	3	0	4	5	40	60	100		
19BECS351	PC hardware Assembly and Troubleshooting	MC	Ι	a,b,e,m2	1	1	0	0	100	-	100		
				TOTAL	17	2	16	25	340	360	700		
						1							

SEMESTER –IV													
COURSE CODE	COURSE TITLE	COURS E	COURSObjectives &EOutcomesAREAPEOPO P			truct 1rs/w	ion eek	lits	Ma	iximum	Marks		
		AREA	PEO	PO,P	L	Τ	Р	rec	CIA	ESE	TOTAL		
				SO				С	40	60	100		
19BECS401	DiscreteMathemat ics	PC	Ι	a,b,c,f	3	1	0	4	40	60	100		
19BECS402	Organizational Behavior	HS	II	f,h,I,g	3	0	0	3	40	60	100		
19BECS441	ComputerOrganiz ation &Architecture	ES	Ι	a,b,c	3	0	4	5	40	60	100		
19BECS442	Operating Systems	PC	I,III	a,b,c,d ,e,f,l, m1	3	0	4	5	40	60	100		
19BECS443	DesignandAnalysi s ofAlgorithms	PC	I,III	a,b,c,d ,f,m1	3	0	4	5	40	60	100		
19BECS451	Mobile Application Development	MC	Ι	a,b,c,d ,e,f,m 2	0	1	1	0	100	-	100		
			,	ГОТАL	15	2	13	22	300	300	600		

	SEMESTER –V												
COURSE	COURSE TITLE	COUR	Object	tives &	Ins	truc	tion		Μ	aximum	Marks		
CODE		SE	Outo	omes	hou	ırs/v	veek	lits			-		
		AREA	PEO	PO,P	L	Т	Р	rec	CIA	ESE	TOTAL		
				SO				$\circ$	40	60	100		
19BECS501	Signals and Systems	ES	I	abc	3	0	0	3	40	60	100		
	8		1	d	5		Ŭ	5					
19BECS502	Formall anguage&	PC	T	aha	3	Δ	0	3	40	60	100		
17020002	AutomataTheory	10	1	a, 0, c, d f m	5	U	U	5			100		
	1 1000 11100 11001			u,1,111									
100502		IIC		1	-	0	0	-	40	(0)	100		
19BECS503	Professional Ethics	HS	11,111	a,f,g,	3	0	0	3	40	60	100		
				h,I,j,									
				k,1									
19BECS541	Database	PC	Ι	a,b,e,	3	0	4	5	40	60	100		
	ManagementS yste			m1									
	ms												
19BECS542	ObjectOriented	PC	Ι	a,b,c,	3	0	4	5	40	60	100		
	Programming			d,f,k,									
				m1									
19BECSExx	Elective-I	PE			3	0	0	3	40	60	100		
19BECS551	In plant Training	MC	IIII	abc	_	_	_	0	100	-	100		
			-,	def				Ŭ					
				a, c, I,									
				g,11,1,									
				J,K,I,									
			7		10	•	0	22	240	260	700		
			I Semes	TFD V	10 T	U	0	22	340	300	700		
COURSE	COURSE TITLE	COUR	Object	tives &	1 Ins	truc	tion		M	avimum	Marks		
CODE	COURSE IIILE	SE	Objec	comes	hou	irs/v	veek	lits					
CODL		AREA	PEO	PO,P	L	Τ	Р	red	CIA	ESE	TOTAL		
				SÓ				C	40	60	100		
19BECS641	Complier	PC	Ι	a,b,c,	3	0	4	5	40	60	100		
	Design			d,m1									
19BECS642	Computer	PC	I,III	a,b,c,	3	0	4	5	40	60	100		
	Networks			d,e,m									
				1									
19BECSExx	Elective-II	PE			3	0	0	3	40	60	100		
19BECSExx	Elective-III	PE			3	0	0	3	40	60	100		
19BECSOE	OpenElective-I	OE			3	0	0	3	40	60	100		
	(Humanities)	M	1 111	_ 1	0	0	1	0	100		100		
19BEC2021	CCNA- Introduction	мс	1,111	a,b,c,	0	0	1	0	100	-	100		
	to inetworks			$e, 111, m^2$									
19BFC\$601	Droject 1	<b>Ρ</b> W/	TITI	0 h c	0	0	6	3	40	60	100		
176105071	110,000-1	T 44	1,111				0	5	10	00	100		
				a,e,f,									
				g,h,l,									

				i k l							
			T	DTAL	15	0	15	22	340	360	700
		S	SEMEST	ER –V	II	v	10				
COURSE	COURSE TITLE	COUR	Objecti	ves &	Ins	trua	tion		Μ	aximum	Marks
CODE	COCKEL IIILL	SE	Outco	mes	hou	irs/v	veek	ts	1.1		
0022		AREA	PEO	PO,	L	Т	Р	edi	CIA	ESE	TOTAL
				PS				$\mathbf{C}$	40	60	100
				0							
19BECSExx	Elective-IV	PE			3	0	0	3	40	60	100
19BECSExx	Elective-V	PE			3	0	0	3	40	60	100
19BECSOE	OpenElective-II	OE			3	0	0	3	40	60	100
XX	<b></b>						-		40	60	100
19BECC/04	Biology	BS	•	a,f	2	1	0	3	40	60	100
19BECS751	CCNA –Routing and	MC	1,111	a,b,	0	0	I	0	100	0	100
	Switching Essentials			c,e,							
100500701		DIV		ml	0	0	10		00	120	200
19BECS/91	Project-II	PW	1,111	a,b,	0	0	12	6	80	120	200
				c,d,							
				e,f,							
				g,h,							
				Li.							
				k 1							
				m2							
			т		11	1	12	10	340	360	700
		S	TT FMFSTI	JIAL FD VI		I	13	10	540	500	700
COURSE	COURSE TITLE		Ohiecti	ves &	Ins	true	tion		Μ	aximum	Marks
CODE	COURSE IIILE	SE	Outco	mes	hou	irs/v	rs/week		111		
CODE		AREA	PEO	PO,	L	Τ	Р	edi	CIA	ESE	TOTAL
				PS				CĽ			
				0							
19BECSExx	Elective-VI	PE			3	0	0	3	40	60	100
19BECSOE	OpenElective-III	OE			3	0	0	3	40	60	100
XX											
19BECSOE	OpenElective-IV	OE			3	0	0	3	40	60	100
XX 10DECS201	Ducie of III	DW	TTT	1	0	0	10	6	80	120	200
19DEC 3091	Project-III	PW	1,111	a,b,	0	0	12	0	80	120	200
				c,d,							
				e,f,							
				g,h							
				,I,j,							
				k.1.							
				m?							
		<u>I</u>	Т	OTAL	9	0	12	15	200	300	500

**Total Credits: 162** 

LIST OF PROFESSIONAL	LECTIVES
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Professional Electives for semester-V										
COURSE	COURSE TITLE	Obje	ctives &	In	stru	cti		Max	imum N	Aarks
CODE		Out	comes		on					
				ho	urs/	we	its			
				_	ek	_	.pə.			
		PEO	PO,PSO	L	Т	P	Cr	CIA	ESE	TOT
								40	60	AL 100
					0	0		40	00	100
19BEC\$5E01	Advanced Data		a,b,c,d	3	0	0	3	40	60	100
1)DLC55L01	Advanced Computer	I	ahc	3	0	0	3	40	60	100
19BECS5E02	Architecture	1	a,0,0	5	U	Ū	5	40	00	100
19BECS5E03	Design Patterns	Ι	a,b,c	3	0	0	3	40	60	100
19BECS5E04	Advanced Databases	I,III	a,b,e	3	0	0	3	40	60	100
	Professional	Elective	s for semes	ter-	V				1	1
	Advanced Operating	Ι	a,b,c	3	0	0	3	40	60	100
19BECS5E05	Systems									
19BECS5E06	C# and.NET	Ι	a,b,c,d,e	3	0	0	3	40	60	100
19BECS5E07	Servlets and JSP	Ι	a,b,c,d,e	3	0	0	3	40	60	100
19BECS5E08	User Interface Design	Ι	a,b,c,f,j	3	0	0	3	40	60	100
	Professional	Electives	for semest	er-	VI					
19BECS6E01	Internet of Things	Ι	a,b,c,e	3	0	0	3	40	60	100
	Network Routing	Ι	a,b,c	3	0	0	3	40	60	100
19BECS6E02	Algorithms									
19BECS6E03	Distributed Computing	Ι	a,b,c,d	3	0	0	3	40	60	100
		I,III	a,b,c,d,e	3	0	0	3	40	60	100
19BECS6E04	Video Analytics									
	Professional	Electives	for semest	er-	VI					
19BECS6E05	Wireless Sensor Networks	Ι	a,b,c	3	0	0	3	40	60	100
	Service Oriented	Ι	a,b,c,d	3	0	0	3	40	60	100
19BECS6E06	Architecture									
	Software Project	I,III	a,b,c,d,j,	3	0	0	3	40	60	100
19BECS6E07	Management	_	k							
10BECS6E08	TCP/IP Design and	I	a,b,c	3	0	0	3	40	60	100
1)DEC50E00	Professional	Floctivos	for somest	or_V	711					
	1 Toressionar		ab c de	3	0	0	3	40	60	100
19BECS7E01	Managing Big Data	1,111	a,0,0,0,0,0	5	U	Ū	5	40	00	100
19BECS7E02	Ad Hoc Networks	Ι	a.b.c.d	3	0	0	3	40	60	100
19BECS7E03	Cloud Computing	Ι	a.b.c	3	0	0	3	40	60	100
19BECS7E04	Information Security	Ι	a.b.c	3	0	0	3	40	60	100
19BECS7E05	Devops	I.III	a.b.c.d.e	3	0	0	3	40	60	100
	Professional I	Electives	for semeste	er-V	III		1			
19BECS8E01	Semantic Web	Ι	a,b,c.d	3	0	0	3	40	60	100
19BECS8E02	E-Commerce	Ι	F	3	0	0	3	40	60	100
	Human Computer	I.III	a,b,c,d.e	3	0	0	3	40	60	100
19BECS8E03	Interaction	,								
	Natural Language	Ι	a,b,c,d	3	0	0	3	40	60	100
19BECS8E04	Processing									

19BECS8E05	Digital Marketing	Ι	a,b,c,d,e	3	0	0	3	40	60	100
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List of Open Electives offered by other departments											
COURSE	COURSE TITLE	Obje	ctives &	In	stru	cti		Max	kimum N	<b>Aarks</b>	
CODE		Out	comes		on						
				ho	urs/ ek	we	dits				
		PEO	PO,PSO	L	T	P	Cree	CIA	ESE	ТОТ	
			,							AL	
								40	60	100	
	Scie	nce & Hu	manities								
19BESHOE01	Solid Waste	I, III	a,b,c,g	3	0	0	3	40	60	100	
	Management										
		I	a,b,c,g,h	3	0	0	3	40	60	100	
19BESHOE02	Green Chemistry	T TT TTT	,]	2	•	•	2	40		100	
10BESHOE03	Applied	1,11,111	a,b,c,	3	U	U	3	40	60	100	
1)DESHOE05		I.II	a.b.c.d.g	3	0	0	3	40	60	100	
19BESHOE04	Industrial Chemistry	_,	,h,j		÷		-				
19BESHOE05	Technical Writing	Ι	a,b,d	3	0	0	3	40	60	100	
19BESHOE06	Geophysics	Ι	a,b,c,	3	0	0	3	40	60	100	
17225110200		I,II	a,b,c,d,g	3	0	0	3	40	60	100	
19BESHOE07	Engineering Acoustics		,h,j								
	Industrial Mathematics	I,II,III	a,b,d,g,h	3	0	0	3	40	60	100	
19BESHOE08	<u>– I</u>						-	10		100	
	Industrial Mathematics	1,11	a,c,d,h,j	3	0	0	3	40	60	100	
19DESH0E09		I	ahc	3	0	0	3	40	60	100	
19BESHOE10	Fuzzy Mathematics	I	a, b, c	3	0	0	3	40	60	100	
19BESHOEII	Mathematical Physics	1 1 II	a,g,n,j	3	0	0	3	40	00 60	100	
19BESHOE12	Linear Algebra	1,11	a,0, g,11,J	3	U	U	3	40	00	100	
	Bio M	ledical Er	ngineering					40	60	100	
19BEBMEOE01	Robotics in medicine	1,11,111	a,b,c	3	0	0	3	40	60	100	
19BEBMEOE02	Virtual Reality and	1,11	a,b,d,g,h	3	0	0	3	40	60	100	
	Augmented Reality	т	1 1 '	2	0	•	2	40	(0)	100	
19BEBMEOE03	Artificial organs and	1	a,b,g,h,j	3	U	U	3	40	60	100	
	Implants	• 15	•••								
		mical Eng	gineering	2	•	•	2	40	(0)	100	
19BTCEOE01	Chemical Industrias	1,11,111	a,b,c	3	U	U	3	40	60	100	
	Eartilizar Taabaalagu	TII	adahi	3	0	0	3	40	60	100	
19DICEUEU2	Industrial Wasternator	1,11 T		2	0	0	2	-+V 	20	100	
19BTCEOE03	muusinai wasiewater Treatment	1	a,0,0,0	3	U	U	3	40	00	100	
	Solid And Hazardous	T	ababi	2	0	0	2	40	60	100	
19BTCEOE04 Waste Management		5		U U	5	-10	00	100			
	Electrical &	L z Electror	L nics Engine	erir	ן זס	I			<u> </u>	I	
	Electric Hybrid Vahialas	Ι	a.b.c	3	- <u>s</u>	0	3	40	60	100	
TYDEEEUEUI	Electric rigoria venicles	1		1	Í	<u> </u>	-		~ ~		

	Energy Management &	Ι	a,b,c,h,j	3	0	0	3	40	60	100
19BEEEOE02	Energy Auditing									100
19BEEEOE03	Programmable Logic Controller	I,II	a,b,g,h,j	3	0	0	3	40	60	100
	Renewable Energy	I,II,III	a,b,c,d,g	3	0	0	3	40	60	100
19BEEEOE04	Resources		,h,j							
	Electronics & (	Communi	cation Eng	ine	erin	g				
19BEECOE01	Real Time Embedded Systems	I,II	a,b,c,d	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	Ι	a,b,c,,j	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	Ι	a,b,c,d	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	I,II	a,b,d	3	0	0	3	40	60	100
19BEECOE05	Principles of Modern Communication System	I,II	a,d,g,h,j	3	0	0	3	40	60	100
	Fo	od Techi	nology							
19BTFTOE01	Processing Of Food Materials	I, III	a,b,c,d	3	0	0	3	40	60	100
		Ι	a,b,c,g,h	3	0	0	3	40	60	100
19BTFTOE02	Nutrition and Dietetics		,j							
19BTFTOE03	Ready to Eat	I,II,III	a,b,c,d	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste and Byproducts Utilization	I,II	a,b,c,g,h	3	0	0	3	40	60	100
	В	io Techn	ology				-	-	-	
19BTBTOE01	Bioreactor Design	I,II,III	a,b,c,	3	0	0	3	40	60	100
1000000000	Food Processing and	I,III	a,b,d	3	0	0	3	40	60	100
19BTBTOE02	Preservation	T	a <b>b</b> a	2	•	•	2	40	(0	100
19BTBTOE03	Basic Bioinformatics	I		3	U	U	3	40	00	100
19BTBTOE04	Fundamentals of Nano Biotechnology	I	a,b,c,d,g ,h,j	3	0	0	3	40	60	100
	Mech	anical En	gineering			-	-			
19BEMEOE01	Computer Aided Design	Ι	a,b,c,d	3	0	0	3	40	60	100
19BEMEOE02	Industrial Safety and Environment	Ι	a,b,d,g	3	0	0	3	40	60	100
19BEMEOE03	Transport phenomena	I, III	a,b,c,d	3	0	0	3	40	60	100
	Introduction to	I,II,III	a,b,c,d,g	3	0	0	3	40	60	100
19BEMEOE04	Biomechanics		,h,j							
	Autor	nobile En	gineering							
19BEAEOE01	Automobile Engineering	I, III	a,b,d,g	3	0	0	3	40	60	100
19BEAEOE02	Basics of two and three wheelers	I,II	a,b,d,	3	0	0	3	40	60	100
19BEAEOE03	Automobile Maintenance	Ι	a,b,c	3	0	0	3	40	60	100
19BEAEOE04	Introduction to Modern Vehicle Technology	I,II,III	a,b,c	3	0	0	3	40	60	100
19BEAEOE05	Commercial Fleet Operation	I,III	a,b,g,h,j	3	0	0	3	40	60	100
	Ci	vil Engin	eering							

19BECEOE01	Housing, Plan and Management	I,III	a,b,c,d	3	0	0	3	40	60	100
19BECEOE02	Building Services	I,III	a,b,c,d	3	0	0	3	40	60	100
19BECEOE03	Repair And Rehabilitation Of Structures	I,II	a,b,d	3	0	0	3	40	60	100
19BECEOE04	Computer-Aided Civil Engineering Drawing	Ι	a,b,c	3	0	0	3	40	60	100

	Open Elective Courses Offered to other Departments											
COURSE CODE	COURSE TITLE	Obj Oı	In ho	stru on urs/ ek	cti we	dits	Max	imum N	<b>Iarks</b>			
		PEO	PO,PSO	L	T	P	Cre	CIA	ESE	TOT AL		
								40	60	100		
		I,III	a,b,c,g,h,m	3	0	0	3	40	60	100		
19BECSOE01	Internet Programming		1									
19BECSOE02	Multimedia and Animation	I,III	a,b,c,g,h,j, m2	3	0	0	3	40	60	100		
	PC hardware and	Ι	a,b,c,d	3	0	0	3	40	60	100		
19BECSOE03	Troubleshooting		,j,m1									
19BECSOE04	Java Programming	I,II a,b,c,d,m1,		3	0	0	3	40	60	100		
19BECSOE05	Machine Learning	I,II	a,b,g,h,,m2	3	0	0	3	40	60	100		

#### i) **COURSE AREA**

- 1. **BS-Basic Sciences**
- 2. **ES-Engineering Sciences**
- 3. HS-Humanities and Sciences
- 4. **PC-Professional Course**
- 5. PE- Professional Elective
- **OE-** Open Elective 6.
- 7.
- PW-Project Work MC-Mandatory Course 8.
- **PEOs Programme Educational Objectives.** ii)
- PO-Programme Outcomes. iii)
- **PSO-Programme Specific Outcomes** iv)



#### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University Established Under Section 3 of UGC Act 1956) Eachanari, Coimbatore-641 021. INDIA FACULTY OF ENGINEERING

#### DEGREE OF BACHELOR OF ENGINEERING / TECHNOLOGY

#### **REGULAR PROGRAMME**

#### PROGRAMME EDUCATIONAL OBJECTIVES(PEOs):

- 1. To impart skill based training to apply engineering practices to design, implement model and analyze real time problems and interpret the result.
- 2. To impart students with strong fundamental knowledge in the field of Electronics and Communication Engineering to meet the emerging industrial needs and to promote Research
- 3. To build and lead cross-functional teams upholding the professional responsibilities & ethical values.

#### PROGRAMME OUTCOMES (POs)

- a) Apply knowledge of mathematics, basic sciences, engineering fundamentals and specialization to solve engineering problems
- b) Identify, design, formulate analyze & interpret data
- c) Design an integrated system with due considerations to public health, safely, societal and environment
- d) Investigate, formulate and solve industrial engineering problems
- e) Acquire skills to use modern engineering tools and software to solve complex engineering problems
- f) Apply societal and cultural issues in professional engineering practice.
- g) Understand the impact of engineering solutions in global and societal context
- h) Function as a member of multidisciplinary team
- i) Communicate effectively both orally and in writing
- j) Recognize the need for ability to engage in lifelong learning
- k) Understand the project management and finance

1) Acquire knowledge to design, develop, predict and model an electronic system and also to implement communication protocols

#### PROGRAMME SPECIFIC OUTCOMES(PSOs)

- m) Be acquainted with the continuous learning in the field of Embedded systems, VLSI design, Communication and Signal Processing and hold expertise in the modern tools for quenching the techno-thirsty society.
- n) Incorporate the socio-responsible electronics and communication engineer with leadership, teamwork skills and exhibit a commitment to the lifelong learning

#### **PEO-PO** mapping

	POa	POb	POc	POd	POe	POf	POg	POh	POi	POj	POk	POl
PEO1	~	~	~	~	~					~		
PEO2	~	~	~	~		~	~	~				~
PEO3			~	~	~				✓		✓	✓

#### **PEO-PSO** mapping

	PSOm	PSOn
PEO1	$\checkmark$	✓
PEO2	✓	$\checkmark$
PEO3	✓	

	SEMESTER I													
		Obj	ectives &	Ins	struct	ion	S	Max	imum N	Iarks				
Course	Course Title	0	utcomes	hou	urs/w	eek	edit	CIA	ECE	Tatal				
Code		PEO	РО	L	Т	Р	Cr	<b>CIA</b> 40	ESE 60	10tai 100				
19BEEC101	Mathematics-I	13	aegik	3	1	0	4	40	60	100				
TJBLLCIOI	Semiconductor	1,5	a,c,g,j,k	5	1	0	-	40	00	100				
19BEEC142	Physics	1,3	a,0,0,e, <u>g</u> ,j, k,l	3	1	3	5	40	60	100				
19BEEC103	English	2,3	e,f,g,i	2	0	2	3	40	60	100				
19BEEC144	Programming For Problem Solving	2	a,b,j	3	0	4	5	40	60	100				
19BEEC155	Yoga	3	h,j	1	0	0	0	100	-	100				
	TOTAL	•		12	2	9	17	260	240	500				
		5	SEMESTER	II										
		Obj	Ins	struct	ion		Maximum Marks							
Course	Course Title	O	hours/week			dits								
Code	Course The	PEO	РО	L	Т	Р	Cre	CIA	ESE	Total				
								40	60	100				
19BEEC201	Mathematics-II	1,3	a,e,g,j,k	3	1	0	4	40	60	100				
19BEEC242	Chemistry-I	1,3	a,b,d,e,g,j	3	1	3	6	40	60	100				
19BEEC243	Basic Electrical Engineering	1,2	a,b,e,j	3	1	2	5	40	60	100				
19BEEC204	Environmental Studies	1,2,5	b,c,e,j	3	0	0	3	40	60	100				
	Workshop/													
19BEEC215	Manufacturing	1,2	a,b,e,j	1	0	4	3	40	60	100				
	Fractices													
19BEEC216	& Design	1,2	a,b,e,j	1	0	4	3	40	60	100				
	TOTAL		14	3	13	24	240	360	600					

	SEMESTER III													
Course	~ ~ ~ ~	Obj Ot	ectives & itcomes	Ins hou	struct urs/w	ion eek	lits	Maximum Marks						
Code	Course Title	DEO	DO	т	т	р	Crec	CIA	ESE	Total				
		FEU	ru	L	I	r	Ŭ	40	60	100				
19BEEC301	Linear Algebra and Partial Differential Equations	1,3	a,e,g,j,k	3	1	0	4	40	60	100				
19BEEC302	Electronic Devices	1,2	a,c,d,j,l,m	3	0	0	3	40	60	100				
19BEEC303	Digital system design	1,2	a,b,c,e,l,m	3	0	0	3	40	60	100				
19BEEC304	C++ and data structures	1,3	b,c,h,l	3	0	0	3	40	60	100				
19BEEC305	Signals and systems	1,2	b,c,l,m	3	0	0	3	40	60	100				
19BEEC306	Network Theory	1,2	b,l,m	3	0	0	3	40	60	100				
19BEEC311	C++ and data structures Laboratory	1,3	b,c,e,h,l	0	0	2	1	40	60	100				
19BEEC312	Electronic Devices Laboratory	1,2	b,c,e,d,j,l	0	0	2	1	40	60	100				
19BEEC313	Digital system design Laboratory	1,2	b,c,e,l,m	0	0	2	1	40	60	100				
19BEEC351	PCB Designing	1,2	e,l,m	1	0	0	-	100	-	100				
	TOTAL		19	1	6	22	460	540	1000					

		S	SEMESTER	IV						
Course		Obj Ot	ectives & itcomes	Ins hou	struct urs/w	ion eek	lits	Max	imum N	larks
Code	Course Title	PEO	PO	T.	т	р	Cred	CIA	ESE	Total
		1L0	10	L	•		_	40	60	100
19BEEC401	Material Sciences	1,2	a,b,d,,g,j,l	3	0	0	3	40	60	100
19BEEC402	Analog circuits	1,2	a,b,c,l	3	0	0	3	40	60	100
19BEEC403	Analog and digital Communication	1,2	a,d,l	3	0	0	3	40	60	100
19BEEC404	Microcontroller	1,2	b,c,d,m	3	0	0	3	40	60	100
19BEEC405	Economics for Engineers	3	d,h,k	3	0	0	3	40	60	100
19BEEC411	Microcontroller Laboratory	1,2	b,c,d,e,m	0	0	2	1	40	60	100
19BEEC412	Analog circuits Laboratory	1,2	a,b,c,e,l,m	0	0	2	1	40	60	100
19BEEC413	Analog and digital Communication Laboratory	1,2	a,d,e,l,m	0	0	2	1	40	60	100
19BEEC451	Constitution of India	3	g	1	0	0	-	100	-	100
	TOTAL			16	0	6	18	420	480	900

		S	SEMESTER	V						
Course		Obje Ou	ectives & Itcomes	Ins hou	struct 1rs/w	ion eek	lits	Max	imum N	farks
Code	Course Title	PEO	РО	L	Т	Р	Cred	CIA	ESE	Total
								40	60	100
19BEEC501	Probability and Random Processes	1,3	a,e,g,j,k	3	1	0	4	40	60	100
19BEEC502	Computer Architecture	1,2,3	h,l,m	3	0	0	3	40	60	100
19BEEC503	Digital Signal Processing	1,2	a,b,c,l,m	3	0	0	3	40	60	100
19BEEC504	Electromagnetic waves	1,2	a,d,l,m	3	0	0	3	40	60	100
19BESHOE**/ 19BECSOE**/ 19BEEEOE**/ 19BTBTOE**/ 19BEMEOE**/ 19BEAEOE**/ 19BECEOE**/ 19BTCEOE**/ 19BTFTOE**/ 19BEBMEOE**	Open Elective-I	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
19BEEC5E**	Professional Elective-I	1,2	a,c,h,l,m	3	0	0	3	40	60	100
19BEEC511	Digital Signal Processing Laboratory	1,2	a,b,c,e,l,m	0	0	2	1	40	60	100
19BEEC512	Antenna Laboratory	1,2	a,b,c,e,l,m	0	0	2	1	40	60	100
19BEEC551	In plant Training	-	d,h,i,l,n	-	_	-	-	100	-	100
	TOTAL			18	1	4	21	420	480	900

		SI	EMESTER	VI						
Course		Obje Ou	ectives & tcomes	Ins hou	truct irs/w	ion eek	lits	Max	imum N	larks
Code	Course Title	PFO	PO	T.	т	Р	Cred	CIA	ESE	Total
		TEO	10	L	-	•		40	60	100
19BEEC601	Total Quality management	3	d,e	3	0	0	3	40	60	100
19BEEC602	Control systems	1,2	c,l,m	3	0	0	3	40	60	100
19BEEC603	Computer Networks	1,2,3	c,h,l,m	3	0	0	3	40	60	100
19BEEC6E**	Professional Elective-II	1,2	a,c,h,l,m	3	0	0	3	40	60	100
19BESHOE**/ 19BECSOE**/ 19BEEEOE**/ 19BTBTOE**/ 19BEMEOE**/ 19BEAEOE**/ 19BECEOE**/ 19BTCEOE**/ 19BTFTOE**/ 19BEBMEOE**	Open Elective-II	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
19BEEC611	Computer Networks Laboratory	1,2,3	c,e,h,l,m	0	0	4	2	40	60	100
19BEEC612	Electronic Measurement Laboratory	1,2	c,e,l	0	0	2	1	40	60	100
19BEEC613	Mini Project	1,2,3	g,h,l,m,n	0	0	2	1	40	60	100
19BEEC651	Soft Skills	3	i,j	1	-	-	-	100	-	100
	TOTAL				0	8	19	420	480	900

		S	EMESTER	VII						
Course		Obje Ou	ectives & tcomes	Ins hou	truct irs/w	ion eek	lits	Max	imum N	larks
Code	Course Title	РЕО	РО	L	Т	Р	Cred	CIA 40	ESE 60	Total 100
19BEEC701	Professional Ethics	3	f,g	3	0	0	3	40	60	100
19BEEC7E**	Professional Elective-III	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E**	Professional Elective-IV	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E**	Professional Elective-V		a,c,l,m	3	0	0	3	40	60	100
19BESHOE**/ 19BECSOE**/ 19BEEEOE**/ 19BTBTOE**/ 19BEMEOE**/ 19BEAEOE**/ 19BECEOE**/ 19BTCEOE**/ 19BTFTOE**/ 19BEBMEOE**	Open Elective-III	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
19BEEC791	Project Work- Phase I	1,2,3	c,l,m,n	0	0	10	5	100	-	100
19BEEC751	VLSI Design using Cadence tool	1,2	c,e,i,l,m	0	0	2	0	100	-	100
	TOTAL			15	0	12	20	400	300	700

		S	EMESTER	VII						
Course		Obje Ou	ectives & Itcomes	Ins hou	struct urs/w	ion eek	lits	Max	imum N	larks
Code	Course Title	DEO	DO	т	т	р	Cree	CIA	ESE	Total
		PEU	PO	L	1	r		40	60	100
19BESHOE**/ 19BECSOE**/ 19BEEEOE**/ 19BTBTOE**/ 19BEAEOE**/ 19BEAEOE**/ 19BECEOE**/ 19BTCEOE**/ 19BTFTOE**/	Open Elective-IV	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
19BESHOE**/ 19BECSOE**/ 19BEEEOE**/ 19BTBTOE**/ 19BEAEOE**/ 19BEAEOE**/ 19BECEOE**/ 19BTCEOE**/ 19BTFTOE**/ 19BEBMEOE**	Open Elective-V	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
19BEEC8E**	Professional Elective-VI	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E**	Professional Elective-VII	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC891	Project Work- Phase-II &Viva-Voce	1,2,3	c,l,m,n	0	0	18	9	120	180	300
	TOTAL			12	0	18	21	280	420	700

#### **PROFESSIONAL ELECTIVE LIST**

#### SEMESTER V-ELECTIVE I

		S	SEMESTER	V						
Course		Obje Ou	ectives & Itcomes	Ins ho	struct urs/w	ion eek	lits	Max	imum N	Iarks
Code	Course Title	PFO	PO	т	т	р	Cred	CIA	ESE	Total
		TEO	10	Ľ				40	60	100
19BEEC5E01	Biomedical Electronics	1,2,3	a,c,h,l,m	3	0	0	3	40	60	100
19BEEC5E02	Antennas and Wave Propagation	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC5E03	Information theory and coding	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC5E04	Sensors and Transducers	1,2	a,c,l,m	3	0	0	3	40	60	100
	TOTAL			12	0	0	12	160	240	400
SEMESTER	R VI -ELECTIVE II									
		S	EMESTER	VI						
		Obj	ectives &	Ins	struct	ion		Max	imum N	larks
Course	Course Title	Ou	itcomes	ho	urs/w	eek	edits			
Code		PEO	РО	L	Т	Р	Cré	CIA	ESE	Total
								40	60	100
19BEEC6E01	Power Electronics	1,2,3	a,c,h,l,m	3	0	0	3	40	60	100
19BEEC6E02	Introduction to MEMS	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC6E03	CMOS design	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC6E04	Nano Electronics	1,2	a,c,l,m	3	0	0	3	40	60	100
	TOTAL			12	0	0	12	160	240	400
SEMESTER	R VII - ELECTIVES	III,IV &	& V							

		S	EMESTER	VII						
Course Code		Obje Ou	ectives & atcomes	Ins hou	struct urs/w	ion eek	lits	Maximum Marks		
Code	Course little	PEO	PO	T.	т	Р	Cree	CIA	ESE	Total
		1 EO	10		-	•	-	40	60	100
19BEEC7E01	Satellite Communication	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E02	Embedded Systems	1,2	a,c,l,m	3	0	0	3	40	60	100

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19BEEC7E03	Microwave Theory and Techniques	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E04	VLSI Technology	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E05	Mixed Signal Design	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E06	Internet of Things	1,2,3	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E07	Artificial Neural Networks	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E08	Advanced Microprocessors	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E09	Digital Logic Design with PLDs and VHDL	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E10	Speech and Audio Processing	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E11	Mobile Communication and Networking	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC7E12	Digital Image and video processing	1,2	a,c,l,m	3	0	0	3	40	60	100
	TOTAL			36	0	0	36	480	720	1200
SEMESTEI	<b>R VIII - ELECTIVE</b>	VI, VII								

		S	EMESTER	VII						
Course		Obje Ou	ectives & tcomes	Ins hou	struct urs/w	ion eek	lits	Max	imum N	larks
Code	Course Title	PEO	РО	L	Т	Р	Cree	CIA 40	ESE 60	Total 100
19BEEC8E01	FPGA Design	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E02	Fiber optic communication	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E03	Wavelets	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E04	High Speed Networks	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E05	Error correcting codes	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E06	Adaptive signal processing	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E07	Wireless Sensor Networks	1,2	a,c,l,m	3	0	0	3	40	60	100
19BEEC8E08	ASIC Design	1,2	a,c,l,m	3	0	0	3	40	60	100
	TOTAL			24	0	0	24	320	480	800

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021

#### **OPEN ELECTIVE LIST**

#### SEMESTER V, VI, VII&VIII

		SEMES	TER V, VI,	VII&	VIII					
		Obje	ectives &	Ins	struct	ion	Š	Max	imum N	Iarks
Course	<b>Course Title</b>	Ou	tcomes	no	urs/w	еек	redit	CIA	ESE	Total
Couc		PEO	РО	L	Т	Р	C	40	60	100
	1	Scien	ice and Hum	anitie	es					
19BESHOE01	Solid Waste Management	1,3	a,c,d,g	3	0	0	3	40	60	100
19BESHOE02	Green Chemistry	1,3	c,e,h,j,l	3	0	0	3	40	60	100
19BESHOE03	Applied Electrochemistry	1,3	c,e,h,j,l	3	0	0	3	40	60	100
19BESHOE04	Industrial Chemistry	1,3	c,e,h,j,l	3	0	0	3	40	60	100
19BESHOE05	Technical Writing	1,3	i	3	0	0	3	40	60	100
19BESHOE06	Geophysics	1,3	a,b,d,e,g,j,	3	0	0	3	40	60	100
19BESHOE07	Engineering Acoustics	1,3	a,b,d,e,g,j,	3	0	0	3	40	60	100
19BESHOE08	Industrial Mathematics – I	1,3	a,e,g,j,k	3	0	0	3	40	60	100
19BESHOE09	Industrial Mathematics – II	1,3	a,e,g,j,k	3	0	0	3	40	60	100
19BESHOE10	Fuzzy Mathematics	1,3	a,e,g,j,k	3	0	0	3	40	60	100
19BESHOE11	Mathematical Physics	1,3	a,b,c,d,i,g	3	0	0	3	40	60	100
19BESHOE12	Linear Algebra	1,3	a,e,g,j,k	3	0	0	3	40	60	100
	Co	omputer	Science and	Engi	neerii	ng				
19BECSOE01	Internet Programming	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100
19BECSOE02	Multimedia and Animation	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100
19BECSOE03	PC Hardware and Trouble shooting	1,3	a,b,c,d,e	3	0	0	3	40	60	100
19BECSOE04	Java Programming	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100
19BECSOE05	Machine Learning	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100

Course Code		Obj Or	ectives & itcomes	Ins ho	struct urs/w	ion eek	ts	Max	imum N	Iarks
Code	Course Title			_		_	redi	CIA	ESE	Total
		PEO	PO	L	Т	Р	0	40	60	100
	Elec	trical ar	nd Electronic	s Eng	gineer	ring				
19BEEEOE01	Electric Hybrid Vehicles	1,3	a,b,c,d,e,l	3	0	0	3	40	60	100
19BEEEOE02	Energy Management and Energy Auditing	1,3	a,d,f,g,k	3	0	0	3	40	60	100
19BEEEOE03	Programmable Logic Controller	1,3	a,d,f,g	3	0	0	3	40	60	100
19BEEEOE04	Renewable Energy Resources	1,3	a,d,f,g,k	3	0	0	3	40	60	100
			Biotechnolog	gy						
19BTBTOE01	Bioreactor Design	1,3	a,b,c,d,e,g, j,l	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	1,3	a,b,c,d,e,g, j,l	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	1,3	a,b,c,d,e,g, j,l	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of Nanobiotechnology	1,3	a,b,c,d,e,g, j,l	3	0	0	3	40	60	100
		Mech	nanical Engir	neerin	ıg					
19BEMEOE01	Computer Aided design	1,3	a,b,c,d,e, m	3	0	0	3	40	60	100
19BEMEOE02	Industrial safety and Environment	1,3	b,c,d,g	3	0	0	3	40	60	100
19BEMEOE03	Transport Phenomena	1,3	b,c,d,g	3	0	0	3	40	60	100
19BEMEOE04	Introduction to biomechanics	1,3	b,c,d,g	3	0	0	3	40	60	100
		Auto	mobile Engir	neerir	ıg					
19BEAEOE01	Automobile Engineering	1,3	a,b,c,d	3	0	0	3	40	60	100
19BEAEOE02	Two and Three Wheeler Technology	1,3	a,b,c,d	3	0	0	3	40	60	100
19BEAEOE03	Vehicle Maintenance	1,3	a,b,c,d	3	0	0	3	40	60	100
19BEAEOE04	Modern Vehicle Technology	1,3	a,b,c,d	3	0	0	3	40	60	100
19BEAEOE05	Fleet Management	1,3	a,b,c,d	3	0	0	3	40	60	100

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021

Course Code 19BECEOE01		Objectives & Outcomes		Instruction hours/week		ion eek	lits	Max	imum N	larks
Code	Course Title	PEO	РО	L	Т	Р	Cred	CIA	ESE	Total
								40	60	100
		С	ivil Engineer	ring						
19BECEOE01	Housing, Plan and Management	1,3	a,b,c,d,e,f, g,h,j	3	0	0	3	40	60	100
19BECEOE02	Building Services	1,3	a,b,c,d,e,f, g,h,j	3	0	0	3	40	60	100
19BECEOE03	Repair and Rehabilitation Of Structures	1,3	a,b,c,d,e,f, g,h,j	3	0	0	3	40	60	100
19BECEOE04	Computer Aided Civil Engineering Drawing	1,3	a,b,c,d,e,f, g,h,j	3	0	0	3	40	60	100
		Che	mical Engine	eering	3					
19BTCEOE01	Energy Management in Chemical Industries	1,3	a,d,f,g,k	3	0	0	3	40	60	100
19BTCEOE02	Fertilizer Technology	1,3	c,g	3	0	0	3	40	60	100
19BTCEOE03	Industrial Wastewater Treatment	1,3	c,g	3	0	0	3	40	60	100
19BTCEOE04	Solid & Hazardous Waste Management	1,3	c,g	3	0	0	3	40	60	100
		F	ood Technol	ogy						
19BTFTOE01	Processing of Food Materials	1,3	a,b,c,d,e,g, j,l	3	0	0	3	40	60	100
19BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,d,e,g, j,l	3	0	0	3	40	60	100
19BTFTOE03	Ready to Eat Foods	1,3	a,b,c,d,e,g, j,l	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste and Byproducts Utilization	1,3	b,c.d,g	3	0	0	3	40	60	100
		Biom	edical Engin	eerin	g					
19BEBMEOE01	Robotics in Medicine	1,3	a,d,e,l,m	3	0	0	3	40	60	100
19BEBMEOE02	Virtual Reality and Augmented Reality	1,3	d,e,j,l,m	3	0	0	3	40	60	100
19BEBMEOE03	Artificial organs and Implants	1,3	c,l	3	0	0	3	40	60	100

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021

Course		Obje Ou	ectives & tcomes	Ins ho	struct urs/w	ion eek	lits	Maximum Marks		
Code	Course Title	PEO	PO	L	Т	D	Crec	CIA	ESE	Total
		TEO	10	L				40	60	100
Electronics and Communication Engineering										
19BEECOE01	Real Time Embedded Systems	1,2,3	a,b,c,d,e,j,l ,m	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	1,2,3	a,b,c,d,e,j,l ,m	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	1,2,3	a,b,c,d,e,j, l,m	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	1,2,3	a,b,c,d,e,j, l,m	3	0	0	3	40	60	100
19BEECOE05	Principles of Modern Communication System	1,2,3	a,b,c,d,e,j, l,m	3	0	0	3	40	60	100

#### COURSES OFFERED TO OTHER DEPARTMENTS

# B.E. ELECTRICAL AND ELECTRONICS ENGINEERING CURRICULUM 2019 (FULL TIME PROGRAMME)

## Department of Electrical and Electronics Engineering FACULTY OF ENGINEERING



### KARPAGAM ACADEMYOFHIGHER EDUCATION

(Deemed to be University)

(Established Under Section 3 of UGC Act, 1956)

Pollachi Main Road, EachanariPost, Coimbatore- 641021, India.

#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING FACULTY OF ENGINEERING UG PROGRAM (CBCS) – B.E –EEE (FULL TIME) (2019–2020 Batch and onwards)

SEMESTER I												
Course		Objectives & Outcomes		Instruction hours/week			n k	dits	Maximum Marks			
Code	Course Title	DEO	BO	т	т		D	Cree	CIA	ESE	Total	
		FEO	PO	L	I		r	0	40	60	100	
19BEEE101	Mathematics-I (Calculus and Differential Equations)	1,2	a,b,e,l	3	1		0	4	40	60	100	
19BEEE102	English	2	i,j,l	2	0		2	3	40	60	100	
19BEEE141	Waves, Optics and Introduction to Quantum Mechanics	1,2	a,g,j,k, l	3	1		3	5	40	60	100	
19BEEE142	Programming For Problem Solving (With C)	1	a,b,c,d ,e,l	3	0		4	5	40	60	100	
TOTAL					2	9	)	17	160	240	400	
		SEM	ESTER I	[								
		Obje	ectives &		Instr	ucti	ion	S	N	laximum	Marks	
Course	Course Title	Ou	Outcomes		hour	urs/wee		edit		EGE		
Code		PEO	РО	]	LT		Р	Cr		ESE	Total	
10000001	Mathamatica H			_	2	1	0	4	40	60	100	
19BEEE201	(Linear Algebra, Transform calculus and Numerical Method)	2	a,b,c,e,l		3	1	0	4	40	00	100	
19BEEE241	Chemistry-I	1,2	a,b,c,e,l		3	1	3	6	40	60	100	
19BEEE242	Basic Electrical Engineering	1,2	a,b,c,e,g ,l	3	3	1	2	5	40	60	100	
19BEEE211	Workshop/ Manufacturing Practices	1,2	a,c,d,e,f	;	1	0	4	3	40	60	100	
19BEEE212	Engineering Graphics& Design	1,2	c,d		1	0	4	3	40	60	100	
	·	•	TOTA	L 1	1	3	13	21	200	300	500	

	Name of the course		Objectives and out comes		iction h week	ours /	t(s)	Maximum Marks			
Course code			POs	L	Т	Р	Credi	CIA	ESE	Total	
		GE		TTT				40	60	100	
		SEMILSIER - III									
19BEEE301	Electrical Circuit Analysis	1	a,b,c,d, e,l	3	1	0	4	40	60	100	
19BEEE302	Analog Electronics	2	a,b,c,d, e,l	3	0	0	3	40	60	100	
19BEEE303	Electrical Machines – I	1	a,b,c,d, e,j	3	0	0	3	40	60	100	
19BEEE304	Electromagnetic Fields	1	a,b,c,d, e,j	3	1	0	4	40	60	100	
19BEEE305	Engineering Mechanics	2	a,c,d,f	3	1	0	4	40	60	100	
19BEEE311	Analog Electronics Laboratory	2	a,d,e,k,l	0	0	2	1	40	60	100	
19BEEE312	Electrical Machines Laboratory - I	1	a,d,e,k,l	0	0	2	1	40	60	100	
19BEEE351	NSS/NCC/PCB Design/Electricity Standards									0	
Semester Total				15	3	4	20	280	420	700	
		SE	MESTER	R – IV							
19BEEE401	Digital Electronics	2	a,d,e	3	0	0	3	40	60	100	
19BEEE402	Electrical Machines – II	1	a,b,c,d, e,g,l	3	0	0	3	40	60	100	
19BEEE403	Power Electronics	2	a,b,c,d, e,g	3	0	0	3	40	60	100	
19BEEE404	Signals and Systems	1	a,b,c,d, e,g,l	2	1	0	3	40	60	100	
19BEEE405	Mathematics – III (Probability and Statistics)	1	a,b ,d,i	3	1	0	4	40	60	100	
19BEEE406	Environmental Studies	1	a,c,e,f, g,h,l	2	1	0	3	40	60	100	
19BEEE411	Digital Electronics Laboratory	2	a,d,e,k, l	0	0	2	1	40	60	100	
19BEEE412	Power Electronics Laboratory	2	a,c,d,j, k,l	0	0	2	1	40	60	100	
19BEEE413	Electrical machines Lab-II	1	a,b,c,d, e,l	0	0	2	1	40	60	100	
19BEEE451	Constitution of India/ Essence of Indian Traditional Knowledge									0	
	Semester Total			16	3	6	22	360	540	900	

Course code	Name of the course		Objectives and out comes		iction week	hours /	it(s)	Maximum Marks		
course coue			POs	L	Т	Р	Credi	CIA	ESE	Tota I
	SF	EMEST	FER - V					40	00	100
19BEEE501	Power Systems – I	2	a,b,c,d, e,g,l	3	0	0	3	40	60	100
19BEEE502	Control Systems	1	a,b,c,d, e,l	3	0	0	3	40	60	100
19BEEE503	Microprocessors	1	a,c,e,h,i ,k,l	3	0	0	3	40	60	100
19BEEE504	Engineering Economics and Financial Management	1	a,e,f,i	3	0	0	3	40	60	100
19BEEE5E	Program Elective - I			3	0	0	3	40	60	100
19BE5OE	Open Elective-I			3	0	0	3	40	60	100
19BEEE511	Power Systems Laboratory – I	2	a,c,d,j,k ,l	0	0	2	1	40	60	100
19BEEE512	Control Systems Laboratory	1	c,d,e,f,i ,j	0	0	2	1	40	60	100
19BEEE513	Microprocessors Laboratory	1	a,c,d,j,k ,l	0	0	2	1	40	60	100
	Semester Total			18	0	6	21	360	540	900
	SE	MEST	ER – VI							
19BEEE601	Total Quality Management	-	b,e,f,g, h,i,j	3	0	0	3	40	60	100
19BEEE602	Power Systems – II	1	a,b,c,d, e,g,l	3	0	0	3	40	60	100
19BEEE641	Measurements and Instrumentation	1	a,b,c,d, e,l	2	0	2	3	40	60	100
19BEEE6E	Program Elective - II			3	0	0	3	40	60	100
19BEEE6E	Program Elective - III			3	0	0	3	40	60	100
19BE6OE	Open Elective-II			3	0	0	3	40	60	100
19BEEE611	Power Systems Laboratory – II	1	a,c,d,j, k,l	0	0	2	1	40	60	100
19BEEE612	Electronics Design Laboratory	2	a,d,e,k, l	1	0	4	3	40	60	100
	Semester Total			18	0	8	22	320	480	800

Course code	Name of the course	Objective s and out comes		In hou	structi urs / w	on eek	dit(s)	Maximum Marks			
		EOs	POs	L	Т	Р	Cred	CIA	ESE	Tot al	
		H						40	60	100	
SEMESTER - VII											
19BEEE701	Professional Ethics	-	a,b,d g,k,l	3	0	0	3	40	60	100	
19BEEE7E	Program Elective -IV			3	0	0	3	40	60	100	
19BEEE7E	Program Elective -V			3	0	0	3	40	60	100	
19BE 7OE	Open Flective-III			5	0	0	5	40	00	100	
	open Elective III			3	0	0	3	40	60	100	
19BE7OE	Open Elective-IV			3	0	0	3	40	60	100	
19BEEE791	Project Stage-I	1,2	-	0	0	6	3	80	120	200	
	Semester Total			15	0	6	18	280	420	700	
	SEN	AEST	<u>'ER – V</u>	III	1	1		1			
19BEEE8E	Program Elective -VI			3	0	0	3	40	60	100	
19BE8OE	Open Elective-V			3	0	0	3	40	60	100	
19BE8OE	Open Elective-VI			3	0	0	3	40	60	100	
19BEEE891	Project Stage-II	1,2	-	0	0	16	8	80	120	200	
Semester Total				9	0	16 68	17	200	300 3240	500	
	rogram roun			110	**		100		52-10	0100	

**TOTAL CREDITS: 158** 

#### **PROFESSIONAL ELECTIVE COURSES**

SEMESTER V											
Course		Objectives & Outcomes		Instruction hours/week			dits	Maximum Marks			
Code	Course Title	PEO	РО	L	т	Р	Cre	CIA	ESE	Total	
19BEE5E01		120	10	-	-		-	40	60	100	
19BEEE5E01	Electrical Machine Design	1	a,c,d, g	3	0	0	3	40	60	100	
19BEEE5E02	Industrial Automation	1	a,c,d, e,k,m ,n	3	0	0	3	40	60	100	
19BEEE5E03	Sensor and Transducer	1	a,b,c, e,i	3	0	0	3	40	60	100	
SEMESTER VI											
Course	Course Title	Objec Out	ctives & comes	Instruction hours/week			edits	Maximum Marks			
Code	Course Thie	PEO	РО	L	Т	Р	C	CIA	ESE	Total	
				_	_	_		40	60	100	
19BEEE6E01	Digital Control Systems	1	b,c,h,i	3	0	0	3	40	60	100	
19BEEE6E02	Digital Signal Processing	1	a,b,c,d, e,g,l,m	3	0	0	3	40	60	100	
19BEEE6E03	Computer Architecture	1	a,c,e	3	0	0	3	40	60	100	
19BEEE6E04	Electromagnetic Waves	1	a,b,c,d ,e,g	3	0	0	3	40	60	100	
19BEEE6E05	Computational Electromagnetics	1	a,b,c,d ,e,l	3	0	0	3	40	60	100	
19BEEE6E06	Control Systems Design	1	a,c,e,h ,l	3	0	0	3	40	60	100	
19BEEE6E07	Industrial Electrical Systems	1	a,b,d	3	0	0	3	40	60	100	
19BEEE6E08	Electrical Drives	1	a,c,d,e ,h,l	3	0	0	3	40	60	100	
19BEEE6E09	Line Commutated and Active Rectifiers	2	a,c,d,e ,g	3	0	0	3	40	60	100	
19BEEE6E10	High Voltage Engineering	2	a,b,c,d ,e,g,l	3	0	0	3	40	60	100	
19BEEE6E11	Electrical Energy Conservation and Auditing	2	b,e,f,g ,h,i,j,n	3	0	0	3	40	60	100	
		SEME	STER V	Ι							
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Course		Objec Outo	tives & comes	In ho	struc urs/w	tion veek	dits	Ma	<b>ximum</b> ]	Marks	
Code	Course Title	PFO	PO	т	т	D	Cree	CIA	ESE	Total	
		TEO	10	L	I	1	•	40	60	100	
19BEEE7E01	Wind and Solar Energy	2	a,b,c,	3	0	0	3	40	60	100	
	Systems	2	d,e,g,l								
19BEEE7E02	Electrical and Hybrid	2	a,c,d,h	3	0	0	3	40	60	100	
	Vehicles	Z	,m,n								
19BEEE7E03	Power System	0	a,b,c,d	3	0	0	3	40	60	100	
	Protection	2	,e,g,l								
19BEEE7E04	HVDC Transmission	0	a,b,c,	3	0	0	3	40	60	100	
	Systems	2	h,i,l								
19BEEE7E05	Power Quality and	0	a,b,c,	3	0	0	3	40	60	100	
	FACTS	2	d,e,j,l								
19BEEE7E06	Power System	2		3	0	0	3	40	60	100	
	Dynamics and Control	2	a,c,e								
		SEME	STER VI	II							
Course	Comment Title	Objec Out	ctives & comes	In ho	struc ours/v	tion veek	dits	Ma	<b>ximum</b> I	Marks	
Code	Course Thie	PFO	PO	т	т	р	Cre	CIA	ESE	Total	
		TEO	10				-	40	60	100	
19BEEE8E01	Advanced Electric	1	a,b,c,d,	3	0	0	3	40	60	100	
	Drives	1	e,g								
19BEEE8E02	Power System Stability	2	d,e	3	0	0	3	40	60	100	
19BEEE8E03	Power Generation	2	c,d,e,g	3	0	0	3	40	60	100	
	Systems	2	,h,i								
19BEEE8E04	Virtual Instrumentation	1	a,b,e,h	3	0	0	3	40	60	100	
		1	,l,m,n								

# LIST OF OPEN ELECTIVES

# **COURSE OFFERED BY OTHER DEPARTMENT**

SUB. CODE	TITLE OF THECOURSE	PEO	РО	L	Т	Р	С	CIA	ESE	TOTAL
	AUTOMOB	BILE E	NGINEERIN	IG						
19BEAEOE01	Automobile Engineering	1,2	a,b,d,g	3	0	0	3	40	60	100
19BEAEOE02	Two And Three Wheeler Technology	1,2	a,b,d,	3	0	0	3	40	60	100
19BEAEOE03	Vehicle Maintenance	Ι	a,b,c	3	0	0	3	40	60	100
19BEAEOE04	Modern Vehicle Technology	1,2,	a,b,c	3	0	0	3	40	60	100
19BEAEOE05	Fleet Management	1,2	a,b,g,h,j	3	0	0	3	40	60	100
BIOMEDICAL	ENGINEERING									
19BEBMEOE01	Robotics in medicine	1,2,	a,b,c	3	0	0	3	40	60	100
19BEBMEOE02	Virtual Reality and Augmented Reality	1,2	a,b,d,g,h	3	0	0	3	40	60	100
19BEBMEOE03	Artificial organs and Implants	1	a,b,g,h,j	3	0	0	3	40	60	100
	BIOT	ECHNO	OLOGY							
19BTBTOE01	Bioreactor Design	1,2,	a,b,c,	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	1,2	a,b,d	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	1	a,b,c,	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of Nano biotechnology	1	a,b,c,d,g,h,j	3	0	0	3	40	60	100
	CHEMIC	AL EN	GINEERIN	G						
19BTCEOE01	Energy Management in Chemical Industries	1,2	a,b,c	3	0	0	3	40	60	100
19BTCEOE02	Fertilizer Technology	1,2	a,d,g,h,j	3	0	0	3	40	60	100
19BTCEOE03	Industrial wastewater treatment	1	a,b,c,d	3	0	0	3	40	60	100
19BTCEOE04	Solid and Hazardous waste management	1	a,b, g,h,j	3	0	0	3	40	60	100
	CIVIL I	ENGIN	EERING							
19BECEOE01	Housing, Plan and Management	1,2	a,b,c,d	3	0	0	3	40	60	100
19BECEOE02	Building Services	1,2	a,b,c,d	3	0	0	3	40	60	100
19BECEOE03	Repair and Rehabilitation of Structures	1,2	a,b,d	3	0	0	3	40	60	100
19BECEOE04	Computer Aided Civil Engineering Drawing	1	a,b,c	3	0	0	3	40	60	100
	COMPUTER SCIE	ENCE A	AND ENGIN	EER	RING					
19BECSOE01	Internet Programming	1,2	a,b,c,g,h	3	0	0	3	40	60	100

19BECSOE02	Multimedia and Animation	1,2	a,b,c,g,h,j	3	0	0	3	40	60	100
19BECSOE03	PC Hardware and Trouble shooting	1	a,b,c,d ,j	3	0	0	3	40	60	100
19BECSOE04	Java Programming	1,2	a,b,c,d,	3	0	0	3	40	60	100
19BECSOE05	Machine Learning	1,2	a,b,g,h,	3	0	0	3	40	60	100
	ELECTRONICS AND CC	OMMU	NICATION	ENG	INE	ERI	NG			
19BEECOE01	Real Time Embedded Systems	1,2	a,b,c,d	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	1	a,b,c,j	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	1	a,b,c,d	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	1,2	a,b,d	3	0	0	3	40	60	100
19BEECOE05	Principles of Modern Communication System	1,2	a,d,g,h,j	3	0	0	3	40	60	100
	FOOD	ГЕСНІ	NOLOGY						I	
19BTFTOE01	Processing of Food Materials	1,2	a,b,c,d	3	0	0	3	40	60	100
19BTFTOE02	Nutrition and Dietetics	1	a,b,c,g,h,j	3	0	0	3	40	60	100
19BTFTOE03	Ready to Eat Foods	1,2,	a,b,c,d	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste and Byproducts	1,2	a,b,c,g,h	3	0	0	3	40	60	100
	MECHANIC	CAL EN	NGINEERIN	G						
	Commuton Aided Design	1	1 1	2	0	0	2	40	60	100
	Computer Alded Design	1	a,b,c,d	3	0	0	2 2	40	60	100
19BEMEOE02	Transport Discourses	1	a,b,d,g	3	0	0	3	40	60	100
19BEMEOE03	I ransport Phenomena	1,2	a,b,c,d	3	0	0	3	40	60	100
19BEMEOE04	Introduction to Biomechanics	1,2	a,b,c,d,g,h,j	3	0	0	3	40	60	100
	SCIENCE A	AND H	UIMANITIE	LS						
19BESHOE01	Solid Waste Management	1,2	a,b,c,g	3	0	0	3	40	60	100
19BESHOE02	Green Chemistry	1	a,b,c,g,h,j	3	0	0	3	40	60	100
19BESHOE03	Applied Electrochemistry	1,2,	a,b,c,	3	0	0	3	40	60	100
19BESHOE04	Industrial Chemistry	1,2	a,b,c,d,g,h,j	3	0	0	3	40	60	100
19BESHOE05	Technical writing	1	a,b,d	3	0	0	3	40	60	100
19BESHOE06	Geophysics	1	a,b,c,	3	0	0	3	40	60	100
19BESHOE07	Engineering Acoustics	1,2	a,b,c,d,g,h,j	3	0	0	3	40	60	100
19BESHOE08	Industrial Mathematics I	1,2	a,b,d,g,h	3	0	0	3	40	60	100
19BESHOE09	Industrial Mathematics II	1,2	a,c,d,h,j	3	0	0	3	40	60	100
19BESHOE10	Fuzzy Mathematics	1	a,b,c	3	0	0	3	40	60	100
19BESHOE11	Mathematical Physics	1	a,g,h,j	3	0	0	3	40	60	100
				_	_	_	_			

19BESHOE12	Linear Algebra	1,2	a,b, g,h,j	3	0	0	3	40	60	100				
COURSES OFFERED TO OTHER DEPARTMENT														
19BEEEOE01	Electric Hybrid Vehicle	2	a,c,d,h,m,n	3	0	0	3	40	60	100				
19BEEEOE02	Energy Management & Energy Auditing	2	b,e,f,g,h,i,j,n	3	0	0	3	40	60	100				
19BEEEOE03	Programmable Logic Controller	1,2	a,b,d,e,l	3	0	0	3	40	60	100				
19BEEEOE04	Renewable Energy Resources	1	a,b,c,d,e,g,l	3	0	0	3	40	60	100				

# **PROGRAM OUTCOMES:** On successful completion of the programme,

a	Apply the Mathematical knowledge and the basics of Science and Engineering to solve the problems pertaining to Electronics and Instrumentation Engineering.
b	Identify and formulate Electrical and Electronics Engineering problems from research literature and be ability to analyze the problem using first principles of Mathematics and Engineering Sciences.
С	Come out with solutions for the complex problems and to design system components or process that fulfill the particular needs taking into account public health and safety and the social, cultural and environmental issues.
d	Draw well-founded conclusions applying the knowledge acquired from research and research methods including design of experiments, analysis and interpretation of data and synthesis of information and to arrive at significant conclusion.
e	Form, select and apply relevant techniques, resources and Engineering and IT tools for Engineering activities like electronic prototyping, modeling and control of systems and also being conscious of the limitations.
f	Understand the role and responsibility of the Professional Electrical and Electronics Engineer and to assess societal, health, safety issues based on the reasoning received from the contextual knowledge.
g	Be aware of the impact of professional Engineering solutions in societal and environmental contexts and exhibit the knowledge and the need for Sustainable Development.
h	Apply the principles of Professional Ethics to adhere to the norms of the engineering practice and to discharge ethical responsibilities.
i	Function actively and efficiently as an individual or a member/leader of different teams and multidisciplinary projects.
j	Communicate efficiently the engineering facts with a wide range of engineering community and others, to understand and prepare reports and design documents; to make effective presentations and to frame and follow instructions.
k	Demonstrate the acquisition of the body of engineering knowledge and insight and Management Principles and to apply them as member / leader in teams and multidisciplinary environments.
1	Recognize the need for self and life-long learning, keeping pace with technological challenges in the broadest sense.

# **PROGRAM SPECIFIC OUTCOMES:**

m	Apply the Mathematical knowledge and the basics of Science and Engineering to solve the problems pertaining to Electronics and Instrumentation Engineering
n	Identify and formulate Electrical and Electronics Engineering problems from research literature and be able to analyze the problem using first principles of Mathematics and Engineering Sciences.

# PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1	Have successful technical and professional careers in their chosen fields such as													
	circuit theory, Field theory, control theory and computational platforms.													
PEO 2	Engross in life long process of learning to keep themselves abreast of new													
	developments in the field of Electronics and their applications in power													
	engineering													

# MAPPING

PROGRAMME		PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES													
<b>OBJECTIVES</b>	a	b	С	d	e	f	g	h	i	j	k	1	m	n	
1	~	~	~	~	~	~	~					~	~	~	
2	~	~	~	~	~	~		~		~			~	~	



# **KARPAGAM ACADEMY OF HIGHER EDUCATION**

(Deemed to be University Established under Section 3 of UGC Act 1956) FACULTY OF ENGINEERING B.Tech (FOOD TECHNOLOGY) COURSE OF STUDY AND SHCEME OF EXAMINATION (2019 BATCH ONWARDS)

		SEN	MESTE	ER I									
Course code	Course Title	Obje out	ctives come	s & s	In ho	nstru urs /	ictio ′ we	n ek	edits		Ma	aximun	n Marks
		PEOs	P	Os	L		T	Р	Cre	(	CIA	ESE	Total
											40	60	100
19BTFT101	Mathematics-I	2,3	a,b,e	e,h,k	3		1	0	4		40	60	100
19BTFT141	Chemistry-I	3	a,b,o h,k	c,e,f,	3		1	3	6		40	60	100
19BTFT142	Basic Electrical Engineering	2,3	a,b,o	d,h,k	3		1	2	5		40	60	100
19BTFT111	Engineering Graphics & Design	1,2	a,h,i	i	1		0	4	3		40	60	100
		Sem	ester '	Total	10	)	3	9	18	1	160	240	400
SEMESTER – II													
Course code	Course Title	Objectives &Instructionoutcomeshours / week							lits	Μ	axim	um Ma	rks
		PEOs	P	'Os	L		T	Р	red	C	IA	ESE	Total
									С	4	<b>40</b>	60	100
19BTFT201	Mathematics-II	2,3	a, b, k	e, h,	3	1	(	)	4	40		60	100
19BTFT202	English	3	i, j, k		2	0	4	2	3	40		60	100
19BTFT241	Engineering Physics	2,3	a,c,e,	,h,k	3	1		3	5	40		60	100
19BTFT242	Programming for problem solving	1	a, b,	С	3	0	2	1	5	40		60	100
19BTFT243	Food Chemistry	1,2	a, b, :	f, m	3	1		3	6	40		60	100
		Sem	ester '	Total	14	1	3	12	23	20	)0	300	500
		SEME	STER	- III									
Course code	Course Title		Objec outc	ctives comes	&	Ins hou	truc rs / ˈ	tion wee	k lite	5111	М	aximu	m Marks
			PEO	PC	)s	L	Т	P	202		CIA	ESE	Total
			S								40	60	100
19BTFT301	Mathematical Transforms and Pa differential Equations	artial 1	.,2	a, b		3	1	0	4		40	60	100
19BTFT302	Fluid Mechanics	1	.,2	a, b, c d, e	,	3	0	0	3		40	60	100
19BTFT303	Food Microbiology	1	,2	a, d, f, m, n	, l,	2	1	0	3		40	60	100
19BTFT304	Food Process Calculations	1	.,2,3	a, b, c ,e ,f, l, o	, d m,	3	0	0	3		40	60	100

19BTFT305	Thermodynamics	-	1,2	a. b, c, d,	3	0	0	3	40	60	100
19BTFT306	Food Biochemistry and Human	-	1,2	a, b, h, l,	3	0	0	3	40	60	100
19BTFT311	Food Microbiology Laboratory	-	1,2,3	a, d, e, f,	0	0	4	2	40	60	100
19BTFT312	Food Biochemistry Laboratory	-	1,2,3	a, b, d,	0	0	4	2	40	60	100
19BTFT351	Constitution of India		3	h, l	1	0	0	-	100	-	100
				TOTAL	18	2	8	23	8 420	480	900
		SEME	ESTE	R – IV	•						
Course code	Course Title	0	bject outco	tives & omes	Ins h	truc our: wee	tion s / k	redits	Ма	ıximum	Marks
		PEOs	s	POs	L	Т	Р	С	CIA	ESE	Total
									40	60	100
19BTFT401	Probability and Biostatistics	1,2	a	, b	3	1	0	4	40	60	100
19BTFT402	Engineering properties of Food Materials	1,2	a	, b, c, e	3	0	0	3	40	60	100
19BTFT403	Heat and Mass Transfer	1,2	a	, b, d, e	3	0	0	3	40	60	100
19BTFT404	Food Analysis	1,2,3	3 a g	, b, c, d, e, , l	3	0	0	3	40	60	100
19BTFT405	Unit Operations in Food Processing	1,2,3	3 a	, b, c, d	3	0	0	3	40	60	100
19BTFT406	Environmental Studies	1,2,3	3 f,	g, h, l	3	0	0	3	40	60	100
19BTFT411	Food Analysis Laboratory	1,2	a g	, b, c, d, e, , i, l	0	0	4	2	40	60	100
19BTFT412	Fluid Mechanics and Heat Transfer Laboratory	1,2	a	, b, d, e, i	0	0	4	2	40	60	100
				TOTAL	18	1	8	23	3 400	480	800
		SEM	ESTE	ER - V	1						
Course code	Course Title	0	bject outc	tives & comes	Inst hou we	ruc irs / ek	tion /	dits	Max	kimum I	Marks
		PEOs	s	POs	L	Τ	Р	Cre	CIA	ESE	Total
									40	60	100
19BTFT501	Bakery and Confectionary Technology	1,2	b o	, d, e, g, l, m,	3	0	0	3	40	60	100
19BTFT502	Refrigeration, Air conditioning and Cold Storage Construction	1,2	a o	, b, c, d, l, n,	3	0	0	3	40	60	100
19BTFT503	Cereals and Pulses Technology	1,2	a n	, b, c, d, l, m,	3	0	0	3	40	60	100
19BTFT504	Meat, Poultry and Fish Processing	1,2	a n	, b, d, e, f, g, n, o	3	0	0	3	40	60	100
19BTFT505	Fruits and Vegetable Processing Technology	1,2	a f,	, b, c, d, e, g, l, n, o	3	0	0	3	40	60	100
19BTFT5E-	Professional Elective - I	-	-		3	0	0	3	40	60	100

19BTFT511	Food Enzymology Laboratory	1,2	a, b, d, i, l, n	1	0	0	4	2	2	40	60	100
19BTFT512	Food Product Laboratory - I	1,2	a, b, c, d, e,	I,	0	0	4	2	2	40	60	100
19BTFT551	Food Industry Waste Management / Byproduct Ittilization	1,2,3	a-0		0	0	1	-		100	-	100
	Byproduct offiziation		ТОТА	I.	18	0	9	2	2	420	480	900
		SEMES	TER – VI		10	Ŭ	-		_		100	
Course code	Course Title	Ob	jectives		Inst	truc	ction	1				
		&	out		h	our	s /		112	Ma	iximun	n Marks
			omes		<u> </u>	wee	<u>k</u>		nai	CLA	БСБ	Tatal
		PEUS	POS		L	1	Р	C C	ر		ESE	1 otal
100757601	East Additives	1.2	a hait		2	0	0		2	40	60	100
190111001	Food Additives	1,2	a, b, c, l, k,		3	0	0		3	40	60	100
19BTFT602	Food Safety Regulations	1,2	b, c, d, e, f,	g,	3	0	0		3	40	60	100
19BTFT603	Dairy Technology	1,2	a, b, c, d, e, f, g, l, n, o	,	3	0	0		3	40	60	100
19BTFTOE-	Open Elective - I	-	-		3	0	0		3	40	60	100
19BTFT6E-	Professional Elective - II	-	-		3	0	0		3	40	60	100
19BTFT6E-	Professional Elective – III	-	-		3	0	0		3	40	60	100
19BTFT611	Food Product Laboratory-II	1,2	a , b, c, d, e I, n, o	e,	0	0	4		2	40	60	100
19BTFT612	Food Additives and Quality Control Laboratory	1,2	b, c, e, f, i, o	m,	0	0	4		2	40	60	100
19BTFT651	Technical Presentation and Seminar	1,2,3	i, j		0	0	1		-	100	-	100
			TOTA	L	18	0	9		22	420	480	900
	Summer Internship / Mini Pro	ject– Du	ring Summer	Vac	catior	1 – I	Von	cred	lit co	ourse		
	5	SEMEST	ER - VII									
Course code	Course Title	Obje out	ctives & comes	In: ł	stru nour wee	ctio s / ek	n	redits		Maxi	mum M	Marks
		PEOs	POs	L	Τ	]	P	0	C	IA	ESE	Total
									4	40	60	100
19BTFT701	Professional Ethics, Principles of Management and Entropronourship Dovelopment	1,2	f, g, h, o	3	0	(	0	3	4	40	60	100
19BTFT702	Process Economics and Plant Layout Design	1,2	a, f, g, k, l, m, o	3	0	(	0	3	4	40	60	100
19BTFT703	Food Packaging Technology	1,2	a, b, c, d, e, h, l, o	3	0	(	0	3	2	40	60	100
19BTFTOE-	Open Elective-II	-	-	3	0	(	0	3	4	40	60	100
19BTFT7E-	Professional Elective - IV	-	-	3	0	(	0	3	4	40	60	100
19BTFT711	Food Packaging Laboratory	1,2	a, b, c, d, h, i, l, n	0	0	4	4	2	4	40	60	100

19BTFT791	Project Work Phase - I	1.2.3	a-l	0	0	4	2	4	0	60	100			
		_,_,_	TOTAL	15	0	8	19	) 28	30 4	420	700			
	S	EMESTE	R -VIII	_	_					-				
Course code	Course Title	Object o	ives & ut comes	Ir n	nstru hou wee	ictio irs / ek	edits		Maxi	mum N	larks			
		PEOs	POs	L	Т	Р	S	CI	A	ESE	Total			
								4	0	60	100			
19BTFT8E-	Professional Elective - V	-	-	3	0	0	3	4	0	60	100			
19BTFT8E-	Professional Elective – VI	-	-	3	0	0	3	4	0	60	100			
19BTFT891	Project Work Phase II	1,2,3	a-l	0	0	18	9	12	20	180	300			
			TOTAL	6	0	18	15	2	00	300	500			
	TOTAL CREDITS							16	5					
	Profe	essional	Elective - I											
Course code	Course Title	Obje	ectives & out	t	Inst	ructio	n		M	aximu	n Marks			
			comes	h	ours	s / we	ек	its						
		PEOs	POs		L	Т	Р	Ū	CIA	ESE	Total			
									40	60	100			
			SEMESTER -	V										
19BTFT5E01	Food Preservation Principles	1,2,3	a, c, d, l,m,	,n	3	0	0	3	40	60	100			
19BTFT5E02	Beverage Processing Technology	2,3	a, b, d, f, g,m,o		3	0	0	3	40	60	100			
19BTFT5E03	Nonthermal Techniques in Food Processing	1,2	a, c, d, l,n	1	3	0	0	3	40	60	100			
19BTFT5E04	Instrumental Analysis of Foods	1,2	a, b, d, e,n,	,0	3	0	0	3	40	60	100			
19BTFT5E05	Production Technology of Fruit Crops	5 1,2	e, g, i, j, l,n	,0	3	0	0	3	40	60	100			
19BTFT5E06	Production Technology of Vegetable Crops	1,2	e, g, i, j, l,n	,0	3	0	0	3	40	60	100			
	Professi	onal Ele	ctive – II & l											
Course code	Course Title	Obj ou	ectives & tcomes		Ins houi	tructi 's / w	on eek	edits	N	laximu	ım Marks			
		PEOs	POs		L	Т	P	CĽ	CIA	ES ES	E Total			
									40	6	0 100			
		1	SEMESTER -	VI										
19BTFT6E01	Radiation Preservation and Processing of Food Products	1,3	a, c, d, l,m	,0	3	0	0	3	40	6	0 100			
19BTFT6E02	Plantation Products and Spice Processing Technology	2,3	a, b, d, 1,n	1,0	3	0	0	3	40	6	0 100			

19BTFT6E03	Sanitation in Food Industries	2,3	b, d, g, i, j, l,o	3	0	0	3	40	60	100
19BTFT6E04	Industrial Safety and Hazard Analysis	2,3	b, d, g, i, j, l,n,o	3	0	0	3	40	60	100
19BTFT6E05	Milling Technology	2,3	a, c, e, f, l,m,n	3	0	0	3	40	60	100
19BTFT6E06	Technology of Legumes and Oilseed Processing	1,3	a, b, c, d, l,m,n,o	3	0	0	3	40	60	100
19BTFT6E07	Milk and Milk Products Technology	2	a,c, f, i, k, l,m,n,o	3	0	0	3	40	60	100
19BTFT6E08	Design and Formulation of Foods	1	a,b, c, e,l,n,o	3	0	0	3	40	60	100
19BTFT6E09	Design of Food Process Equipment	1,2 ,3	a, b, c, d, e, g, l, o	3	0	0	3	40	60	100
19BTFT6E10	Food Colorants and Flavorants	1	a, g, l, n	3	0	0	3	40	60	100
19BTFT6E11	Process Control for Food Engineers	1,2	a, b, d, e ,n ,o	3	0	0	3	40	60	100
19BTFT6E12	Postharvest Technology	1,2	a, b, c, d, e, f, g, l, n, o	3	0	0	3	40	60	100
19BTFT6E13	Crop Processing Technology	2, 3	a, e, l, m, o	3	0	0	3	40	60	100

#### Professional Elective - IV

Course code	Course Title	Obj	ectives & tcomes	In: hou	struc ırs / ˈ	tion week	its	Maximum Marks		larks
		PEOs	POs	L	Т	Р	Credi	CIA	ESE	Total
								40	60	100
		SE	EMESTER –VI	I						
19BTFT7E01	Lipid Processing Technology	1, 3	a, b, c, d, l.	3	0	0	3	40	60	100
			n, o							
19BTFT7E02	Role of Nanotechnology in Food Processing	1, 3	a, b, d, g, i, o	3	0	0	3	40	60	100
19BTFT7E03	New Product Development and Sensory Science	2	a, b, d, f, l, m, o	3	0	0	3	40	60	100
19BTFT7E04	Marketing Management and International Trade	1, 2, 3	b, h, i, j, l, o	3	0	0	3	40	60	100
19BTFT7E05	Supply Chain Management	1,3	a, d, f, g, h, i, j, o	3	0	0	3	40	60	100
	Professi	onal Elec	tive – V & VI					•	•	
Course code	Course Title	Objec	ctives & out comes	Instruction hours / wee			its	Maxi	imum M	larks
		PEOs	POs	L	T	Р	Credi	CIA	ESE	Total
								40	60	100
		SE	<b>MESTER -VII</b>	Ι						

a, b, d, f, l, o 3 0

0

3

40

60

100

Functional Foods and Nutraceuticals 1,2

19BTFT8E01

19BTFT8E02	Food Biotechnology	1,3	a, b, e, f, m	3	0	0	3	40	60	100
19BTFT8E03	Protein Chemistry and Technology	1,2	a, b, d, e, i, l,	3	0	0	3	40	60	100
			n, o							
19BTFT8E04	Advanced Drying Technology	1, 3	a, b, c, e, l, n,	3	0	0	3	40	60	100
			0							
19BTFT8E05	Food Fermentation Technology	1,3	a, b, d, g, m,	3	0	0	3	40	60	100
			n, o							
19BTFT8E06	Extrusion Technology	1,2	a, c, e, f, l, m	3	0	0	3	40	60	100
19BTFT8E07	Sugar Technology	1,3	a, b, c, f, m, n	3	0	0	3	40	60	100
19BTFT8E08	Food Allergy and Toxicology	2	a, b, f, g, m	3	0	0	3	40	60	100
19BTFT8E09	Waste Management in Food	1,2,3	a, b, f, l, m, n	3	0	0	3	40	60	100
	Industries									
19BTFT8E10	Total Quality Management	2,3	a, b, d, g, f,	3	0	0	3	40	60	100
			i, l, n, o							
19BTFT8E011	Food Storage and Logistic	1,2 ,3	a, b, c, d, e,	3	0	0	3	40	60	100
	Management		g, l, m, n							

OPEN ELECTIVES I & II (OFFERED BY FOOD TECHNOLOGY)

SUB. CODE	TITLE OF THE COURSE	PEO	РО	L	Т	Р	С	CIA	ESE	TOTAL
FOOD TECHNO	LOGY	1								
19BTFTOE01	Processing of Food Materials	1,3	a,b,c,m,n,o	3	0	0	3	40	60	10 0
19BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,m,n,o	3	0	0	3	40	60	10 0
19BTFTOE03	Ready to Eat Foods	1,3	a,b,c,m,n,o	3	0	0	3	40	60	10 0
19BTFTOE04	Agricultural Waste and Byproducts Utilization	1,3	a,b,c,d,g,m,n,o	3	0	0	3	40	60	10 0

#### OPEN ELECTIVES COURSES OFFERED BY OTHER DEPARTMENTS

SUB. CODE	TITLE OF THE	PEO	PO	L	Т	Р	С	CIA	ESE	TOTAL
	COURSE									
SCIENCE AND	HUMANITIES									
19BTSHOE01	Solid Waste Management	1,2	a,b,c,d,f,m	3	0	0	3	40	60	100
19BTSHOE02	Green Chemistry	1,2,3	a,b,c,d,e,f,g,o	3	0	0	3	40	60	100
19BTSHOE03	Applied Electrochemistry	2,3	a,b,c,d,e,f	3	0	0	3	40	60	100
19BTSHOE04	Industrial Chemistry	2,3	a,b,c,d,f,g,i	3	0	0	3	40	60	100
19BTSHOE05	Technical Writing	2,3	a,h,i,j,l	3	0	0	3	40	60	100
19BTSHOE06	Geophysics	2,3	a,b,c,e, k,	3	0	0	3	40	60	100
19BTSHOE07	Engineering Acoustics	2,3	a,b,c,d,	3	0	0	3	40	60	100
19BTSHOE08	Industrial Mathematics – I	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
19BTSHOE09	Industrial Mathematics – II	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
19BTSHOE10	Fuzzy Mathematics	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
19BTSHOE11	Mathematical Physics	2,3	a,b,e,h,i	3	0	0	3	40	60	100
19BTSHOE12	Linear Algebra	2,3	a,b	3	0	0	3	40	60	100
COMPUTER S	CIENCE AND ENGINEERING	r						•		
19BECSOE01	Internet Programming	2,3	a,b,c,d,e,	3	0	0	3	40	60	100
19BECSOE02	Multimedia and Animation	2,3	a,b,c,d,e,	3	0	0	3	40	60	100
19BECSOE03	PC Hardware and Trouble	2,3	a,b,c,d,e,	3	0	0	3	40	60	100
	shooting									
19BECSOE04	Java Programming	2,3	a,b,c,d,e,	3	0	0	3	40	60	100
ELECTRICAL A	AND ELECTRONICS ENGINE	ERING								
19BEEEOE01	Electric Hybrid Vehicle	2	a,b,	3	0	0	3	40	60	100
19BEEEOE02	Energy Management & Energy Auditing	2	a,b,f,g,	3	0	0	3	40	60	100
19BEEEOE03	Programmable Logic Controller	2	a,b,f	3	0	0	3	40	60	100
19BEEEOE04	Renewable Energy Resources	1,2	a,b,c,e,f,g,m	3	0	0	3	40	60	100
ELECTRONIC	S AND COMMUNICATION E	NGINE	ERING							
19BEECOE01	Real Time Embedded Systems	1	a,b	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	1	a,b	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	1	a,b,	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its	1	a,b	3	0	0	3	40	60	100
	Applications									
AUTOMOBILE	ENGINEERING				1		r			
19BEAEOE01	Automobile Engineering	1	a,b	3	0	0	3	40	60	100
19BEAEOE02	Two And Three Wheeler	1	a,b	3	0	0	3	40	60	100
1000400000	Technology Valiate Maintenance	1	- 1-	2	0	0	2	40	(0)	100
19BEAEUEU3	Venicle Maintenance	1	a,b	3	0	0	3	40	60	100
19BEAEUEU4	Modern Venicle Technology	1	a,o	3	0	0	3	40	60	100
CIVIL ENGIN		1	1	2	0	0	2	40	(0)	100
19BECEUEUI	Housing Plan And Management	1	a,b,c,m	3	0	0	5	40	60	100
19BECEUEUZ	Building Services	1	a,b	3	0	0	3	40	00	100
19BECEUEU3	Structures	1	a,b	3	0	0	3	40	00	100
19BECEOE04	Computer Aided Civil	1,3	a,b,e,m,o	3	0	0	3	40	60	100

	Engineering Drawing									
MECHANICA	AL ENGINEERING									
19BEMEOE01	Computer Aided Design	1,3	a,b,d, e,m,o	3	0	0	3	40	60	100
19BEMEOE02	Industrial Safety and	1,3	a,b,c,f,g,m	3	0	0	3	40	60	100
	Environment									
19BEMEOE03	Transport Phenomena	1	a,b	3	0	0	3	40	60	100
19BEMEOE04	Introduction to Biomechanics	1,3	a,b,c,e,m	3	0	0	3	40	60	100
CHEMICAL EN	GINEERING									
19BTCEOE01	Energy management in chemical industries	1,3	a,b,c,d,f,m	3	0	0	3	40	60	100
19BTCEOE02	Fertilizer technology	1,3	a,b,c,d,f,m	3	0	0	3	40	60	100
19BTCEOE03	Industrial wastewater treatment	1,2,3	a,b,c,d,f,g,m ,0	3	0	0	3	40	60	100
19BTCEOE04	Solid and hazardous waste	1,2,3	a,b,c,d,f,g,m	3	0	0	3	40	60	100
	management		,0							
BIOMEDICAL H	ENGINEERING									
19BEBMEOE01	Robotics In Medicine	1	a,b,c,e,	3	0	0	3	40	60	100
19BEBMEOE02	Virtual Reality And Augmented	1	a,b,c,e,	3	0	0	3	40	60	100
	Reality									
19BEBMEOE03	Artificial Organs And Implants	1,3	a,b,c,e,h	3	0	0	3	40	60	100
BIOTECHNOLO	DGY									
19BTBTOE01	Bioreactor Design	1,2,3	a,b,c,d,m	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	1	a,b,c,g,m, n, o	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	1,3	a,b,c,d,e,o	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of Nanobiotechnology	1,3	a,b,m	3	0	0	3	40	60	100
FOOD TECHNO	DLOGY									
19BTFTOE01	Processing of Food Materials	1,3	a,b,c,m,n,o	3	0	0	3	40	60	100
19BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,m,n,o	3	0	0	3	40	60	100
19BTFTOE03	Ready to Eat Foods	1,3	a,b,c,m,n,o	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste and Byproducts Utilization	1,3	a,b,c,d,g,m,n, o	3	0	0	3	40	60	100

# DEPARTMENT OF FOOD TECHNOLOGY B.TECH FOOD TECHNOLOGY

#### PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

- 1. To provide students with a strong base of theoretical and practical knowledge of food processing and technology.
- 2. To implement the knowledge and skills to find workable solutions to troubleshoot the challenges involved in the food processing and its related sectors.
- 3. To exhibit ethical attitude, leadership, interdisciplinary skills, adapt to current trends through lifelong learning and to serve the society.

#### **PROGRAMME OUTCOMES (POS)**

- a. **Engineering Knowledge:** Ability to apply knowledge of mathematics, sciences and engineering to overcome challenges in food and its related sectors
- b. **Problem analysis:** Applying the key principles of mathematics, natural science and engineering science to identify, formulate and analyze solutions for engineering problems
- c. **Design/Development of Solutions:** Design and develop a durable solution to address various issues in manufacturing, sustainability, and food safety by using recent food technology concepts.
- d. **Investigations of Complex Problems:** Use research based knowledge and research methods, including design of experiments, analysis and interpretation of data.
- e. **Modern Tool Usage:** With the use of the advanced scientific tools and modern engineering, develop the food processing technology for the benefits of mankind.
- f. **The Engineer and Society:** Understand the impact of engineering solutions in a global and societal context
- g. **Environment and Sustainability:** Impart the principles of waste management / byproduct utilization to develop value added products for a sustainable environment.
- h. Ethics: Demonstrate knowledge of professional and code of ethical conduct.
- i. **Individual and Team Work:** Play as an effective individual or active member or leader in diverse multidisciplinary forum.
- j. Communication: Communicate effectively in both verbal and written forms.
- k. **Project Management and Finance:** Proact with knowledge of process economics and financial management to design and manage projects.
- l. Life-long Learning: Realize the need to engage in learning activities throughout their life.

#### PROGRAM SPECIFIC OUTCOMES (PSOS)

At the end of the B.Tech Food Technology program, the graduates will be able to

- m. Acquire a detailed knowledge of food science, food processing and preservation technology.
- n. Apply skills of food technology to design and develop methods to produce quality, nutritious and safe food products.
- o. Innovate ideas to develop economic food products and cost effective preservation methods to fulfill the societal needs and for sustainable development.

					I UUU I	cennoro		51071		PPms/					
								PO/PSO	)						
PEO	а	b	С	d	е	f	g	h	i	j	k	1	m	n	0
1	$\checkmark$	~	~	✓	~					~			~	~	$\checkmark$
2		✓	✓	✓		~	~	$\checkmark$					~	✓	$\checkmark$
3				✓					✓		✓	✓		✓	✓

# Food Technology (PEO-PO / PSO mapping)



**KARPAGAM ACADEMY OF HIGHER EDUCATION** 

(Deemed to be University Established Under Section 3 of UGC Act, 1956) Eachanari Post, Coimbatore-641021.Tamilnadu,India.

#### FACULTY OF ENGINEERING B.E. (MECHANICAL ENGINEERING) COURSE OF STUDY AND SCHEME OFEXAMINATION (2019 Batch Onwards)

	SEMESTERI										
Course		Object Outc	tives & omes	Ins Hou	tructi rs / W	on 'eek	lits	Max	imum N	Aarks	
Code	Course title	DEO	DO	т	т	р	Cred	CIA	ESE	Total	
		PEO	PO	L	1	r	$\cup$	40	60	100	
19BEME101	Mathematics-I(Calculus and Linear Algebra for MechanicalandAutomobileEngineering )	1	1,2,8, 9	3	1	0	4	40	60	100	
19BEME102	Electro Magnetism	1, 3	1,2,3,5 ,8,9	3	1	2	5	40	60	100	
19BEME103	Basic Electrical Engineering	1, 3	1,2,3,8 ,9,11	3	1	2	5	40	60	100	
19BEME311	Engineering Graphics-I	1, 2	1,2,3, 5,9	1	0	4	3	40	60	100	
	Tot					8	17	160	240	400	

	SEI	MESTEI	RII							
Course		Object Outc	tives & omes	Ins Hou	tructi rs / W	on 'eek	lits	Max	imum N	Marks
Code	Course title	PEO	РО	L	Т	Р	Cred	CIA 40	ESE 60	Total
19BEME201	Mathematics-II (Calculus, Ordinary Differential Equations and Complex variable for Mechanical and Automobile Engineering)	1	1,2,8, 9	3	1	0	4	40	60	100
19BEME202	Chemistry I	1	1,2,5, 10	3	1	3	6	40	60	100
19BEME203	English	2	4,5, 10	2	0	2	3	40	60	100
19BEME204	Programming for problem Solving	1	1,2,9	3	0	4	5	40	60	100
19BEME205	Constitution of India			1	-	-	-	100	-	100
19BEME211	Workshop / Manufacturing Practice	1, 2	1,2,3,5	1	0	4	3	40	60	100
19BEME212	Engineering Graphics II	1, 2	1,2,3, 5,9	1	0	3	2	40	60	100
			Total	12	2	16	23	340	360	700

		SEMEST	TER III							
Course Code	Course title	Ob	ojectives & Outcomes	Ins H	tructi lours Week	on /	lits	Max	<b>ximum</b> ]	Marks
Course Coue	Course the	DEO	BO	т	т	р	Cree	CIA	ESE	Total
		PEU	ro	L	1	r	-	40	60	100
19BEME301	Mathematics III	1	1,3,5,6,7,8	3	1	0	4	40	60	100
19BEME302	Biology for Engineers	1	1,3,5,6,7,8	3	0	0	3	40	60	100
19BEME303	Engineering Mechanics	1	1,2,3,4,10,11	3	1	0	3	40	60	100
19BEME304	Thermodynamics	1	1,2,3,4,10	3	1	0	3	40	60	100
19BEME341	Basic Electronics Engineering	1	1,2,3,4,10	3	0	2	4	40	60	100
19BEME311	Machine Drawing	1	1,2,3,4,10	2	0	3	4	40	60	100
19BEME351	Aptitude Training	-	-	1	0	0	-	100	-	100
19BEME352A / 19BEME352B	Welding Process / Welding Metallurgy	-	-	2	0	0	-	100	-	100
19BEME353	Material Testing Laboratory	-	-	0	0	3	-	100	-	100
			Total	20	3	8	21	540	360	900

	SEN	AESTER	IV							
Course Code	Course title	Obje Ou	ectives & tcomes	Ins H	truct lours Week	ion ; / ;	dits	Max	imum N	/larks
Course Coue	Course the	PEO	РО	L	Т	Р	Cre	CIA	ESE	Total
		_						40	60	100
19BEME401	Instrumentation & Control systems	1	1,2,3,4,10	3	0	0	3	40	60	100
19BEME402	Environmental Studies	1	1,2,3,4,10	3	0	0	3	40	60	100
19BEME441	Engineering Materials and Metallurgy	1	1,2,3,4,10	3	0	2	4	40	60	100
19BEME442	Applied Thermodynamics	1	1,2,3,4,10	3	1	2	5	40	60	100
19BEME443	Strength of Materials	1	1,2,3,4,10	3	1	2	5	40	60	100
19BEME444	Fluid Mechanics & Fluid Machines	1	1,2,3,4,10	3	1	2	5	40	60	100
19BEME451	Technical Presentation	-	-	1	0	0	-	100	-	100
19BEME452A / 19BEME452B	Welding Economics and Management / Process Modeling	-	-	2	0	0	-	100	-	100
19BEME453	Mini Project I on Welding	-	-	1	0	0	-	100	-	100
			Total	22	3	8	25	540	360	900

	SE	MESTER	V								
Course Code	Course title	Obje Ou	ectives & atcomes	Instruction Hours / Week			dits	Maximum Marks			
Course Coue	course the	PEO	PO	т	т	D	Cre	CIA	ESE	Total	
		TEO	10	L	I	1		40	60	100	
19BEME501	Design of Machine Elements	1	1,2,3,4,9	3	1	0	4	40	60	100	
19BEME541	Heat and Mass Transfer	1	1,2,3,4,5	3	1	2	5	40	60	100	
19BEME542	Manufacturing Technology I	1	1,2,3,6,8,9	3	0	2	4	40	60	100	
19BEME543	Theory of Machines	1	1,2,3,4,10	3	1	2	5	40	60	100	
19BE	Open Elective I	-	-	3	0	0	3	40	60	100	
19BEME551	Essence of Indian Traditional Knowledge	-	-	1	0	0	-	100	-	100	
19BEME552	Geometrical Dimensioning and Tolerance	1	1,2,3,4,5,8,9	1	0	0	-	100	-	100	
19BEME553A / 19BEME553B	Welding Application Technology / Repair Welding and Reclamation	-	-	2	0	0	-	100	-	100	
19BEME554	Welding Process Laboratory	-	-	0	0	3	-	100	-	100	
19BEME555	Project I (Course Oriented)	-	-	1	0	0	1	100	-	100	
	Tota						22	700	300	1000	

	SE	MESTE	R VI								
Course Code	Course title	01	ojectives & Dutcomes	Ins H	truct lours Weel	tion s / k	dits	Maximum Marks			
Course Coue	Course the	PEO	РО	L	Т	Р	Cre	CIA 40	ESE 60	Total 100	
19BEME601	Design of Transmission Systems	1	1,2,3,4,8,9,10	3	1	0	4	40	60	100	
19BEME641	Manufacturing Technology II	1	1,2,3,6,8,9	3	0	2	4	40	60	100	
19BEME642	Industrial Metrology	1	1,2,3,6,8,9	3	0	2	4	40	60	100	
19BEME6E	Professional Elective-I	-	-	3	0	0	3	40	60	100	
19BEME6E	Professional Elective-II	-	-	3	0	0	3	40	60	100	
19BE	Open Elective II	-	-	3	0	0	3	40	60	100	
19BEME611	Computer Aided Modeling and Simulation Laboratory	1	1,2,3,4,5,8,9	0	0	3	2	40	60	100	
19BEME651	Robotics and Automation	1	1,2,3,4,5	1	0	0	-	100	-	100	
19BEME652A / 19BEME652B	Welding Codes and Standards / Welding Consumables	-	-	2	0	0	-	100	-	100	
19BEME653	Heat Treatment Laboratory			0	0	3	-	100	-	100	
19BEME654	Mini Project II on Welding			0	0	1	-	100	-	100	
19BEME691	Project II (Mini)	-	-	1	0	0	1	100	-	100	
			Total	22	1	11	24	780	420	1200	

		SEMEST	ER VII							
Course Code	Course title	Ol (	ojectives & Outcomes	Ins H	truct Iours Week	ion /	edits	Maximum Marks		
course coue	course the	PEO	PO	т	т	D	Cre	CIA	ESE	Total
		TEO	10	L	1	Г		40	60	100
19BEME741	Automation in Manufacturing	1	1,2,3,4,5,8,9	3	0	2	4	40	60	100
19BEME742	Computer Aided Engineering	1	1,2,3,4,5,8,9	3	1	2	5	40	60	100
19BEME7E	Professional Elective-III	-	-	3	0	0	3	40	60	100
19BEME7E	Professional Elective-IV	-	-	3	0	0	3	40	60	100
19BEME7E	Professional Elective-V	-	-	3	0	0	3	40	60	100
19BE	Open Elective III	-	-	3	0	0	3	40	60	100
19BEME751	Motors and Pumps	-	-	1	0	0	-	100	-	100
19BEME752A / 19BEME752B	Design Aspects of Welding & Casting / Design of Weldments	-	-	2	0	0	-	100	-	100
19BEME753	Welding Simulation Laboratory	-	-	0	0	3	-	100	-	100
19BEME754	Mini Project III on Welding	-	-	0	0	1	-	100	-	100
19BEME791	Project III	-	-	0	0	6	3	100	-	100
			Total	21	1	14	24	740	360	1100

	SEME	STER V	III							
		Objec & Out	ctives comes	Ins Hou	Instruction Hours / Week		its	Maximum Marks		larks
Course Code	Course title	DEO	DO	т	т	р	red	CIA	ESE	Total
		PEO	PO	L	1	r	0	40	60	100
19BEME8E	Professional Elective-VI	-	-	3	0	0	3	40	60	100
19BE	Open Elective IV	-	-	3	0	0	3	40	60	100
19BE	Open Elective V	-	-	3	0	0	3	40	60	100
19BEME891	Project IV	-	-	0	0	12	6	100	200	300
			Total	9	0	12	15	220	380	600

# **PROFESSIONAL ELECTIVE I**

Course Code		Obje & Out	ctives comes	Ins Hou	tructi rs / W	on /eek	its	Max	imum N	larks
Course Code	Course title	DEO	DO	т	т	р	red	CIA	ESE	Total
		PEO	PO	L	1	r	)	40	60	100
19BEME6E01	Emerging Materials	1,3	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME6E02	Renewable Energy Sources	1,2	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME6E03	Industrial Robotics	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BEME6E04	Advanced I.C. Engines	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME6E05	Hydraulics and Pneumatics Power Control	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
19BEME6E06	Automobile Engineering	1	1,2,3,7, 9,15	3	0	0	3	40	60	100

# **PROFESSIONAL ELECTIVE II**

Course Code		Obje & Out	ctives comes	Ins Hou	truction rs / Week		its	Max	imum N	larks
Course Code	Course title	DEO	DO	т	т	р	red	CIA	ESE	Total
		PEO	PO	L	1	r	)	40	60	100
19BEME6E07	Design of Jigs, Fixtures and Press Tools	1,3	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME6E08	Refrigeration and Air Conditioning	1,2	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME6E09	Advanced Manufacturing Processes	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BEME6E10	Vibration Analysis and Control	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME6E11	Design and Analysis of Experiments	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
19BEME6E12	Hybrid Vehicle Technology	1	1,2,3,7, 9,15	3	0	0	3	40	60	100

# **PROFESSIONAL ELECTIVE III**

Course Code		Obje & Out	ctives comes	Ins Hou	tructi rs / W	on /eek	its	Maximum Marks			
Course Code	Course title	DEO	DO	т	т	р	red	CIA	ESE	Total	
		PEU	PO	L	1	r	)	40	60	100	
19BEME7E01	Design for Manufacture and Assembly	1,3	1,2,3,7, 9,13	3	0	0	3	40	60	100	
19BEME7E02	Computational Fluid Dynamics	1,2	1,2,3,7, 9,13	3	0	0	3	40	60	100	
19BEME7E03	Power Plant Engineering	1	1,2,3,7, 13,15	3	0	0	3	40	60	100	
19BEME7E04	Energy Conservation Methods and EnergyAudit	1	1,2,3,7, 9,13	3	0	0	3	40	60	100	
19BEME7E05	Additive Manufacturing	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100	
19BEME7E06	Logistics & Supply Chain Management	1	1,2,3,7, 9,15	3	0	0	3	40	60	100	

# PROFESSIONAL ELECTIVE IV

	Course Code Course title	Obje & Out	ctives comes	Ins Hou	tructi rs / W	on /eek	its	Max	imum N	larks
Course Code	Course title	DEO	BO	т	т	р	red	CIA	ESE	Total
		PEU	ru	L	1	r	)	40	60	100
19BEME7E07	Gas Dynamics and Jet Propulsion	1,3	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME7E08	Design of Mechatronic Systems	1,2	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME7E09	Machine Tool Design	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BEME7E10	Computer Integrated Manufacturing	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEME7E11	Advanced Welding Technology	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
19BEME7E12	Operation Research	1	1,2,3,7, 9,15	3	0	0	3	40	60	100

# **PROFESSIONAL ELECTIVE V**

		Obje & Out		Ins Hou	truction rs / Week		its	Maximum Marks			
Course Code	Course	DEO	DO	т	т	р	red	CIA	ESE	Total	
	title	PEO	PO	L	1	r	)	40	60	100	
19BEME7E13	Manufacture and Inspection of Gears	1,3	1,2,3,7, 9,13	3	0	0	3	40	60	100	
19BEME7E14	Composite Materials	1,2	1,2,3,7, 9,13	3	0	0	3	40	60	100	
19BEME7E15	Design of HVAC Systems	1	1,2,3,7, 13,15	3	0	0	3	40	60	100	
19BEME7E16	Non Destructive Testing	1	1,2,3,7, 9,13	3	0	0	3	40	60	100	
19BEME7E17	Industrial Safety Engineering	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100	
19BEME7E18	Surface Engineering	1	1,2,3,7, 9,15	3	0	0	3	40	60	100	

# **PROFESSIONAL ELECTIVE VI**

		Obje & Out	ctives comes	Ins Hou	tructi rs / W	on /eek	its	Max	imum N	larks
Course Code	Course	DEO	DO	т	т	р	red	CIA	ESE	Total
	uue	PEU	ru	L	1	r	)	40	60	100
19BEME8E01	Quality Control and Reliability	1,3	1,2,3,7,	3	0	0	3	40	60	100
	Engineering		9,13							
19BEME8E02	Production Planning and Control	1,2	1,2,3,7,	3	0	0	3	40	60	100
			9,13							
19BEME8E03	Cogeneration and Waste Heat	1	1,2,3,7,	3	0	0	3	40	60	100
	RecoverySystems		13,15							
19BEME8E04	Industrial Engineering	1	1,2,3,7,	3	0	0	3	40	60	100
			9,13							
19BEME8E05	Computer Aided Drafting and Cost	1,3	1,2,3,7,	3	0	0	3	40	60	100
	Estimation		9,12							
19BEME8E06	Total Quality Management	1	1,2,3,7,	3	0	0	3	40	60	100
	-		9,15							

	SCIENCE	& HUI	MANIT	IES						
		Obje & Out	ctives tcomes	Ins Hou	tructi rs / W	on /eek	ts	Max	ximum N	Iarks
Course Code	Course title	PEO	PO	L	Т	Р	Credi	CIA	ESE	Total
1000001	Drobability and Dandom Droases	1.3	1237	2	-	0	2	40	<b>60</b>	100
IARE2HOE01	Probability and Random Process	1,5	1,2,3,7, 9,13	3	0	0	3	40	00	100
19BESHOE02	Fuzzy Mathematics	1,2	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BESHOE03	Linear Algebra	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BESHOE04	Engineering Acoustics	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BESHOE05	Solid Waste Management	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
19BESHOE06	Green Chemistry	1	1,2,3,7, 9,15	3	0	0	3	40	60	100
19BESHOE07	Applied Electrochemistry	1,2	2,3,4,5, 13	3	0	0	3	40	60	100
19BESHOE08	Industrial Chemistry	1,2	2,3,4,5, 14	3	0	0	3	40	60	100
19BESHOE09	Technical Writing	1	2,3,4,5, 12	3	0	0	3	40	60	100
	COMPUTER SCIENC	E AND	ENGI	NEEF	RING	r		1		
		Object Outc	tives &	Ins Hou	tructi rs / W	on /eek	lits	Ma	ximum	Marks
Course Code	Course title	РЕО	РО	L	Т	Р	Cred	CIA 40	ESE 60	Total
19BECSOE01	Internet Programming	1,3	1,2,3,7,	3	0	0	3	40	60	100
19BECSOE02	Multimedia and Animation	1	1,2,3,7, 9,15	3	0	0	3	40	60	100
19BECSOE03	PC Hardware and Trouble shooting	1,2	2,3,4,5, 13	3	0	0	3	40	60	100
19BECSOE04	Java Programming	1,2	2,3,4,5, 14	3	0	0	3	40	60	100
	ELECTRICAL AND ELEC	CTRON	NICS E	NGIN	EER	ING				
		Object Outc	tives &	Ins Hou	tructi rs / W	on /eek	lits	Ma	ximum	Marks
Course Code	Course title	РЕО	РО	L	т	Р	Cred	CIA	ESE	Total
19BFFFOF01	Electric Hybrid Vehicles	1.2	1.2.3.7.	3	0	0	3	<b>40</b>	<b>60</b>	100 100
100000000		1,2	9,13	2	0	0	2	40	60	100
19BEEEOE02	Auditing	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BEEEOE03	Programmable Logic Controller	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEEEOE04	Renewable Energy Resources	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
	ELECTRONICS AND CO	MMUN	ICATI	ON E	NGI	NEEI	RING			
		Obje & Out	ctives tcomes	Ins Hou	tructi rs / W	on /eek	its	Max	ximum N	Iarks
Course Code	Course title	PEO	РО	L	т	Р	Cred	CIA	ESE	Total
10000001	Deal Time Erste dde d Cartana	1.2	1027	2	0	0	2	40	<b>60</b>	100
19BEECOE01	Keal Time Embedded Systems	1,3	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEECOE02	Consumer Electronics	1,2	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEECOE03	Neural Networks and its Applications	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BEECOE04	Fuzzy Logic and its Applications	1	1,2,3,7, 9,13	3	0	0	3	40	60	100

# COURSES OFFERED BY OTHER DEPARTMENTS

	BIOTE	ECHNO	LOGY							
		Obje & Out	ctives comes	Ins Hou	tructi rs / W	on Zeek	ts	Max	imum N	larks
Course Code	Course title	PEO	PO	L	Т	Р	Credi	CIA	ESE	Total
4000000000		110	1007	<u> </u>	•	•		40	60	100
19BTBTOE01	Bioreactor Design	1	1,2,3,7, 9,15	3	0	0	3	40	60	100
19BTBTOE02	Food Processing and Preservation	1,2	2,3,4,5, 13	3	0	0	3	40	60	100
19BTBTOE03	Basic Bioinformatics	1,2	2,3,4,5, 14	3	0	0	3	40	60	100
19BTBTOE04	Fundamentals of Nano Biotechnology	1	2,3,4,5, 12	3	0	0	3	40	60	100
	AUTOMOBI	LE EN	GINEE	RINO	Ĵ					
		Obje	ctives	Ins	tructi rs / W	on	ts	Max	imum N	farks
Course Code	Course title		Do	-		CCK	redit	CIA	ESE	Total
		РЕО	РО	L	Т	Р	С	40	60	100
19BEAEOE01	Automobile Engineering	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BEAEOE02	Two and Three Wheelers Technology	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEAEOE03	Vehicle Maintenance	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
19BEAEOE04	Modern Vehicle Technology	1	1,2,3,7, 9,15	3	0	0	3	40	60	100
19BEAEOE05	Fleet Management	1,2	2,3,4,5, 13	3	0	0	3	40	60	100
	CIVIL F	ENGIN	EERIN	G						
		Obje	ctives	Ins	tructi	on	s	Max	imum N	larks
Course Code	Course title	& Out	comes	Hou	rs / w	еек	redit	CIA	ESE	Total
		PEO	РО	L	Т	Р	C	40	60	100
19BECEOE01	Housing, Plan and Management	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BECEOE02	Building Services	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BECEOE03	Management of Irrigation Systems	1	2,3,4,5, 12	3	0	0	3	40	60	100
19BECEOE04	Advanced Construction Technology	1	1,2,3,7, 9,15	3	0	0	3	40	60	100
	CHEMICA	L ENG	INEER	ING						
		Obje	ctives	Ins	tructi	on	S	Max	imum N	larks
Course Code	Course title		comes	nou		D	redit	CIA	ESE	Total
		PEO	РО	L	Т	Р	С	40	60	100
19BTCEOE01	Energy Management in Chemical Industries	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BTCEOE02	Fertilizer Technology	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BTCEOE03	Industrial Wastewater Treatment	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
19BTCEOE04	Solid and Hazardous Waste Management	1	1,2,3,7, 9,15	3	0	0	3	40	60	100

	FOODT	ECHN	OLOG	Y						
		Obje & Out	ctives comes	Ins Hou	tructi rs / W	ion /eek	its	Max	imum N	larks
Course Code	Course title	DEO	DO	т	т	р	red	CIA	ESE	Total
		PEU	ru	L	1	r	0	40	60	100
19BTFTOE01	Processing of Food Materials	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BTFTOE02	Nutrition and Dietetics	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BTFTOE03	Ready to Eat Foods	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
19BTFTOE04	Agricultural Waste and Byproducts Utilization	1	1,2,3,7, 9,15	3	0	0	3	40	60	100
	COURSES OFFERED T	о отн	ER DE	PAR'	ГМЕ	NTS	•	•		
		Obje & Out	ctives comes	Ins Hou	tructi rs / W	ion /eek	its	Max	imum N	larks
Course Code	Course title	DEO	PO	т	т	D	Cred	CIA	ESE	Total
		PEU	ru	L	1	r	0	40	60	100
19BEMEOE01	Computer Aided Design	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
19BEMEOE02	Industrial Safety and Environment	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
19BEMEOE03	Transport Phenomena	1	1,2,3,7, 9,14	3	0	0	3	40	60	100
19BEMEOE04	Introduction to Biomechanics	1	1,2,3,7, 9,15	3	0	0	3	40	60	100

#### **Programme Educational Objectives (PEO's)**

1:Graduates will more conscious about their profession with social awareness and responsibility.2:Graduates will be engineering experts, who would help solve industry's technological problems.

**3:**Graduates will be engineering professionals, consultants or entrepreneurs engaged in technology development.

**4**:Graduates will interact with their peers in other disciplines in industry and society and contribute to the economic growth of the country.

#### **Programme Outcomes (PO's)**

**1:** Ability to apply knowledge of mathematics and science in solving engineering problems.

**2:** In-depth knowledge on the fundamental principles, construction and auxiliary systems of mechanical sciences.

**3:** To understand the principles involved in evaluating the structural, functional and safety requirements of mechanical systems.

**4:** Hands on knowledge to develop analytical skills for designing and analyzing various mechanical components and processes.

5: To understand and apply appropriate techniques and IT tools for the design and analysis of mechanical systems.

**6:** Understanding the mechanism of pollutant formation and its control techniques.

7: Understanding of human and ethical responsibilities towards the profession and society.

8: Ability to understand the economics and cost analysis in order to take economically sound decisions.

**9:** Ability to apply modem techniques and tools necessary for engineering practice with appropriate considerations for public health, safety, cultural and environmental limitations.

**10:** Understand the impact of engineering solutions in a societal context and to be able to respond effectively to the needs for sustainable development.

**11:** Function effectively as an individual, and as a member or a leader in diverse teams, and in multi-disciplinary situations.

**12:** To recognize the need for, and have the ability to engage in independent and lifelong learning.

#### ProgrammeSpecific Outcomes (PSO's)

**13:** Ability to design a mechanical system, component, or process to meet desired needs of the nation, industries, institutions within realistic constraints such as economic, environmental, social, political, ethical, health care, and safety, manufacturability, and sustainability.

**14:**Ability to develop and use of software tools and Information Technology for mechanical engineering domain.

**15:**Ability to perform effectively first level managerial responsibilities for large or medium engineering organizations.

Programme Educational		Programme Objectives													
Objectives	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1			~			~	~	~	~	~			~		
2	~	✓	✓	✓	✓				~					✓	
3	~	✓	~	✓	~				~		√	~		~	
4								~			√				~



#### **B.ARCH- CURRICULUM**

#### 2019-2020 batch

#### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

- Bachelor of Architecture curriculum is designed to prepare the graduates having knowledge and Skillful aptitude I. To become a successful Professional
  - II. To imbibe and implant a strong foundation in Architectural Design Skills involving advanced Technological science and social concern.
- III. To learn the theoritical aspects, critical thinking process and Practices in the field of Architecture and design.
- IV. To update themselves of new developments in the field of architecture
- V. To follow and inspire high ethical values in professional practice.

#### **PROGRAMME OUTCOME (PO):**

- 1) Ability to gain knowledge of Building Science, Technology, Engineering, Architecture and Humanities.
- 2) Ability to understand and analyse theoretical knowledge and to apply the principles, elements and construction details and techniques in Architectural Design.
- 3) Ability to identify social, economical, environmental and cultural issues and to restructure the evolution of Design accordingly.
- 4) Ability to understand ethical and professional responsibilities.
- 5) Ability to review the technological developments in the profession of architecture and construction.
- 6) Ability to understand real life situation of Architectural Practice.
- 7) Ability to communicate effectively and work in interdisciplinary groups.

#### **PROGRAMME SPECIFIC OUTCOME(PSO):**

8. Ability to gain overall knowledge in the field of Architecture and Design and contribute the best to the development of the society and the country.

9. Ability to become a successful professional with ethical values

#### MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOME:

A broad relation between the programme objectives and the outcome is given in the following table

PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO8	PSO9
								2	al
1				N	N	N	N	N	v
Π	$\checkmark$		$\checkmark$					$\checkmark$	
III								$\checkmark$	
IV					$\checkmark$	$\checkmark$		$\checkmark$	
V									

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# B.ARCH - CURRICULUM 2019-2020 batch Choice Based Credit System

Subject Legend:ART – Theory -0,ARP – Practical-1,ARS – Studio-2,L- lecture ,T- Theory,P/S- Practical /StudioC- CreditsAbbreviation:CIA – Continuous Internal Assessment;ESE – End Semester ExamExam Hours :Theory(T)-3 HrsPractical (P)-6 HrsStudio(S)- 6 hrs

Name of the course Course **Objectives** Instruction **Maximum Marks** code and out comes hours / week Credit(s) L Т P/ Total ESE CIA PEOs POs S 40 60 100 **SEMESTER - I** III 3,8,9 19ART101 History of Architecture – I 2 2 40 60 100 \_ \_ Ш 1, 8,9 19ART102 Mathematics in Architecture 2 2 40 60 100 \_ -III 3,6 2 19ART103 **Environmental Studies** \_ 2 40 60 100 \_ 2,6,7 II.III 19ARP111 1 3 ArtApprecition and Model making 3 60 90 150 \_ 8,9 2,6,7 I.II.II 19ARS121 Architectural Design -I 10 200 300 500 \_ 10 8.9 I,IV I,IV, 2,48,9 **Building Materials** 1 5 80 200 19ARS122 4 120 V I.II 1,2 8,9 19ARS123 Architectural Graphics 1 3 3 60 90 150 \_ **Semester Total** 9 -21 26 520 780 1300 **SEMESTER - II** 3,8,9 Ш -19ART201 History of Architecture - II 2 2 40 60 100 2,8,9 II,III 2 \_ 19ART202 Concept of Building Structures 2 40 60 100 \_ II,III 2,8,9 -19ART203 2 2 40 100 Theory of Architecture 60 2,5,8,9 I.II.I -19ARP211 Computer Application – I 1 3 3 60 90 150 V I.II.II 2,6,7 -19ARS221 Architectural design -II 10 200 300 500 8,9 10 \_ I,IV 2,4 8,9 I.IV. -19ARS222 Building Materials and construction-I 1 5 4 80 120 200 V Measured Drawing and I,II 1,2,8,9 -1 3 19ARS223 90 3 60 150 Documentation 9 21 26 **Semester Total** -520 780 1300

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ARE – Elective-3,

2

Course code	Name of the course	Objective out cor	es and nes	Ins h	truc ours	tion ; /		Max	imum N	Iarks
				,	weeł	K	t(s)			
		PEOs	POs	L	Т	P /S	Credit	CIA	ESE	Total
								40	60	100
	SI	EMESTER	- III							[
19ART301	History of Architecture – III	111	3,8,9	2	-	-	2	40	60	100
19ART302	Design of Structures I	II,III	2,8,9	2	-	-	2	40	60	100
19ART303	Building Services- I	III,IV	2,5 8,9	2	-	-	2	40	60	100
19ARP311	Surveying, levelling and Site Planning	II,III	2,8,9	1	-	3	3	60	90	150
19ARS321	Architectural design -III	I,II,III,IV	2,6,7 8,9	-	-	10	10	200	300	500
19ARS322	Building Materials & construction - II	I,IV,V	2,4 8,9	1	-	5	4	80	120	200
19ARS323	Climate Responsive Architecture	III,IV	2,5 ,8,9	1	-	3	3	60	90	150
	Semester Total			9	-	21	26	520	780	1300
	SI	EMESTER	– IV							
19ART401	Contemporary Architecture – I	III,IV	2,3 ,8,9	2	-	-	2	40	60	100
19ART402	Design of Structures - II	II,III	2,8,9	2	-	-	2	40	60	100
19ART403	Acoustics and Lighitng	II,III	2,8,9	2	-	-	2	40	60	100
19ARP411	Computer Application -II	I,II,IV	2,5,8,9	1	-	3	3	60	90	150
19ARS421	Architectural design –IV	I,II,III,IV	2,6,7 8,9	-	-	10	10	200	300	500
19ARS422	Building Materials & construction - III	I,IV,V	2,4 ,8,9	1	-	5	4	80	120	200
19ARS423	Building Services - II	III,IV	2,5 ,8,9	1	-	3	3	60	90	150
	Semester Total			9	-	21	26	520	780	1300
	S	EMESTER	R−V							
19ART501	Contemporary Architecture - II	III,IV	2,3 8,9	2	-	-	2	40	60	100
19ART502	Landscape Architecture	I,II,IV	2,5 8,9	2	-	-	2	40	60	100
19ARP511	Computer Application III	I,II,IV	2,5 8,9	1	-	3	3	60	90	150
19ARS521	Architectural design -V	I,II,III,IV	2,6,7 8,9	-	-	10	10	200	300	500
19ARS522	Building Materials & construction - IV	I,IV,V	2,4 8,9	1	-	5	4	80	120	200
19ARET***	Elective 1	I,IV	5,6,7 8,9	2	-	-	2	40	60	100
19ARES***	Elective 2	I,IV	5,6,7 8,9	1	-	3	3	60	90	150
	Semester Total			9	-	21	26	520	780	1300

# List of Elective subjects-\*\*\*19ARET531Progressive Architecture19ARET532Environmental Planning19ARES533Advanced Stuructural Design19ARES534Building services for special buildings

Course code	Name of the course	Object out	tives and comes	Ins hou	struct irs / v	tion veek	t(s)	Maximum Marks			
		PEOs	POs	L	Т	P/S	Credi	CIA	ESE	Total	
								40	60	100	
	SE.	MESTE					1	1			
19ART601	Building Codes and Regulations	1,1V, V	4,6 8,9	2	-	-	2	40	60	100	
19ART602	Estimation and Specification	III,IV	2,5,6 8,9	2	-	-	2	40	60	100	
19ARS621	Architectural design –VI	I,II,II I,IV	2,6,7 8,9	-	-	10	10	200	300	500	
19ARS622	Architectural detailing &Working drawing	I,IV, V	1,5,6 8,9	2	-	4	4	80	120	200	
19ARS623	Vernacular Architecture	II,III	1,3,5 8,9	1	-	3	3	60	90	150	
19ARET***	Elective 3	I,IV	5,6,7 8,9	2	-	-	2	40	60	100	
19ARES***	Elective 4	I,IV	5,6,7 8,9	1	-	3	3	60	90	150	
	Semester Total			10	-	20	26	520	780	1300	
List of Electiv 19ARET631A 19ARET632 19ARES633 19ARES634	ve subjects *** Architectural Conservation Vaastu and principles of Traditional Ind Product design Architectural Journalism	ian Archi	tecture								
	SEN	MESTE	R VII								
19ARP711	Practical Training I: Client Meeting/Interaction Site Visits, Verification and Measurement Concept and Scheme Development Construction Documents/Drawings Training Portfolio I	I,IV, V	1,4,5,6, 7	-	-	-	18	360	540	900	
Semester Total			-	-	-		18	360	540	900	

Course	Name of the course	Objectiv	es and	Instruction				Maximum Marks		
code		out co	mes	hou	irs / w	eek	<b>s</b> )		1	
		PEOS	POs	L	Т	P/ S	Credit(	CIA	ESE	Total
								40	60	100
	S	SEMESTE	ER VIII							
19ART801	Physical Planning	III,IV	2,3,5	2	-	-	2	40	60	100
19ART802	Urban Design	III,IV	2,3,6 8,9	2	-	-	2	40	60	100
19ARS821	Architectural design –VII	I,II,III,I V	2,6,7 8,9	-	-	10	10	200	300	500
19ARS822	Interior Design	Ι	5,8,9	2	-	3	4	80	120	200
19ARS823	Sustainable Architecture	III,IV	2,3,6	2	-	3	4	80	120	200
19ARET***	Elective 5	I,IV	5,6,7 8,9	2	-	-	2	40	60	100
19ARES***	Elective 6	I,IV	5,6,7 8,9	1	-	3	3	60	90	150
	Semester Total			11	-	19	27	540	810	1350
19ARET831 19ARES833 19ARES835V	Earth quake resistance Architecture Industrial Architecture19ARES834 isual Communication Design	e 19ARE' 4Digital Arcl	T832Integ	grated	Buildi	ng Mai	nageme	ent Syster	ms	
		SEMEST	ER IX							
19ART901	Housing	I,V	4,5,6 ,7	2	-	-	2	40	60	100
19ART902	Research Methods and Field studies	III,IV	2,5	2	-	-	2	40	60	100
19ARS921	Architectural Design -VIII- (Urban Design)	III,IV	2,5,7	-		14	14	280	420	700
19ARS922	Dissertation	I,II,III,I V	2,6,7	-	-	6	3	60	90	150
19ARET***	Elective 7	I,IV	5,6,7	2	-	-	2	40	60	100
19ARES***	Elective 8	I,IV	5,6,7	1	-	3	3	60	90	150
	Semester Total			7	-	23	26	520	780	1300
List of Elect 19ARET931 19ARES933 19ARES934	<b>ive subjects (Any Two)</b> Disaster management High rise buildings Green Buildings	19A	ARET932	2 ]	Real e	state 1	nanage	ement		
		SEMEST	ER X							
19ARS1021	Professional practice	I,V	2	1	-	3	3	60	90	150
19ARS1022	Project Management	I,V	2	1	-	3	3	60	90	150
19ARS1023	Architectural Thesis	I,II,III,I V,V	4,5,6 ,7	-	-	18	18	360	540	900
	Semester Total			2	-	24	24	480	720	1200

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# Credits :

Course	Credits
Theory	40
Practical	15
Studio	137
Elective	20
Practical Training	18
Dissertation	3
Architectural thesis	18
Total	251

# <u>Total Marks :</u>

Semester	<b>Total Credits</b>	Marks
Semester- I	26	1300
Semester- II	26	1300
Semester- III	26	1300
Semester- IV	26	1300
Semester- V	26	1300
Semester- VI	26	1300
Semester- VII	18	900
Semester- VIII	27	1350
Semester- IX	26	1300
Semester- X	24	1200
Total	251	12550



# FACULTY OF ARCHITECTURE B.DES (INTERIOR DESIGN) - CURRICULUM 2019 - 2020 Batch

# **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

1. To prepare students to excel in computer applications to succeed in industry/ technical profession. The need to Design and present the ideas onto the working format

2. To provide students with solid foundation in technical design and aesthetics combination fundamentals required to solve related projects and also to pursue higher studies and research.

3. To train students with good design breadth with material understanding so as to comprehend, analyze, design and create design solutions for the real life projects.

4. To inculcate students in professional and ethical attitude, effective communication skills, multidisciplinary approach and an ability to relate design issues to broader social context.

5. To provide students with an academic environment aware of excellence, leadership and continuous learning, on technology and trends needed for a successful career.

## **PROGRAMME OUTCOMES (POs):**

On successful completion of the program,

1. Graduates will acquire knowledge of basic design, digital fundamentals, design concepts, materials and a broader understanding into services and execution.

2. Graduates will have an ability to practically identify, formulate and implement design solutions and foray into main stream of the professional practice..

3. Graduates will have an ability to design and conduct experiments, analyze and interpret design data and make suitable drawings and 3d visualizations for execution.

4. Graduates will be able to design variety of projects based on the user study analysis and formulate requirements and design types along with styles and aesthetics related to the above.

5. Graduates will have the skill to work on bring in costing and project execution elements and they will recognize and implement related emerging disciplines. Graduates will be able to communicate the design language effectively in both verbal and written form.

# **PROGRAMME SPECIFIC OUTCOME (PSO):**

6. Graduates will demonstrate skills to use modern tools, software and equipments to analyze project solutions. 7. Graduates will exhibit the knowledge of professional and ethical responsibilities. Graduates will have a confidence for self education and ability for continuous learning on trends and technologies along with an attitude to excel in the field

# MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOME:

A broad relation between the programme objectives and the outcome is given in the following table

PEO	<b>P</b> 01	PO2	PO3	PO4	<i>PO</i> 5	PSO6	PSO7
1				V	V		
2	V						
3							
4							
5						$\checkmark$	

# <u>B.DES – CURRICULUM</u> 2019 - 2020 batch (New Syllabus) PROGRAMME DTRUCTURE:

Subject Legend:

- IDT Theory 0
- IDP Practical 1
- IDS Studio 2
- IDE Elective 3
- IDV Value 4

Abbreviations:

**CIA** - Continuous Internal Assessment; **ESE** – End Semester Exam



# FACULTY OF ARCHITECTURE B.DES - CURRICULUM 2019 - 2020 Batch

#### **PROGRAM STRUCTURE:**

Subject Legend: IDT – Theory -0, IDP – Practical-1, IDS – Studio-2, IDE – Elective-3, IDV – Value-4

Abbreviation: CIA - Continuous Internal Assessment; ESE - End Semester Exam

Course code	Name of the course	Ot er c	ojectiv s and out omes	Ins n l	Instructio n hours / week			Maxi	mum ]	Marks
		PEOs	POs	L	Т	Р	Credi	CIA	ESE	Total
	SEMEST		T					40	60	100
	SEMES	IEK-	- 1 	2	0	0	2	40	60	100
19IDT101	Theory of Interiors	III	1,6	4	U	U	2	40	00	100
19IDT102	History of Interiors - I	Π	1,6	3	0	0	3	40	60	100
19IDT103	Environmental Studies	Π	3,6	2	-	-	2	40	60	100
19IDP111	Art and craft	II	1,4,6	1	-	3	3	60	90	150
19IDS121	Basic Interior Design - I	III	2,4,5	0	0	12	8	160	240	400
19IDS122	Interior Materials & Construction - I	III	1,6,7	2	0	5	4	80	120	200
19IDS123	Interior Graphics - I	Ι	1,6,7	1	0	5	3	60	90	150
	Semester Total			11	0	29	25	480	720	1200
	SEMEST	ER –	· II							
19IDT201	Psychology of Interiors	ш	1.4,7	2	0	0	2	40	60	100
19IDT202	History of Interiors - II	II	1,4,7	3	0	0	2	40	60	100
19IDP211	Computer applications - I	Ι	3,6,7	1	0	4	3	60	90	150
19IDP212	Model Making	Π	3,6,7	1	0	4	3	60	90	150
19IDS221	Interior Design - II	III	3,6,7	0	0	12	8	160	240	400
19IDS222	Interior Materials & Construction - II	III	1,6,7	3	0	5	4	80	120	200
19IDS223	Interior Graphics - II	Ι	1,6,7	1	0	4	3	60	90	150
	Semester Total			11	0	29	25	500	750	1250

Karpagam Academy of Higher Education, (Deemed to be University), Coimbatore - 641021

Course code	Name of the course	Ob es co	Instructio n hours / week			t(s)	Maximum Marks			
		PEOs	POs	L	Т	Р	Credi	CIA	ESE	Total
								40	60	100
	SEMESTI	E <b>R</b> – 1		r –	1	1	1		1	
19IDT301	Space Planning and Ergonomics	III	2,4,7	2	0	0	2	40	60	100
19IDT302	Interior Services - I - Plumbing and water supply	п	1,5,7	3	0	0	2	40	60	100
19IDP311	Computer Applications - II	Ι	2,6,7	4	0	0	3	60	90	150
19IDP312	Workshop (Wood, cane& bamboo engineered wood, glass, stone)	п	1,6,7	0	0	6	3	60	90	150
19IDS321	Interior Design - III	v	3,4,7	0	0	12	8	160	240	400
19IDS322	Advanced materials & applications	IV	3,4,7	1	0	6	4	80	120	200
19IDS323	Interior Landscape	v	1,2,7	0	0	6	3	60	90	150
	Semester Total			10	0	30	25	500	750	1250
	SEMESTI	E <b>R</b> – 1	IV					1	•	•
19IDT401	Furniture Design, Light and Color	II I	1,3,4	2	-	-	2	40	60	100
19IDT402	Interior Services - II– Electrical wiring, lighting and air conditioning	п	1,5,7	3	-	-	2	40	60	100
19IDP411	Computer Applications - III	Ι	2,5,6	4	-	-	3	60	90	150
19IDP412	Workshop	II	1,3,6	-	-	6	3	60	90	150
19IDS421	Interior Design - IV	V	3,6,7	-	-	12	8	160	240	400
19IDS422	Furniture Construction detailing &Modular /custom made	IV	1,3,4	1	-	6	3	60	90	150
19IDS423	Lifestyle accessories design	IV	1,4,7	-	-	6	6	80	120	200
	Semester Total			10	0	30	27	500	750	1250

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Course code	Name of the course	Objective s and out		Ins n l	stru hou	ctio rs /		Maxi	mum ]	Marks
		con	nes		wee	k	(S		1	
		PEOs	POs	L	T	P	Credit(	CIA	ESE	Total
								40	60	100
	SEMEST	ER –	V							
19IDT501	Contemporary Interiors	II	1,4,6	3	0	0	2	40	60	100
19IDT502	Interior Services - III– Acoustics and climate response	II	1,5,6	3	0	0	2	40	60	100
19IDP511	Computer Graphics	Ι	2,3,6	4	0	0	3	60	90	150
19IDP512	Working drawings and detailing	V	1,3,4	1	0	5	3	60	90	150
19IDS521	Interior Design - V	V	3,6,7	0	0	12	8	160	240	400
19IDS524	Estimation Costing	IV	5,6,7	1	0	5	3	60	90	150
19IDES531	Elective – 2	IV	1,6,7	1	0	5	3	60	90	150
	Semester Total			13	0	27	22	480	720	1200
Elec	tives									
1. 19II	DES531A – Signage and graphics									
2. 19II	DES531B – Product design									
3. 19II	DES531C - Set Design									
	SEMEST	ER –	VI							
19IDP611	v	6,7	0	0	0	16	320	480	800	
19IDS621	IV	1,6,7	0	0	6	3	60	90	150	
	Semester Total			0	0	6	19	380	570	950

Course	Name of the course				jectiv and out mes	Ins n l	stru hou wee	ctio rs / k	dit(s)	Maximum Marks		
code				PEOs	POs	L	Т	Р	Cre	CIA	<b>ESE</b>	Dota
		S	EMESTE	R – V	/II					40	00	100
19IDT701	Professional Practice			IV	6,7	3	0	0	2	40	60	100
19IDT702	Project management			V	6,7	3	0	0	2	40	60	100
19IDP711	Interior Photography and	Journali	sm	IV	2,3,5	1	0	4	3	60	90	150
19IDP712	Advanced Workshop			II	1,3,7	1	0	6	4	80	120	200
19IDS721	Interior Design - VI			V	3,6,7	2	0	10	8	160	240	400
19IDS722	Integrated Project Work			V	1,6,7	0	0	6	3	60	90	150
19IDP731	Elective			IV	1,6,7	0	0	4	3	60	90	150
	Semester Total					10	0	30	25	500	750	1250
19IDPE731A	A Interior Website and Blog	gging	19	IDPE'	731B M	larke	ting	Tech	nique	s		
19IDPE7310	C Creative Art & Craft		19	IDPE	731D P	reser	ntatio	on Te	chniq	ues		
19IDPE731E	E Adaptive reuse and Recyc	cling	19	IDPE	731F T	extil	e De	sign				
		S	EMESTE	R – V	III				r		1	1
19IDS821	Design Thesis: Independed interior project comprisin and design. Project Report Model	ent work g study, t , Draw	of large analysis ing and	v	5,6,7	2	0	28	16	320	480	800
19IDS831	Dissertation			IV	2,6,7	1	0	6	4	80	120	200
	Semester Total					3	0	34	20	400	600	1000
Design Cont	exual Studies		Interior	r Phot	ography	/						
Digital Inter	orsBranding in Interiors		N. J. and a second s	1 T								
A doptivo rov	eriais research		Vernac	r blog	nteriors	d wo	hait	- <i>or</i> oo	tion			
Total Credi	ts•	Interio	i biog	ging an	u we	USIU	e crea					
Theorem	bry Courses	- 33	credits									
Prac	tical Courses	- 51	credits									
Stud	io Courses	- 99	credits									
Elec	tive Courses	- 5	credits_									
<u>Tota</u>	Total - 188 credits											

Karpagam Academy of Higher Education, (Deemed to be University), Coimbatore – 641021
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
		Theory of Interiors		#					
		History of Interiors - I			#				
I.	<b>IR- I</b>	Space planning &Ergonomics	#		#				
AR.	ILSE	Art and craft		#				#	#
YE	SEM	Basic Interior Design I		#				#	#
		Interior Materials & Construction I		#					
		Interior Graphics I	#						
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
		Psychology of Interiors		#					
		History of Interiors. II			#				
	н-я	Computer applications I		#	#				
AR -	STER	Model Making		#			#		
YE	EME	Interior Design II		#				#	#
	S	Interior Materials & Construction II		#					
		Interior Graphics II	#						
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
		Furniture Design			#				
		Interior Services – Plumbing and water supply		#					
п	R- III	Computer Applications II		#			#		
YEAR -	EMESTE	Workshop (Wood, cane& bamboo engineered wood, glass, stone)		#					
	N.	Interior Design III		#				#	#
		Advanced materials & applications		#					
		Interior Landscape		#			#		

		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
		Light and Color	#					#	
		Interior Services –		#					
		electrical wiring, lighting							
		and air conditioning							
	CR- IV	Computer Applications III		#					
AR	ILSI	Workshop (elective)		#			#		
YE	SEME	Interior Design IV		#				#	#
	•1	Furniture Construction		#					
		detailing & Modular							
		/custom made.		#			#		
		design		п			π		
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
		Contemporary Interiors		#					
		Interior Services –		#					
		acoustics and climate							
	>	response							
. III -	ER-	Computer Graphics		#			#		
AR	EST	Working drawings and		#				#	#
YE	EM	detailing							
	$\mathbf{v}$	Interior Design IV		#					
		Estimation Costing	#		#				
		Elective - 2	#		#				
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
		Practical Training:	#	#		#		#	#
		Client Masting/Internation site							
		Visits Verification and							
	Μ	Measurement concept							
H	LR.	and Scheme							
AR .	STI	Development							
YE	ME	Construction							
ŗ	SE	Documents/ Drawings							
		I raining Portfolio I							
		Field study and		#				#	
		documentation							

Karpagam Academy of Higher Education, (Deemed to be University), Coimbatore – 641021

		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
		Professional Practice		#	#			#	
	н	Project management		#	#			#	
8 - IV	ER- VI	Photography and Journalism		#					#
YEAH	EMEST	Workshop (Printing and Textiles)	#						
	S	Elective	#						
		Interior Design VI	#						
		Integrated Project Work							
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
YEAR - IV	EMESTER- VIII	Design Thesis: Independent work of large interior project comprising study, analysis and design. Project Report , Drawing and Model	#			#		#	#
	Š	Special Study /Elective		#			#		

### FACULTY OF PHARMACY UG PROGRAM (CBCS) – B.PHARM (2019–2020 Batch and onwards)

		Obje and cor	ctives out nes	Inst hour	tructi rs / w	on eek		Max	imum M	larks
Course code	Name of the course	PEOS	POs	L	Т	Р	Credit(s	CIA	ESE	Total
		I						25/15 /10	75/ 35/15	100/5 0/25
	SEI	MEST	ER -	Ι						
19BP101T	Human Anatomyand Physiology - I Theory	5	k	3	1	-	4	25	75	100
19BP102T	Pharmaceutical Analysis - Theory	1	с	3	1	-	4	25	75	100
19BP103T	Pharmaceutics-Theory	1	a	3	1	-	4	25	75	100
19BP104T	Pharmaceutical Inorganic Chemistry– Theory	5	а	3	1	-	4	25	75	100
19BP105T	Communication skills–Theory*	3	h	2	-	-	2	15	35	50
19BP106RBT 19BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	5	а	2	-	-	2	15	35	50
19BP107P	Human Anatomy and Physiology I – Practical	5	b	-	-	4	2	15	35	50
19BP108P	Pharmaceutical Analysis- Practical	1	b,c	-	-	4	2	15	35	50
19BP109P	Pharmaceutics-Practical	1	b	-	-	4	2	15	35	50
19BP110P	Pharmaceutical Inorganic Chemistry– Practical	5	b,j	-	-	4	2	15	35	50
19BP111P	Communication skills–Practical*	3	h	-	-	2	1	10	15	25
19BP112RBP	Remedial Biology– Practical*	5	a	-	-	2	1	10	15	25
	Semester Total			14/ 16*	4	18/ 20*	27/ 29*/ 30*	185 /200* /210*	490 /525* /540*	675 /725* /750*
	SEN	<b>IEST</b>	ER –	II						
19BP201T	Human Anatomy and Physiology II– Theory	5	k	3	1	-	4	25	75	100
19BP202T	Pharmaceutical Organic Chemistry -I Theory	5	а	3	1	-	4	25	75	100
19BP203T	Biochemistry– Theory	5	a,k	3	1	-	4	25	75	100
19BP204T	Pathophysiology– Theory	2,6	b,f,i	3	1	-	4	25	75	100
19BP205T	Computer Applications inPharmacy– Theory*	4	d	3	-	-	3	25	50	75
19BP206T	Environmental sciences- Theory*	4	j	3	-	-	3	25	50	75
19BP207P	Human Anatomy and Physiology – II Practical	5	k	-	-	4	2	15	35	50
19BP208P	Pharmaceutical Organic Chemistry- I Practical	5	a,b,j	-	-	4	2	15	35	50
19BP209P	Biochemistry– Practical	5	a,b	-	-	4	2	15	35	50
19BP210P	Computer Applications inPharmacy– Practical*	4	d	-	-	2	1	10	15	25
	Semester Total			18	4	14	29	205	520	725

\*Class Examination (The subject experts at department level shall conduct examinations)

		Obj s an co	ective d out mes	Ins h	truct ours week	ion /		Maxi	mum M	arks
Course code	Name of the course	PEOs	POs	L	Т	Р	Credit(s)	CIA	ESE	Total
								25/15	75/ 35	100
	SEMESTE	<b>R - I</b>	II							
19BP301T	Pharmaceutical Organic Chemistry – II Theory	5	а	3	1	-	4	25	75	100
19BP302T	Physical Pharmaceutics -I Theory	5	a	3	1	-	4	25	75	100
19BP303T	Pharmaceutical Microbiology– Theory	1	k	3	1	-	4	25	75	100
19BP304T	Pharmaceutical Engineering – Theory	1,5	a	3	1	-	4	25	75	100
19BP305P	Pharmaceutical Organic Chemistry -II Practical	5	a,b,j	-	-	4	2	15	35	50
19BP306P	Physical Pharmaceutics -I Practical	5	b	-	-	4	2	15	35	50
19BP307P	Pharmaceutical Microbiology-Practical	1	a,b	-	-	4	2	15	35	50
19BP308P	Pharmaceutical Engineering –Practical	1,5	a,c	-	-	4	2	15	35	50
	Semester Total	-	-	12	4	16	24	160	440	600
	SEMESTE	R – I	V							
19BP401T	Pharmaceutical Organic Chemistry –III Theory	5	a	3	1	-	4	25	75	100
19BP402T	Medicinal Chemistry – I Theory	1	a,k	3	1	-	4	25	75	100
19BP403T	Physical Pharmaceutics –II Theory	5	a	3	1	-	4	25	75	100
19BP404T	Pharmacology -I Theory	5	a,d, k	3	1	-	4	25	75	100
19BP405T	Pharmacognosy and Phytochemistry –I Theory	1	a	3	1	-	4	25	75	100
19BP406P	Medicinal Chemistry –I Practical	1	a,b	-	-	4	2	15	35	50
19BP407P	Physical Pharmaceutics -II Practical	5	b	-	-	4	2	15	35	50
19BP408P	Pharmacology – I Practical	5	a,b, d	-	-	4	2	15	35	50
19BP409P	Pharmacognosy and Phytochemistry –I Practical	1	a,b	-	-	4	2	15	35	50
	Semester Total	-	-	15	5	16	28	185	515	700

		Obj s an co	ective d out mes	Ins h	truct ours week	tion /		Maxi	mum M	arks
Course code	Name of the course	PEOs	POs	L	Т	Р	<b>Credit</b> (s)	CIA	ESE	Total
								25/15	75/ 35	100
	SEMEST	'ER - '	V							
19BP501T	Medicinal Chemistry -II Theory	1	a,k	3	1	-	4	25	75	100
19BP502T	Industrial Pharmacy I–Theory	1,5	a,c, k	3	1	1	4	25	75	100
19BP503T	Pharmacology -II Theory	5	a,k	3	1	-	4	25	75	100
19BP504T	Pharmacognosy and Phytochemistry II– Theory	1	a,k	3	1	1	4	25	75	100
19BP505T	Pharmaceutical Jurisprudence – Theory	3,4	a,e, g	3	1	-	4	25	75	100
19BP506P	Industrial Pharmacy I –Practical	1	a,c	-	I	4	2	15	35	50
19BP507P	Pharmacology -IIPractical	5	a,d	-	-	4	2	15	35	50
19BP508P	Pharmacognosy and Phytochemistry -II Practical	1	a,b	-	-	4	2	15	35	50
	Semester Total	-	-	15	5	12	26	170	480	650
	SEMEST	ER –V	/I				•			
19BP601T	Medicinal Chemistry -III Theory	1	a,k	3	1	-	4	25	75	100
19BP602T	Pharmacology - III Theory	5	a,k	3	1	-	4	25	75	100
19BP603T	Herbal Drug Technology– Theory	1,5	a,k	3	1	-	4	25	75	100
19BP604T	Biopharmaceutics and Pharmacokinetics – Theory	5	a,c, k	3	1	-	4	25	75	100
19BP605T	Pharmaceutical Biotechnology- Theory	1	k	3	1	-	4	25	75	100
19BP606T	Quality Assurance – Theory	1,4	a,c, k	3	1	-	4	25	75	100
19BP607P	Medicinal Chemistry -III Practical	1	a,b	-	-	4	2	15	35	50
19BP608P	Pharmacology -IIIPractical	5	a,d	-	-	4	2	15	35	50
19BP609P	Herbal Drug Technology– Practical	1,5	a,b	-	-	4	2	15	35	50
	Semester Total	-	-	18	6	12	30	195	555	750

		Obj s an co	ective d out mes	Ins h	truct ours week	ion /		Maxi	mum M	arks
Course code	Name of the course	PEOs	POs	L	Т	Р	Credit(s)	CIA	ESE	Total
								25/15	75/ 35	100
	SEMESTE	<b>R - V</b>	Π			-				
19BP701T	Instrumental Methods of Analysis – Theory	1	с	3	1	-	4	25	75	100
19BP702T	Industrial Pharmacy II– Theory	1,5	a,c, k	3	1	-	4	25	75	100
19BP703T	Pharmacy Practice – Theory	2,6	a,f,i	3	1	-	4	25	75	100
19BP704T	Novel Drug Delivery System- Theory	1,5	a,k	3	1	-	4	25	75	100
19BP705P	Instrumental Methods of Analysis - Practical	1	a,c	-	-	4	2	15	35	50
19BP706PS	Practice School*	1,2 ,3, 4,5 ,6	a,b, c,d, e,f, g,h, i,j,k	-	-	12	6	25	125	150
	Semester Total	-	-	12	4	16	24	140	460	600
	SEMESTE	<b>R</b> – <b>V</b>	Ш							
19BP801T	Biostatistics and Research Methodology–	4,5	B,c,	2	1		4	25	75	100
	Theory		d	3	1	-	4	25	75	100
19BP802T	Social and Preventive Pharmacy– Theory	3,6	f,g, h,j	3	1	-	4	25	75	100
19BP803ET	Pharma Marketing Management- Theory	1,3	f			-				
19BP804ET	Pharmaceutical Regulatory Science- Theory	3,4	c,k			-				
19BP805ET	Pharmacovigilance– Theory	2,5	a,h,i			-				
19BP806ET	Quality Control and Standardizations of Herbals– Theory	1	b			-				
19BP807ET	Computer Aided Drug Design-Theory	1,5	d	3	1	-		25	75	100
19BP808ET	Cell and Molecular Biology– Theory	4,5	j.k	5		1	8	23 +	15	100
19BP809ET	Cosmetic Science– Theory	1	a	- -	т 1	-	0	$\frac{1}{25}$	+ 75	100
19BP810ET	Pharmacological Screening Methods-Theory	5	a,i	5	1	-		23	15	100
19BP811ET	Advanced Instrumentation Techniques– Theory	1,5	с			-				
19BP812ET	Dietary supplements and nutraceuticals	1	a,h							
19BP813ET	Pharmaceutical Product Development (Theory)	1	a							
19BP812PW	Project Work	1,3 ,4	a,d, e,g	-	-	12	6	-	150	150
	Semester Total	-	-	12	4	12	22	100	450	550

## PROGRAMME OUTCOMES (PO)

The graduate student at the end of the B.Pharm program will be able to face the challenges of the profession of pharmacy in the constituent disciplines namely, Industry, Practice (Community and Hospital) and Research as described below;

- a. Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
- b. Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
- c. Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- d. Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacyrelated computing tools with an understanding of the limitations.
- e. Understand and consider the human reaction to change, motivation issues, leadership and teambuilding when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
- f. Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employees).
- g. Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- h. Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
- i. Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
- j. Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- k. Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change. Self assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

# PROGRAMME SPECIFIC OUTCOMES (PSOs)

**PSO I:** To prepare graduate to success in technical or professional career in pharmaceutical industry and/ or institute and /or Health care system through excellent real time exposure to rigorous education.

**PSO m:**Understand the importance of applying pharmacodynamic and pharmacokinetic principles in formulation development and product development.

**PSO n:**To prepare the graduate to have foundation in science, formulation, technology, synthetic knowledge, discovery tools as per the requirement of Pharmaceutical sector.

**PSO o:**To strengthen the professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate pharmaceutical sciences issues to broader social context.

**PSO p:**To cultivate a sense of compliant partnering spirit in professional duties; especially in aligning with diverse health professionals and communities and to create awareness in society about the effective and safe use of medicines.

# PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A student after completing the B. Pharm course shall be called as a pharmacist and shall be capable of meeting requirements of manufacture & marketing of drugs in industry and to work in sectors of pharmacy practice.

#### PEO 1

For manufacturing, they will be in position to handle methods of drug manufacturing, drug selection, standardization, quality control, drug store management and such other requirements.

## PEO 2

For practicing pharmacy, they will be qualified persons for drug dispensing, patient counseling and such other activities.

## PEO 3

As they are also expected to provide service with globalization perspective, it is imperative that they have sound knowledge of entrepreneurship, leadership, and communication skills with ethical and moral attitudes.

## PEO 4

To develop a sense of teamwork and awareness amongst students towards the importance of interdisciplinary approach for developing competence in solving complex problems in the area of Pharmaceutical Sciences.

## PEO 5

To produce pharmacy graduates with strong fundamental concepts and high technical competence in pharmaceutical sciences who shall be able to use the tools in pharmaceutical arena for success.

## PEO 6

For Pharmacy Practice, the student shall be trained and made required competent for providing effective medication therapy management, Maintain and improve professional performance and Contribute to improve effectiveness of the health-care system and public health.

## MAPPING

PO	a	b	с	d	e	f	g	h	i	j	k	PSO 1	PSO m	PSO n	PSO o	PSO p
PEO 1	Х	Х	Х	Х		Х					Х	Х	Х	Х		
PEO 2	Х					Х		Х	Х		Х	Х				Х
PEO 3		Х	Х		Х	Х	Х	Х			Х	Х			Х	Х
PEO 4		Х	Х	Х	Х	Х		Х		Х	Х			Х	Х	
PEO 5	Х	Х	Х	Х	Х		Х	Х		Х	Х	Х	Х	Х	Х	
PEO 6	Х					Х	Х	Х	Х	Х	Х	Х				Х

# **B.E. MECHANICAL ENGINEERING**

# **CURRICULUM**

# (2019 AND ONWARDS)

# (PART TIME PROGRAMME)

# Department of Mechanical Engineering FACULTY OF ENGINEERING



# **KARPAGAM ACADEMY OF HIGHER EDUCATION**

(Deemed to be University) Established Under Section 3 of UGC Act 1956 Pollachi Main Road, Eachanari Post, Coimbatore – 641 021. INDIA



KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University Established Under Section 3 of UGC Act, 1956) Eachanari Post, Coimbatore-641021.Tamilnadu,India.

## FACULTY OF ENGINEERING B.E. (MECHANICAL ENGINEERING – PART TIME) COURSE OF STUDY AND SCHEME OF EXAMINATION

(2019 Batch Onwards)

	SE	MESTE	RI							
		Obje Ou	ctives & tcomes	In Hou	structi urs / W	ion /eek	lits	Max	ximum N	Iarks
Course Code	Course title	PEO	PO	Т	т	р	Cred	CIA	ESE	Total
		TEO	10	L	L	L	•	40	60	100
THEORY										
19PBEME101	Engineering Mathematics I	1	1,2,3,4	3	1	0	4	40	60	100
19PBEME102	Engineering Mechanics	1	1,2,3,4, 10,11	3	0	0	3	40	60	100
19PBEME103	Basic Electrical and Electronics Engineering	1	1,2,3,4, 7,11	3	0	0	3	40	60	100
19PBEME104	Manufacturing Technology	1	1,2,3,6, 8,9	3	0	0	3	40	60	100
PRACTICAL		-								
19PBEME111	Computer Aided Design Laboratory	1	1,2,3,4, 5,8,9	0	0	3	2	40	60	100
			Total	12	1	3	15	200	300	500

	SEN	IESTEI	RII							
		Obje Out	ctives & tcomes	In: Hou	structi 1rs / W	on /eek	lits	Max	imum N	larks
<b>Course Code</b>	Course title	PEO	PO	T.	т	р	Cred	CIA	ESE	Total
		TLO	10	Ľ		1	)	40	60	100
THEORY										
19PBEME201	Engineering Mathematics II	1	1,2,3,4	3	1	0	4	40	60	100
19PBEME202	Strength of Materials	1	1,2,3,4, 10	3	0	0	3	40	60	100
19PBEME203	Theory of Machines	1	1,2,3,4, 10	3	0	0	3	40	60	100
19PBEME204	Fundamentals of Computer Programming	1,2	1,2,3,5, 9,10	3	0	0	3	40	60	100
PRACTICAL										
19PBEME211	Strength of Materials Laboratory	1	1,2,3,4, 10	0	0	3	2	40	60	100
			Total	12	1	3	15	200	300	500

		SEMEST	ER III							
		Objec Outo	tives & comes	Ins Hou	tructio rs / W	on eek	lits	Max	ximum N	Iarks
Course Code	Course title	PFO	PO	т	т	р	Cred	CIA	ESE	Total
		TEO	10	L	1	L	)	40	60	100
THEORY										
19PBEME301	Thermodynamics	1	1,2,3,4,10	3	1	0	4	40	60	100
19PBEME302	Engineering Materials and Metallurgy	1	1,2,3,4,10	3	0	0	3	40	60	100
19PBEME303	Industrial Metrology	1	1,2,3,4,10	3	0	0	3	40	60	100
19PBEME304	Fluid Mechanics & Fluid Machines	1	1,2,3,4,10	3	0	0	3	40	60	100
PRACTICAL										
19PBEME311	Fluid Mechanics and Metrology Laboratory	1	1,2,3,4,10	0	0	3	2	40	60	100
			Total	12	1	3	15	200	300	500

		SEMEST	FER IV							
		Obje Out	ctives & comes	Ins Hou	tructio rs / W	on eek	lits	Max	imum N	<b>Iarks</b>
Course Code	Course title	PEO	PO	T.	т	р	Cred	CIA	ESE	Total
		TLO	10	L	•		•	40	60	100
THEORY										
19PBEME401	Applied Thermodynamics	1	1,2,3,4,10	3	1	0	4	40	60	100
19PBEME402	Design of Mechatronic Systems	1,2	1,2,3,5,9, 10	3	0	0	3	40	60	100
19PBEME403	Design of Machine Elements	1	1,2,3,4,9	3	0	0	3	40	60	100
19PBEME404	Environmental Science	1	1,2,6,7,8, 9,10	3	0	0	3	40	60	100
PRACTICAL										
19PBEME411	Thermal Engineering Laboratory	1	1,2,3,4,10	0	0	3	2	40	60	100
			Total	12	1	3	15	200	300	500

SEMESTER V												
		Objec Outo	tives & comes	Ins Hou	tructi rs / W	on 'eek	lits	Max	imum I	Aarks		
Course Code	Course title	PFO	PO	Т	т	р	Cred	CIA	ESE	Total		
		TEO	10	L	L	L	0	40	60	100		
THEORY												
19PBEME501	Heat and Mass Transfer	1	1,2,3,4,5	3	1	0	4	40	60	100		
19PBEME502	Operations Research	1,3	1,4,7,8,11	3	0	0	3	40	60	100		
19PBEME503	Design of Transmission Systems	1	1,2,3,4,8, 9,10	3	0	0	3	40	60	100		
19PBEME5E-	Professional Elective - I	-	-	3	0	0	3	40	60	100		
PRACTICAL												
19PBEME511	Computer Aided Manufacturing Laboratory	1	1,2,3,4,5, 8,9	0	0	3	2	40	60	100		
			Total	12	1	3	15	200	300	500		

SEMESTER VI												
		Object Outc	ives & omes	Ins Hou	structi rs / W	on eek	lits	Max	imum N	Iarks		
Course Code	Course title	PEO	PO	I.	т	Р	Cred	CIA	ESE	Total		
		TEO	10	Ľ	-	1	Ŭ	40	60	100		
THEORY												
19PBEME601	Engineering Economics and Financial Management	1,3	1,2,6,7,8, 9,12	3	0	0	3	40	60	100		
19PBEME602	Automation in Manufacturing	1	1,2,3,4,5, 8,9	3	0	0	3	40	60	100		
19PBEME6E-	Professional Elective - II	-	-	3	0	0	3	40	60	100		
19PBEME6E-	Professional Elective - III	-	-	3	0	0	3	40	60	100		
PRACTICAL												
19PBEME611	Computer Aided Analysis Laboratory	1	1,2,3,4,5, 8,9	0	0	3	2	40	60	100		
			Total	12	0	3	14	200	300	500		

SEMESTER VII												
		Objec Out	tives & comes	Ins Hou	tructio rs / W	on eek	lits	Max	imum N	/larks		
Course Code	Course title	PEO	PO	L	т	Р	Cred	CIA	ESE	Total		
		1120	10	Ľ	•	-	•	40	60	100		
THEORY												
19PBEME701	Total Quality Management	1,3	1,2,6,7, 8,9,12	3	0	0	3	40	60	100		
19PBEME7E-	Professional Elective - IV	-	-	3	0	0	3	40	60	100		
19PBEME7E-	Professional Elective - V	-	-	3	0	0	3	40	60	100		
PRACTICAL												
19PBEME791Project Work and Viva Voce1,2,3		1,2,3,4, 5,6,7,8, 9,10,11, 12	0	0	9	6	40	60	100			
	Tota						15	160	240	400		

PROFESSIONAL ELECTIVE I												
		Obje Out	ctives & comes	Ins Hou	tructio rs / W	on eek	lits	Max	imum N	/larks		
Course Code	Course title	PFO	PO	т	т	р	Cred	CIA	ESE	Total		
			10	L	1	1		40	60	100		
19PBEME5E01	Emerging Materials	1	1,2,3,4, 10	3	0	0	3	40	60	100		
19PBEME5E02	Renewable Energy Sources	1	1,2,3,4, 6,7,9	3	0	0	3	40	60	100		
19PBEME5E03	Advanced I.C. Engines	1	1,2,3,4, 6,7,9	3	0	0	3	40	60	100		
19PBEME5E04	Hydraulics and Pneumatics Power Control	1	1,2,3,4, 9,11,12	3	0	0	3	40	60	100		
19PBEME5E05	Automobile Engineering	1	1,2,3,4, 6,7,9	3	0	0	3	40	60	100		

PROFESSIONAL ELECTIVE II												
		Obje Out	ctives & comes	Ins Hou	tructio rs / W	on eek	lits	Max	imum N	/larks		
Course Code	Course title	PEO	PO	L	т	Р	Cred	CIA	ESE	Total		
		TEO	10	Ľ	1	1	)	40	60	100		
19PBEME6E01	Design of Jigs, Fixtures and Press Tools	1	1,2,3,4, 6,7,9	3	0	0	3	40	60	100		
19PBEME6E02	Refrigeration and Air Conditioning	1	1,2,3,4, 8	3	0	0	3	40	60	100		
19PBEME6E03	Advanced Manufacturing Processes	1	1,2,3,4, 9,12	3	0	0	3	40	60	100		
19PBEME6E04	Design and Analysis of Experiments	1	1,2,34,5 ,9	3	0	0	3	40	60	100		
19PBEME6E05	Hybrid Vehicle Technology	1	1,2,3,4, 5,9	3	0	0	3	40	60	100		

PROFESSIONAL ELECTIVE III												
		Obje Ou	ectives & Itcomes	Ins Hou	tructio rs / W	on eek	lits	Max	imum N	Aarks		
Course Code	Course title	PEO	PO	т	т	р	Cred	CIA	ESE	Total		
			10	L	1	1	0	40	60	100		
19PBEME6E06	Design for Manufacture and Assembly	1	1,2,3,5,6, 8,9	3	0	0	3	40	60	100		
19PBEME6E07	Computational Fluid Dynamics	1	1,2,3,4,5, 9	3	0	0	3	40	60	100		
19PBEME6E08	Power Plant Engineering	1	2,3,4,6	3	0	0	3	40	60	100		
19PBEME6E09	Additive Manufacturing	1	1,2,3,4,9, 12	3	0	0	3	40	60	100		
19PBEME6E10	Logistics & Supply Chain Management	1,3	1,2,6,7,8, 9,12	3	0	0	3	40	60	100		

PROFESSIONAL ELECTIVE IV												
		Obje Ou	ectives & Itcomes	Ins Hou	tructio rs / W	on eek	lits	Max	imum N	Aarks		
Course Code	Course title	PEO	РО	L	Т	Р	Cred	CIA 40	ESE 60	Total 100		
19PBEME7E01	Gas Dynamics and Jet Propulsion	1	1,2,3,4,1 0,12	3	0	0	3	40	60	100		
19PBEME7E02	Production Planning and Control	1,3	1,2,3,5,7, 8,9,11	3	0	0	3	40	60	100		
19PBEME7E03	Machine Tool Design	1	1,2,3,5,6, 8,9	3	0	0	3	40	60	100		
19PBEME7E04	Computer Integrated Manufacturing	1,2	5,9,11	3	0	0	3	40	60	100		
19PBEME7E05	Advanced Welding Technology	1	1,2,3,4,6, 7,9	3	0	0	3	40	60	100		

PROFESSIONAL ELECTIVE V												
		Obje Ou	ectives & tcomes	Ins Hou	tructio rs / W	on eek	lits	Max	imum N	Aarks		
Course Code	Course title	РЕО	РО	L	Т	Р	Cred	CIA	ESE	Total		
								40	60	100		
19PBEME7E06	Composite Materials	1	1,2,3,5,6, 8,9	3	0	0	3	40	60	100		
19PBEME7E07	Quality Control and Reliability Engineering	1,3	1,3,4,7,9, 11	3	0	0	3	40	60	100		
19PBEME7E08	Non Destructive Testing	1	1,2,3,4,6, 7,8,9,10	3	0	0	3	40	60	100		
19PBEME7E09	Industrial Safety Engineering	1,3	1,2,3,4,6, 7,8,9,10	3	0	0	3	40	60	100		
19PBEME7E10	Industrial Robotics	1	1,2,3,4,6, 7,9	3	0	0	3	40	60	100		

#### **Programme Educational Objectives (PEO's)**

- 1: Graduates will more conscious about their profession with social awareness and responsibility.
- 2: Graduates will be engineering experts, who would help solve industry's technological problems.
- **3:** Graduates will be engineering professionals, consultants or entrepreneurs engaged in technology development.
- 4: Graduates will interact with their peers in other disciplines in industry and society and contribute to the economic growth of the country.

#### **Programme Outcomes (PO's)**

- 1: Ability to apply knowledge of mathematics and science in solving engineering problems.
- 2: In-depth knowledge on the fundamental principles, construction and auxiliary systems of mechanical sciences.
- **3:** To understand the principles involved in evaluating the structural, functional and safety requirements of mechanical systems.
- 4: Hands on knowledge to develop analytical skills for designing and analyzing various mechanical components and processes.
- 5: To understand and apply appropriate techniques and IT tools for the design and analysis of mechanical systems.
- 6: Understanding the mechanism of pollutant formation and its control techniques.
- 7: Understanding of human and ethical responsibilities towards the profession and society.
- 8: Ability to understand the economics and cost analysis in order to take economically sound decisions.
- 9: Ability to apply modem techniques and tools necessary for engineering practice with appropriate considerations for public health, safety, cultural and environmental limitations.
- **10:** Understand the impact of engineering solutions in a societal context and to be able to respond effectively to the needs for sustainable development.
- **11:** Function effectively as an individual, and as a member or a leader in diverse teams, and in multidisciplinary situations.
- 12: To recognize the need for, and have the ability to engage in independent and lifelong learning.

#### **Programme Specific Outcomes (PSO's)**

- 13: Ability to design a mechanical system, component, or process to meet desired needs of the nation, industries, institutions within realistic constraints such as economic, environmental, social, political, ethical, health care, and safety, manufacturability, and sustainability.
- 14: Ability to develop and use of software tools and Information Technology for mechanical engineering domain.
- **15:** Ability to perform effectively first level managerial responsibilities for large or medium engineering organizations.

Programme Educational		Programme Objectives													
Objectives	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1			~			✓	✓	~	✓	✓			✓		
2	✓	✓	✓	✓	✓				~					~	
3	✓	✓	✓	✓	✓				~		$\checkmark$	~		~	
4								✓			$\checkmark$				~

Total number of credits: 104											
L: Lecture Hour	T: Tutorial Hour	CIA: Continuous Internal Assessment									
P: Practical Hour	C: No. of Credits	ESE: End Semester Examinations									

#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING FACULTY OF ENGINEERING UG PROGRAM (CBCS) – B.E –EEE (PART TIME) (2019–2020 Batch and onwards)

		Obj and o	jectives ut comes	Ins h	truct iours week	tion ; / x	(s)	Maximum Marks		
Course code	Name of the course	PEOs	POs	L	Т	Р	Credit	CIA	ESE	Total
								40	60	100
	SEMES	<u> </u>								
19PBEEE101	Engineering Mathematics-I	Ι	a,b,e,i	3	0	0	3	40	60	100
19PBEEE102	Electrical Machines -I	I,II	a,b,d,i	3	0	0	3	40	60	100
19PBEEE103	ElectronicDevices and Circuits	I,II	a,b,d,f	3	0	0	3	40	60	100
19PBEEE104	Computer Fundamentals and C Programming	I.III	a,e,h,i	3	0	0	3	40	60	100
19PBEEE111	Computer Practices &Programming Laboratory	I.III	a,e,h,i.j	0	0	3	2	40	60	100
	Semester Total			12	0	3	14	200	300	500
	SEMEST	ER – II								.1
19PBEEE201	Engineering Mathematics -II	Ι	a,b,e,i	3	0	0	3	40	60	100
19PBEEE202	Electrical MachinesII	I,II	a,b,d,i	3	0	0	3	40	60	100
19PBEEE203	Measurements and Instrumentation	I.III	a,b,d,f	3	0	0	3	40	60	100
19PBEEE204	Environmental Sciences	II,III	c,f,	3	0	0	3	40	60	100
19PBEEE211 DC and ACMachines   Laboratory		.III.	a,b,d,i	0	0	3	2	40	60	100
Semester Total				12	0	3	14	200	300	500
			24	0	6	28	400	600	1000	

	N. 64	Obj and o	ectives ut comes	Ins h	truct ours week	tion /	t(s)	Maximum Marks		
Course code	Name of the course	PEOs	POs	L	Т	Р	Credit	CIA	ESE	Total
								40	60	100
	SEMEST	ER - III	T			1	I		1	r
19PBEEE301	Power Electronics	Ι	a,b,e,i	3	0	0	3	40	60	100
19PBEEE302	Analysis of Electric Circuits	I,II	a,b,d,i	3	0	0	3	40	60	100
19PBEEE303	Control System Engineering	I,II	a,b,d,f	3	0	0	3	40	60	100
19PBEEE304	Renewable Energy Sources	I.III	a,e,h,i	3	0	0	3	40	60	100
19PBEEE311	Control System Engineering Laboratory	I.III	a,e,h,i.j	0	0	3	2	40	60	100
	Semester Total			12	0	3	14	200	300	500
	SEMEST	ER – IV	T				-		•	•
19PBEEE401	Solid State Drives	Ι	a,b,e,i	3	0	0	3	40	60	100
19PBEEE402	Transmission and Distribution Systems	I,II	a,b,d,i	3	0	0	3	40	60	100
19PBEEE403	Linear Integrated Circuits	I.III	a,b,d,f	3	0	0	3	40	60	100
19PBEEE404	Power Plant Engineering	II,III	c,f,	3	0	0	3	40	60	100
19PBEEE411	Power Electronics and Drives Laboratory	.III	a,b,d,i	0	0	3	2	40	60	100
	Semester Total			12	0	3	14	200	300	500

		Obje and co	ectives 1 out mes	Ins hou	struct irs / v	tion veek	( <b>s</b> )	M	aximu Marks	ım S
Course code	Name of the course	PEOs	POs	L	Т	Р	Credit	CIA	ESE	Total
								40	60	100
	SEM	ESTER	- V	1	T			T	1	1
19PBEEE501	High Voltage Engineering	Ι	a,b,e,i	3	0	0	3	40	60	100
19PBEEE502	Power System Analysis	I,II	a,b,d,i	3	0	0	3	40	60	100
19PBEEE5	Professional Elective I	I,II	a,b,d,f	3	0	0	3	40	60	100
19PBEEE5	Professional Elective II	I.III	a,e,h,i	3	0	0	3	40	60	100
19PBEEE511	Electronics Laboratory	I.III	a,e,h,i. j	0	0	3	2	40	60	100
19PBEEE551	Mini Project			0	0	3	1	100	0	100
S	emester Total			12	0	6	15	300	300	600
	SEM	ESTER ·	- VI	1	1	[	r –	1	1	1
19PBEEE601	Power System Operation and Control	Ι	a,b,e,i	3	0	0	3	40	60	100
19PBEEE602	Engineering Economics and Financial Management	I,II	a,b,e,d ,i	3	0	0	3	40	60	100
19PBEEE6E	Professional Elective III	I.III	a,b,d,f	3	0	0	3	40	60	100
19PBEEE6E	Professional Elective IV	II,III	a,c,f,	3	0	0	3	40	60	100
19PBEEE611	PowerSystemSimulationLaboratory	.III	a,b,d,i	0	0	3	2	40	60	100
19PBEEE691	Project work and Viva-Voce Phase 1			0	0	3	3	40	60	100
S	emester Total			12	0	6	17	240	360	600

	Name of the course	Obj and o	Ins h	truct ours week	tion /	(s)	Maximum Marks			
Course code	Name of the course	PEOs	POs	L	Т	Р	Credit	CIA	ESE	Total
								40	60	100
	SEMEST	ER - V	II							
	Total Quality	Ι	a,b,e,i							
19PBEEE701	Management			3	0	0	3	40	60	100
19PBEEE7E	Professional Elective V	I,II	a,b,d,i	3	0	0	3	40	60	100
19PBEEE7E	Professional Elective VI	I,II	a,b,d,f	3	0	0	3	40	60	100
10DDEEE701	Project work and	I.III	a,e,h,i							
19PBEEE/91 Viva-Voce Phase 2				0	0	9	6	120	180	300
	Semester Total			9	0	9	15	240	360	600
	Program Total			81	0	33	103	1580	2220	3800

### LIST OF ELECTIVES

		PROFESSIONAL E	LEC	<b>FIV</b>	E –I &	z II			
S. No	SUB. CODE	TITLE OF THE COURSE	L	Т	Р	С	CIA	ESE	TOTAL
1.	19PBEEE5E01	Data Structures and Algorithms	3	0	0	3	40	60	100
2.	19PBEEE5E02	Computer Networks	3	0	0	3	40	60	100
3.	19PBEEE5E03	Network Analysis and Synthesis	3	0	0	3	40	60	100
4.	19PBEEE5E04	Special Electrical Machines	3	0	0	3	40	60	100
5.	19PBEEE5E05	Energy Management, Utilization and Auditing	3	0	0	3	40	60	100
6.	19PBEEE5E06	Distributed Generation	3	0	0	3	40	60	100
7.	19PBEEE5E07	Industrial Automation	3	0	0	3	40	60	100
8.	19PBEEE5E08	Consumer Electronics	3	0	0	3	40	60	100

		PROFESSIONAL ELI	ECI	TIVE	E –III (	& IV			
1	1. 19PBEEE6E01	Design of Electrical Apparatus	3	0	0	3	40	60	100
2	2. 19PBEEE6E02	Digital Logic Circuits	3	0	0	3	40	60	100
3	3. 19PBEEE6E03	HVDC and EHVAC	3	0	0	3	40	60	100
2	4. 19PBEEE6E04	Computer Architecture	3	0	0	3	40	60	100
5	5. 19PBEEE6E05	Introduction to Neural Networks	3	0	0	3	40	60	100
6	6. 19PBEEE6E06	Biomedical Instrumentation	3	0	0	3	40	60	100
7	7. 19PBEEE6E07	Sensors and Transducers	3	0	0	3	40	60	100
8	8. 19PBEEE6E08	FlexibleACTransmission Systems	3	0	0	3	40	60	100
Ģ	9. 19PBEEE6E09	Professional Ethics	3	0	0	3	40	60	100
1	10 19PBEEE6E10	Microprocessor and Microcontroller	3	0	0	3	40	60	100
		PROFESSIONAL ELE	СТ	IVE	-V &	VI			
1.	19PBEEE7E01	Fuzzy logic and its Applications	3	0	0	3	40	60	100
2.	19PBEEE7E02	Digital Signal Processing	3	0	0	3	40	60	100
3.	19PBEEE7E03	Power Quality	3	0	0	3	40	60	100
4.	19PBEEE7E04	Power System Restructure	3	0	0	3	40	60	100
5.	19PBEEE7E05	Modern Semiconductor Devices	3	0	0	3	40	60	100
6.	19PBEEE7E06	Smart Grid	3	0	0	3	40	60	100
7.	19PBEEE7E07	3	0	0	3	40	60	100	
8.	19PBEEE7E08	3	0	0	3	40	60	100	

PROGRAM OUTCOMES: On successful completion of the programme,

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021

PO1	Apply the Mathematical knowledge and the basics of Science and Engineering to solve the problems pertaining to Electronics and Instrumentation Engineering
PO2	Identify and formulate Electrical and Electronics Engineering problems from research literature and be able to analyze the problem using first principles of Mathematics and Engineering Sciences.
PO3	Come out with solutions for the complex problems and to design system components or process that fulfill the particular needs taking into account public health and safety and the social, cultural and environmental issues
PO4	Draw well-founded conclusions applying the knowledge acquired from research and research methods including design of experiments, analysis and interpretation of data and synthesis of information and to arrive at significant conclusion
PO5	Form, select and apply relevant techniques, resources and Engineering and IT tools for Engineering activities like electronic prototyping, modeling and control of systems and also being conscious of the limitations.
PO6	Understand the role and responsibility of the Professional Electrical and Electronics Engineer and to assess societal, health, safety issues based on the reasoning received from the contextual knowledge.
PO7	Be aware of the impact of professional Engineering solutions in societal and environmental contexts and exhibit the knowledge and the need for sustainable Development.
PO8	Apply the principles of Professional Ethics to adhere to the norms of the engineering practice and to discharge ethical responsibilities.
PO9	Function actively and efficiently as an individual or a member/leader of different teams and multidisciplinary projects
PO10	Communicate efficiently the engineering facts with a wide range of engineering community and others, to understand and prepare reports and design documents; to make effective presentations and to frame and follow instructions.
PO11	Demonstrate the acquisition of the body of engineering knowledge and insight and Management Principles and to apply them as member / leader in teams and multidisciplinary environments
PO12	Recognize the need for self and life-long learning, keeping pace with technological challenges in the broadest sense.

## **PROGRAM SPECIFIC OUTCOMES:**

PSO13	Apply the Mathematical knowledge and the basics of Science and Engineering to solve the problems pertaining to Electronics and Instrumentation Engineering
PSO14	Identify and formulate Electrical and Electronics Engineering problems from research literature and be able to analyze the problem using first principles of Mathematics and Engineering Sciences.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1	Have successful technical and professional careers in their chosen fields such as circuit theory, Field theory, control theory and computational platforms.
PEO 2	Engross in life long process of learning to keep themselves abreast of new developments in the field of Electronics and their applications in power engineering

## **MAPPING:**

PEO \PO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO10	PO11	PO12	PSO13	PSO14
PEO1	✓	✓	✓	✓	$\checkmark$	$\checkmark$	✓					✓	✓	$\checkmark$
PEO2	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$		✓			$\checkmark$	$\checkmark$

### DEPARTMENT OF ASTROLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAMME CBCS M.Sc APPLIED ASTROLOGY

Course Code	Name of the Course	Objecti & Out Comes	ves	Inst hour wee	ructi rs / k	on		Mamimum Marks				
		PEOs	POs	L	Т	Р	Credit(s)	CIA	ESE	TOTAL		
	SEMEST	STER - I										
19ASP101	அடிப்படை ஜோதிடவியல் - I Fundamentals of Astrology-I	1	1	4	0	0	4	40	60	100		
19ASP102	ஜோதிடவியலில் கோள்கள் - I Planets in Astrology-I	1	1,8	4	0	0	4	40	60	100		
19ASP103	பிரஸன்ன ஜோதிட முறைகள் - 1 Horary Astrological methods I	3	5	4	0	0	4	40	60	100		
19ASP104	ராசிகள் பாவகங்கள் நட்சத்திரங்கள்-I Rasi – Bhava – Star Constelations -I	1	2	4	0	0	4	40	60	100		
19ASP105B	அடிப்படை வாஸ்து — 1 Fundamental Vasthu -I	2	4	4	0	0	4	40	60	100		
19ASP111	பலன் சொல்லும் முறைகள் - I Predictive methods in Astrology-I	1,2	4,1 0	0	0	4	2	40	60	100		
19ASP112	Prediction – Marriage, Education	1,2	11	0	0	4	2	40	60	100		
	Total						24	280	420	700		
	SEMEST	ER II		1				L				
19ASP201	அடிப்படை ஜோதிடவியல் -II Fundamentals of Astrology-II	1	1	4	0	0	4	40	60	100		
19ASP202	ஜோதிடவியலில் கோள்கள் -ll Planets in Astrology-II	1	1	4	0	0	4	40	60	100		
19ASP203	பிரஸன்ன ஜோதிட முறைகள் - II Horary Astrological methods-II	2	5	4	0	0	4	40	60	100		
19ASP204	ராசிகள் பாவகங்கள் நட்சத்திரங்கள்II Rasi – Bhava – Star Constelations-II	1	2	4	0	0	4	40	60	100		
19ASP205B	Modern vasthu II	2	4	4	0	0	4	40	60	100		
19ASP211	பலன் சொல்லும் முறைகள் - II Predictive methods in Astrology-II	2	2,6	0	0	4	2	40	60	100		
19ASP212	Prediction – Job, Business	3	6,1 1	4	0	4	2	40	60	100		
	Total	1			1	1	24	280	420	700		

	SEMESTI	ER III								
19ASP301	புதிய ஜோதிட முறைகள் Modern	2	3,6	4	0	0	4	40	60	
	Astrological Methods									
19ASP302	ஜோதிடவிதிகளில் முகூர்த்தங்கள் -	3	7	4	0	0	4	40	60	100
	Muhurtha in Astrology									
19ASP303	மருத்துவ ஜோதிடம்	3	8	4	0	0	4	40	60	100
	Medical Astrology									
19ASP304	ஜோதிட கணித முறைகள்	1	9	4	0	0	4	40	60	100
	Casting Horoscope									
19ASP305B	Ashtavargam	2	10	4	0	0	4	40	60	100
19ASP311	Marriage Matching – Practical	1	11	4	0	0	4	40	60	100
19ASP312	Prediction Overall - Practical	1,8	11	0	0	4	4	40	60	100
							28	280	420	700
	SEMESTH	ER IV								
19ASP491	Project	2.3	2,1	0	0	0	15	80	120	200
			1							

The following are the Elective papers

		List of Elective Papers
S.No	Course Code	Subjects
1.	19ASP105(A)	எண்கணிதம் (Numerology)
2.	19ASP105(B)	ஆடிப்படை வாஸ்த்து – I (Fundamentals of Vasthu – I)
3.	19ASP105(C)	அங்கலட்சனம் மற்றும் மச்சங்கள் (Samuthrika Lakshanam)
4.	19ASP205(A)	நவரத்தினங்கள் (Gemology)
5.	19ASP205(B)	நவீன வாஸ்த்து – II (Modern Vasthu – II)
6.	19ASP205(C)	கைரேகை சாஸ்திரம் (Palmistry )
7.	19ASP305(A)	தாஜிகம் (Thajigam)
8.	19ASP305(B)	அஷ்டவாக்கம் (Astavargam)
9.	19ASP305(C)	16 வர்க்க சக்கரங்களும் பலன்களும் (Predictions through 16 Varga
		Chakras)

## **Programme outcomes**

- சோதிட முதுகலை மாணவர்கள் வானவியல் பற்றிய, சோதிடவியல் பற்றிய வரலாற்றை அறிவதால் இத்துறையின் பழமையையும் பெருமையையும் புரிந்து கொள்வார்கள்
- 2) சோதிடவியலின் அடிப்படைத்தன்மைகள் இராசி காரகத்துவங்கள், கோள்களின் காரகத்துவங்கள், பாவக காரகத்துவங்கள் ஆகியவற்றை பற்றிய ஆழ்ந்த அறிவு சாதக பலன்கள் நிர்ணயிப்பத்தில் முக்கிய பங்கு வகிக்கும்.
- 3) சோதிடவியலுக்கு பெரும் புகழ் சேர்த்த சோதிட அறிஞர்களின் பலன் கூறும் முறைகளை தெரிந்து கொள்வதினால் இத்துறையில் பல சாதனைகள் பல செய்ய ஆர்வம் ஏற்படும்
- எண்கணிதம், வாஸ்து, கைரேகை, நவரத்தினங்கள், அங்கலட்சணங்கள் ஆகிய துணைப்பாடங்களுக்கு சோதிடவியலே ஆதாரம் என்பது புலப்படும்.
- 5) சாதகம் இல்லாதவர்களுக்கு பலன்கள் சொல்லும் வகையில் பிரசன்ன முறைகள் மூலம் பலன்கள் அறிந்து கொள்ளலாம்.
- 6) நாடி முறை, ஜெயமினி முறை, கிருஷ்ணமூர்த்தி பத்ததி முறை, மேலைநாட்டு முறை ஆகிய முறைகளில் பலன்கள் சொல்லப்படுவது சோதிட துறையின் வளர்ச்சிக்கு ஆதாரங்கள் ஆகும்.

- 7) நல்ல முகூர்த்தங்களில் ஆரம்பிக்கும் செயல்கள் நல்ல பலன்களைத் தரும், தீய முகூர்த்தங்களில் ஆரம்பிக்கப்படும் செயல்கள் துன்பத்தை விளைவிக்கும் என்பதை உணரமுடியும்.
- 8) மருத்துவ சோதிடத்தின் மூலம் நோய் ஏற்படும் உடல் பாவகம், நோயின் தன்மை, நோய் ஏற்படும் காலம், நோய் தீர்க்கும் முறைகள் ஆகியவற்றை தெளிவாக அறிய முடியும்.
- 9) சோதிட கணித முறைகளை அறிந்து கொள்வதின் மூலம் இக்கால விஞ்ஞானம், கணினி முதலியன அழிந்தாலும் சோதிட கணித முறைகள் அழியாமல் பாதுகாக்க முடியும்.
- 10) அஷ்டவர்க்கங்கள், தாஜிகம், பதினாறு வர்க்க சக்கரங்கள் பற்றிய அறிவு, சாதக பலன்களை சொல்லுவதில் துல்லியத்தை நிர்ணயிக்க உதவும்.
- 11) கல்வி, திருமணம், தொழில், புத்திரபேறு முதலியவை பற்றிய கேள்விகளுக்கு தெளிவான பலன்களை சொல்ல முடியும்.

## **Programme Specific outcomes**

- 12) தனிமனிதனின் பிரச்சனைகளுக்கு சோதிட ரீதியில் சரியான தீாவை கொடுக்க முடியும்.
- 13) எதிர்காலத்தில் நடக்கக்கூடிய நன்மை, தீமைகளை முன் கூட்டியே அறிந்து, அதற்காக முன் எச்சரிக்கை நடவடிக்கைகளை எடுத்துக் கொள்ள முடியும்.
- 14) சோதிட சாஸ்திரம் தனிமனிதனின் வளர்ச்சிக்கும், நாட்டின் வளர்ச்சிக்கும் ஒரு வழிகாட்டியாக அமையும்.

## **Programme Educational Objectives (PEOs)**

PEO 1 : சோதிடவியல் முதுகலைப்பட்ட தாரிகளுக்கு வானவியல் அறிவு, சோதிடவியலின் வரலாறு, சோதிடவியலின் அடிப்படைத் தன்மைகள், கோள்கள், இராசிகள், பாவகங்கள் பற்றிய அறிவு உள்ளதால் கால தேச வர்த்தமானங்களுக்கு ஏற்ற வகையில் பலன்கள் கூறுவதற்கான திறமைகள் வளரும்.

PEO 2 : சாதக பலன்கள் சொல்லுவதற்கு சோதிட சாஸ்திரத்தில் பல முறைகள் உண்டு. அனைத்து முறைகளிலும் நன்கு பயிற்சி அளித்து, இத்துறையில் வலிமை உள்ளவர்களாக மாற்ற முடியும். இவர்கள் இத்துறையில் புதிய கண்டுபிடிப்புகளை கண்டுபிடிக்க முடியும். சோதிடத்தின் துணை சாஸ்த்திரங்களான கைரேகை, வாஸ்து, எண்கணிதம் முதலியவற்றிலும் அறிவு வளரும்.

PEO 3 : இது ஒரு தெய்வீக கலை என்பதால் சோதிட முதுகலை பட்டதாரிகள் ஒழுக்கத்தில் சிறந்தவர்களாகவும், சோதிட அறிவில் தன்னிகரற்றவர்களாகவும் மாற்றம் ஏற்படும். தற்காலத்தில் சமுதாயத்தில் ஏற்படும் அனைத்து தனி மனித பிரச்சனைகளுக்கும் தீர்வு காணமுடியும்.

POs	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PEO 1	Х	Х			Х		Х							
PEO 2		Х	Х	Х	Х				Х	Х	Х			Х
PEO 3						Х	Х	Х			X	Х	X	Х



## KARPAGAM ACADEMY OF HIGHER EDUCATION Coimbatore – 641 021 DEPARTMENT OF BIOCHEMISTRY FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS)- M.Sc., Biochemistry

(2019-2020 and onwards)

Course code	Course code Name of the course Objectives and out		Ins hou	struct rs / y	ion veek		Maximum Marks				
		con	nes		207 1		t(s)				
		PEOs	POs	L	Т	Р	Credit	CIA	ESE	Total	
								40	60	100	
	SEME	STER –	I	L .		1					
19BCP101	Chemistry of Biopolymers	I	a	4	-	-	4	40	60	100	
19BCP102	Enzymes and Microbial Technology	II	d	4	-	-	4	40	60	100	
19BCP103	Bioinstrumentation and Good Laboratory Practices	П	d, e	4	-	-	4	40	60	100	
19BCP104	Cellular Biochemistry	III	а	4	-	-	4	40	60	100	
19BCP105A	Plant Biochemistry	III	а	4							
19BCP105B	Ecology and Evolutionary biology	-	-	4	40	60	100				
19BCP105C	Biopharmaceutics	Ι	d								
19BCP111	Practical – I Quantitative Estimation and Separation Techniques	П	а	-	-	4	2	40	60	100	
19BCP112	Practical – II Plant Biochemistry and Microbiology	I, III	a, e	-	-	4	2	40	60	100	
	Journal paper analysis and Presentation	I- III	a, e	2	-	-	-	-	-	-	
			22	-	8	24	280	420	700		
	SEMES	STER –	II								
19BCP201	Regulation of Metabolic Pathways	II	а	4	-	-	4	40	60	100	
19BCP202	Molecular Biology	II	a, b	4	-	-	4	40	60	100	
19BCP203	Developmental Genetics	II	a, b	4	-	-	4	40	60	100	
19BCP204	Bioinformatics	III	d	4	-	-	4	40	60	100	
19BCP205A	Recombinant DNA Technology	Ι	d, j	4							
19BCP205B	Animal Tissue Culture	III	d, e	4	-	-	4	40	60	100	
19BCP205C	Genomics and Proteomics	III	d, j								
10BCD211	Practical – III Molecular Biology and	II	d, g,	-	-	4	2	40	60	100	
19DCI 211	Animal Biotechnology		i				2	40	00	100	
19BCP212	Practical – IV Biological Databases and	III	d, g,	-	-	4	2	40	60	100	
19001212	Analysis		i				2	10	00	100	
	Journal paper analysis and Presentation	I-III	a, e	2	-	-	-	-	-	-	
	Semester Total			22	-	8	24	280	420	700	
	SEMES	<u>TER – 1</u>			1	T		10	0	100	
19BCP301	Immunology	l	a, h	4	-	-	4	40	60	100	
19BCP302	Clinical Biochemistry	1, 111	a, d	4	-	-	4	40	60	100	
19BCP303	Endocrinology		a, d	4	-	-	4	40	60	100	
19BCP304	Drug Biochemistry		a, d	4	-	-	4	40	60	100	
19BCP305A	Biostatistics and Research Methodology		e, g					40	<i>c</i> 0	100	
19BCP305B	Clinical Research and IPR		d, e	4	-	-	4	40	60	100	
19BCP305C	Dietetic Management of Disease		d, h					ļ			
19BCP311	Practical – V Clinical Enzymes and Immunology	1, 11	d, e, i	-	-	4	2	40	60	100	

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19BCP312	Practical – VI Clinical Biochemistry and Animal Studies	Ι	d, e, i	-	-	4	2	40	60	100
	Journal paper analysis and Presentation	2	-	-	-	-	-	-		
Semester Total						8	24	280	420	700
	SEMES	TER – I	IV							
19BCP491	Project and Viva Voce	I-III	a-j	05	-	25	15	80	120	200
Semester total							15	80	120	200
Program Total							87	920	1380	2300

### **Elective courses \***

Elective – 2	1 (18BCP105) *	<b>Core Elective</b>	e – 2 (18BCP205) *	Core Elective – 3(18BCP305) *			
Course code	Name of the course (Theory)	Course Code	Name of the course (Theory)	Course Code	Name of the course (Theory)		
19BCP105-A	Plant Biochemistry	19BCP205- A	Recombinant DNA Technology	19BCP305- A	Biostatistics and Research Methodolology		
19BCP105-B	Ecology and Evolutionary biology	19BCP205- B	Animal Tissue Culture	19BCP305- B	Clinical Research and IPR		
19BCP105-C	Biopharmaceutics	19BCP205- C	Genomics and Proteomics	19BCP305- C	Dietetic Management of Disease		

\* The candidate has to select any one elective course from three options in each semester

#### Code: 19BCP101

19	-	Academic Year
BC	-	Biochemistry
Р	-	Master's Degree
First Digit	-	Semester number (1, 2, 3 and)
Second digit	-	Theory (0); Practical (1); Project (9)
Last digit	-	Paper number in the concerned semester $(1, 2)$

## PROGRAMME OUTCOMES (POs)

PG biochemistry graduate will be able to achieve

- a. **Critical Thinking and Effective Communication:** The teaching is intended to kindle the critical thinking of the student to address problems (Problem based learning) and equip them to list out their understanding (Activity based learning). The syllabus also includes journal paper presentation and analysis on specific topics of all subjects which will be evaluated by faculty handling the subject.
- b. **Future Career:** To prepare students for future careers in the various fields of biochemistry such as academic and research institution.
- c. Societal Contribution and Social Interaction: The Biochemistry Program will benefit the society on the whole by adding to the highly skilled scientific workforce, particularly for the biomedical research sectors, in the academic, industry as well as for research laboratories across the country and the globe. Inside the classrooms group discussion is encouraged on topics during the last five minutes of class to improve the understanding and to share the knowledge and view point. Outside the classroom, various outreach programis conducted on various health initiatives.
- d. **Identification and Differential Diagnosis:** To acquire biochemistposition in leading hospitals and scientist position in industries.
- e. **Ethics:** Students learn about the significance of having right moral features to develop good interpersonal skills.
- f. **Environment and Sustainability:** Understand the role of citizen to maintain sustainable environment and encourage Eco-friendly initiatives.
- g. **Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest context of health and disease.

#### PROGRAMME SPECIFIC OUTCOME (PSOs)

h.To prepare students for future careers in various fields of biochemistry by enhancing analytical and critical-thinking skills in which a core understanding of the chemistry of biological processes are important for the understanding of human health and disease.

i. To equip highly skilled scientific workforce, particularly for the biomedical research sectors, in the academic, industry as well as for research laboratories across the country and the globe.

j.The skills acquired in the program will help the students in acquiring scientific, academic and industrial positions such as Analyst, Research Scientist at Pharma (R&D) Industries, Academician, Project Associates (JRF, SRF), Doctoral Research positions abroad at India and abroad. Clinical biochemist at renowned hospitals, medical coding,

#### Scientific writers. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- I. The course aims to impart advanced and in depth understanding on all the human physiological and pathological state. To understand the molecular process and their perturbation during disease.
- II. The program covers various aspects of Biomolecule estimation and regulation to ascertain health and disease state. metabolic pathways alterations along with their regulation at the replication, transcriptional, translational, and post-translational levels including by studying DNA, RNA and protein molecules, immunology, endocrinology, advancements in rDNA technologies to circumvent genetic disorders.
- III. Further to enrich research understanding various genomic, proteomic and bioinformatics tools are added. Animal cell culture, IPR, Biostatistics, research methodology, clinical research and Plant tissue culture are offered as elective papers to get specialized in a specific area. The final semester is devoted exclusively to enrich the students to address specific research objective.

POs	a	b	c	d	e	f	g	h	i	j
PEO I	X		X			X				
PEO II	X		X	X	X	X		X	X	X
PEO III	X	X	X	X	X		X		X	X

#### Mapping of PEOs and POs

#### DEPARTMENT OF BIOTECHNOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) – M.Sc. Biotechnology (2019–2020 Batch and onwards)

		Object Outo	ives and comes	ln: hoเ	structi irs / W	on eek	()	Marks		
Course code	Name of the course	PEO's	PO`s	L	т	Ρ	Credit (s	CIA	ESE	Total
	SE	R - I								
19BTP101	Fundamentals of Biochemistry and Microbiology	I, II	a, b, c, d	4	0	0	4	40	60	100
19BTP102	Cell Biology and Molecular Genetics	I, II	a, d	4	0	0	4	40	60	100
19BTP103	Ecology, Evolutionary and Developmental Biology	I, II	a, b, c, d	4	0	0	4	40	60	100
19BTP104	Bioinstrumentation and Biostatistics	II, III	d, e, f	3	1	0	4	40	60	100
19BTP105A 19BTP105B 19BTP105C	Biodiversity, Biosafety And IPR Nano-Biotechnology Bio-energy Technology	II, IV	d, g, h	4	0	0	4	40	60	100
19BTP111	Fundamentals of Biochemistry and Microbiology - Practical – I	,	d, e, f	0	0	4	2	40	60	100
19BTP112	Cell Biology and Molecular Genetics - Practical – II	11, 111	d, e, f	0	0	4	2	40	60	100
Journal Paper A	Analysis & Presentation			2	0	0	-	-	-	-
	Semester total			21	1	8	24	280	420	700
	SE	MESTER	R - 11							
19BTP201	Recombinant DNA technology	II, III, IV	d, g, h	4	0	0	4	40	60	100
19BTP202	Fermentation and Bioprocess Technology	II, III, IV	d, g, h	4	0	0	4	40	60	100
19BTP203	Enzyme Technology	IV	g	3	1	0	4	40	60	100
19BTP204	Immunotechnology	II, III, IV	d, e, f, g	4	0	0	4	40	60	100
19BTP205A 19BTP205B 19BTP205C	Pharmaceutical Biotechnology Agricultural Biotechnology Industrial Toxicology	IV	g	4	0	0	4	40	60	100
19BTP211	Recombinant DNA, Fermentation and BioprocessTechnology - Practical – III	IV	g	0	0	4	2	40	60	100
19BTP212	Immuno and Enzyme Technology - Practical – IV	0	0	4	2	40	60	100		
Journal Paper A	Analysis & Presentation			2	0	0		-	-	-
	Semester total			21	1	8	24	280	420	700

		Object Outo	ives and comes	In: hou	structi ırs / W	on eek		Marks				
Course code	Name of the course	PEO's	PO`s	L	т	Ρ	Credit (s	CIA	ESE	Total		
SEMESTER - III												
19BTP301	Plant and Animal Biotechnology	II, III, IV	d, g, h	4	0	0	4	40	60	100		
19BTP302	Genomics, Proteomics and Bioinformatics	II, III, IV	d, g, h	4	0	0	4	40	60	100		
19BTP303	Food Biotechnology	IV	g	4	0	0	4	40	60	100		
19BTP304	Environmental Biotechnology	II, III, IV	d, e, f, g	3	1	0	4	40	60	100		
19BTP305A 19BTP305B 19BTP305C	Applied Biotechnology System Biology Tissue Engineering and Regenerative Medicine	IV	g	4	0	0	4	40	60	100		
19BTP311	Plant and Animal Biotechnology- Practical – V	II, III, IV	d, g, h, f	0	0	4	2	40	60	100		
19BTP312	Genomics, Proteomics and Bioinformatics - Practical – VI	II, III, IV	d, g, h, f	0	0	4	2	40	60	100		
Journal Paper	Analysis & Presentation			2	0	0	-	-	-	-		
	Semester total			21	1	8	24	280	420	700		
SEMESTER – IV												
19BTP491	Project and Viva Voce	III, IV	f, g, h, i	-	-	-	15	80	120	200		
Semester total						-	15	80	120	200		
	4							920	1380	2300		

#### Elective courses\*

Elective	– 1 (19BTP105)	Elective	– 2 (19BTP205)	Elective – 3 (19BTP305)			
Course code	Name of the course (Theory)	Course Code	Name of the course (Theory)	Course Code	Name of the course (Theory)		
19BTP105A	Biodiversity, Biosafety And IPR	19BTP205A	Pharmaceutical Biotechnology	19BTP305A	Applied Biotechnology		
19BTP105B	Nano-Biotechnology	19BTP205B	Agricultural Biotechnology	19BTP305B	System Biology		
19BTP105C	Bio-energy Technology	19BTP205C	Industrial Toxicology	19BTP305C	Tissue Engineering		

\*Electives are Transborder / cross disciplinary / Discipline centric elective nature.

#### PROGRAMME OUTCOMES (POs)

- a) Graduates will able to have knowledge on the basic and applied theories.
- b) Providing a broad educational and analytical knowledge necessary to make the students for appearing in competitive examinations
- c) Ability to design and conduct experiments as well as to interpret the results.
- d) An expert to work on Biotechnological concepts and allied fields (immuno, medical, microbial, Food, agricultural, environmental, plant and animal) with modern tools and techniques towards product and process development for academic, industrial and research application.
- e) Generating the graduates with an ability to identify, formulate and solve to deliver process/product with professional, societal and ethical responsibilities.
- f) Graduates will be able to visualize and work on multidisciplinary laboratory problems.
- g) Graduates will be able to update the current knowledge of interdisciplinary subjects related to biotechnology

#### PROGRAMME SPECIFIC OUTCOMEs (PSOs)

#### To enable the student to emerge as:

- h) Biotechnologist to recognize the societal need and lifelong learning.
- i) Proficient to demonstrate entrepreneurial and leadership skills with life-long learning.

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- **PEO I:** The post-graduates of Biotechnology will able to acquire in-depth knowledge of the basic and applied subjects of Biotechnology and allied fields.
- **PEO II:** The post-graduates of Biotechnology are equipped to design, analyze, conduct and interpret the experiments and data for the development of process/product within the realistic constraints.
- **PEO III:** The post-graduates of Biotechnology will able to acquire the knowledge and ability to use the concept of theories, practical skills and recent technological tools in solving any technological and professional issues independently in a global and societal context.
- **PEO IV:** The graduates of Biotechnology will continue learning to update and to become an entrepreneur in a competitive world of technology and also contribute to all forms of life.

## MAPPING OF PEOs AND POs

PFOs			Programme Outcome (s)							
. 200	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	
PEO I	×	×		``						
PEO II			×	×						
PEO III					×	×				
PEO IV							×	×	×	
# M.Sc. CHEMISTRY CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum

2019-2020



## **DEPARTMENT OF CHEMISTRY** FACULTY OF ARTS, SCIENCE AND HUMANITIES

## KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established under section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore- 641021,

Tamil Nadu, India

Phone: 0422 – 2980011 – 15 Fax No: 0422 – 2980022-23 Email: info@karpagam.com Web: www. kahedu.edu.in

*Master of Science, Department of Chemistry,* Karpagam Academy of Higher Education, (Deemed to be 1 University), Coimbatore - 641 021.

#### Programme Learning Outcomes (PLO)

- Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries.
- b. Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
- c. Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
- d. Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.
- e. Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
- f. Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.
- g. Students will be able to function as a member of an interdisciplinary problem solving team.
- h. The graduate has specific skills in planning and conducting advanced chemical experiments and applying structural-chemical characterisation techniques.
- i. Are able to use modern instrumentation and classical techniques, to design experiments, and to properly record the results of their experiment.
- j. Are able to use modern library searching and retrieval methods to obtain information about a topic, chemical, chemical technique, or an issue relating to chemistry.

#### Programme Specific outcome (PSO)

- k. A graduate with a Master's degree in Chemistry has in-depth and detailed functional knowledge of the fundamental theoretical concepts and experimental methods of chemistry.
- *l.* Students should have an advanced level understanding of the following areas of chemistry Analytical, Inorganic, Organic, and Physical Chemistry. They should master graduate level understanding of their major area(s) of research.
- *m*. Students should be able to communicate scientific results in writing and in oral presentation.

n. Students should become proficient in their specialized area of chemistry and acquire the basic tools needed to carry out independent chemical research

#### **Programme Educational Objectives**

#### PEO-1

The Masters in Chemistry will extend your depth and breadth of knowledge in all branches of chemistry, suitable for a professional chemist capable of conducting research.

#### PEO-2

To carryout research in the trust areas of chemistry. Will be able to communicate effectively the scientific information and research results in written and oral formats, to both professional scientists and to the public.

#### PEO-3

To motivate critical thinking and analytical skills to solve complex chemical problems and the Ability to handle problems of practical relevance to society while complying with economical, environmental, ethical, and safety factors.

#### PEO-4

To practice chemistry by performance of experiments in the laboratory classes. To perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions

## Mapping

РО	a	b	с	d	e	f	g	h	i	j	k	1	m	n
PEO 1	X	Х			х			х	X		Х	Х	Х	
PEO 2		Х	х	X	х			х	X		Х		Х	х
PEO 3			х	х		х	х			х			X	х
PEO 4	X	Х	X			X		X		Х	Х	Х		X

#### **DEPARTMENT OF CHEMISTRY**

## FACULTY OF ARTS, SCIENCE AND HUMANITIES

## PG PROGRAM (CBCS) – M.Sc. Chemistry

## (2019–2020 Batch and onwards)

Course code	Name of the course	Object Outc	ives & omes	In he	structi ours p week	on er	Cre dits	Maxi	mum N	Aarks
		PEO' s	PO's	L	Т	Р		CIA	ES E	Tota 1
	SEME	STER I							•	
19CHP101	Organic Chemistry – I: Reaction Mechanisms	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP102	Inorganic Chemistry –I: Nuclear Chemistry and Metallic Clusters	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP103	Physical Chemistry- I: Quantum Chemistry and Group Theory	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP104	Organic and Inorganic Spectroscopy	1,2,3, 4	1,2,3, 8,9	4	0	0	4	40	60	100
19CHP1058										
19CHP105B	Elective I	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP105C	1									
19CHP111	Organic Chemistry Practical-I: Qualitative Analysis and Single Stage Preparations	3,4	2,8,9	0	0	4	2	40	60	100
19CHP112	Organic Chemistry Practical-II: Quantitative Analysis and Double Stage Preparations	3,4	2,8,9	0	0	4	2	40	60	100
	Journal Paper Analysis & Presentation	1,2,3	1,2,3, 4,5,8, 9	-	-	-	-	-	-	-
	Semester total						24	280	420	700
	SEM	ESTER	II	-			-			
19CHP201	Organic Chemistry-II: Rearrangements, Reactions, Photochemistry and Pericyclic Reactions	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP202	Inorganic Chemistry-II: Co-ordination Chemistry	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP203	Physical Chemistry II: Chemical Kinetics and Electrochemistry	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP204	Industrial chemicals and environment	3,4	6,8	4	0	0	4	40	60	100
19CHP205A 19CHP205B 19CHP205C	Elective – II	1,2,3	1,3,5	4	0	0	4	40	60	100

*Master of Science, Department of Chemistry,* Karpagam Academy of Higher Education, (Deemed to be University), Coimbatore - 641 021.

19CHP211	Inorganic Chemistry Practical-I: Qualitative Analysis and Preparations	3,4	2,8,9	0	0	4	2	40	60	100
19CHP212	Inorganic Chemistry Practical-II: Quantitative Analysis and Complex Preparations	3,4	2,8,9	0	0	4	2	40	60	100
	Journal Paper Analysis & Presentation	1,2,3	1,2,3, 4,5,8, 9	-	-	-	-	-	-	-
19CHP206	Water Management	3	6	0	0	0	4	-	100	100
	Semester Total						28	280	520	800
	SEMI	ESTER	III				-			-
19CHP301	Organic Chemistry-III (Natural Products)	1,2,3	1,3,5	4	0	0	4	40	60	100
19HP302	Physical Chemistry–III (Thermodynamics)	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP303	Physical Methods in Chemistry (Instrumentation)	1,2,3	1,3,5, 9,10	4	0	0	4	40	60	100
19CHP304	Nanochemistry	1,2,3	1,3,5, 9	4	0	0	4	40	60	100
19CHP305A										
19CHP305B	Elective –3 (CBCS)	1,2,3	1,3,5	4	0	0	4	40	60	100
19CHP305C										
19CHP311	Physical Chemistry Practical I (Molecular Weight Determination and Conductometric Titrations)	3,4	2.8,9	0	0	4	2	40	60	100
19CHP312	Physical Chemistry Practical II(Chemical Kinetics andPotentiometric Titrations)	3,4	2,8,9	0	0	4	2	40	60	100
	Journal Paper Analysis & Presentation	1,2,3	1,2,3, 4,5,8, 9	2	-	-	-	-	-	-
	Semester total						24	280	420	700
	SEME	STER -	IV	1		1	1			1
19CHP491	Project and Viva Voce	2,3,4	2,3,4, 8,9,1 0				15	80	120	200
	Semester total		-				15	80	120	200
							91	920	148 0	240 0

	List of Core Course Elective										
]	Elective-I		Elective-II	Ele	ective-III						
Code	Course	Code	Course	Code	Course						
19CHP105A	Green Chemistry	19CHP205A	Research methodology for chemistry	19CHP305A	Polymer Chemistry						
19CHP105B	Medicinal Chemistry	19CHP205B	Analytical Chemistry	19CHP305B	Textile Chemistry						
19CHP105C	Molecular Modelling& Drug Design	19CHP205C	Organometallic Chemistry	19CHP305C	Industrial Chemistry						

## KARPAGAM ACADEMY OF HIGHER EDUCATION, (Deemed to be University) (Established Under Section 3 of UGC Act 1956) MASTER OF COMMERCE (Computer Applications) M.Com. (For the Students admitted during the year 2019 – 2021 Batch onwards)

## **Scheme of Examination**

		Objec Out	tives and tcomes	Inst Hour	ructio s / W	on eek		Max	imum M	arks
Course Code	Name of the Course	PEOs	Pos	L	Т	Р	Credits	CIA	ESE	Total
								40	60	100
		S	emester 1							
19CMP101	Managerial Economics	IV	b,g,h,i	3	1	0	4	40	60	100
19CMP102	Management Accounting	IV	b,g,h,i	3	1	0	4	40	60	100
19CMP103	Statistical Analysis	IV	b,g,h,i	3	1	0	4	40	60	100
19CMP104	Advanced Corporate Accounting	I,II, IV	a,e, b,g,h,i	3	1	0	4	40	60	100
19CMP105A	Indian Financial System	IV	b,g,h,i	4	0	0	4	40	60	100
19CMP105B	Organization Behavior	I,II	a,e,	4	0	0	4	40	60	100
19CMP105C	Consumer Behaviour	IV	b,g,h,i	4	0	0	4	40	60	100
19CMP106	Corporate Law	IV	b,g,h,i	4	0	0	4	40	60	100
19CMP111	Computer Application for Accounting (Practical)	I, II, III	a,e,c,d,f	0	0	4	2	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f	2	0	0	0	0	0	0
				22	4	4	26	280	420	700
		Se	emester II	•						
19CMP201	Corporate Finance	I,II	a,e,	3	1	0	4	40	60	100
19CMP202	Operations Research	IV	b,g,h,i	3	1	0	4	40	60	100
19CMP203	Applied Cost Accounting	IV	b,g,h,i	3	1	0	4	40	60	100
19CMP204	Financial Markets and Institutions	IV	b,g,h,i	4	0	0	4	40	60	100
19CMP205A	Security Analysis and Portfolio Management	III	c,d,f	4	0	0	4	40	60	100
19CMP205B	Human Resource Management	I,II	a,e,	4	0	0	4	40	60	100
19CMP205C	Advertising and Sales Promotion	III	c,d,f	4	0	0	4	40	60	100
19CMP206	Direct Taxation	III	c,d,f	3	1	0	4	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f	2	0	0	0	0	0	0
	- resonation			22	4	4	26	320	480	800
		Se	mester III	1	1		-	-		

19CMP301	Financial Reporting and Analysis	I, II, IV	a,e,b,g,h .i	3	1	0	4	40	60	100
19CMP302	Business Research Methods and Techniques	III	c,d,f	3	1	0	4	40	60	100
19CMP303	Indirect Taxation	III	c,d,f	3	1	0	4	40	60	100
19CMP304	Financial Services	I,II, IV	a,e,b,g,h ,i	4	0	0	4	40	60	100
19CMP305A	Insurance and Risk Management	I,II	a,e,	4	0	0	4	40	60	100
19CMP305B	Human Resource Development	I,II, IV	a,e,b,g,h ,i	4	0	0	4	40	60	100
19CMP305C	Retail Management	IV	b,g,h,i	4	0	0	4	40	60	100
19CMP306	International Business	IV	b,g,h,i	4	0	0	4	40	60	100
19CMP311	SPSS (Practical)	III	c,d,f	0	0	4	2	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f	2	0	0	0	0	0	0
				23	3	4	26	280	420	700
		Se	mester IV							
19CMP401	Corporate Governance, Ethics and Social Responsibility	IV	b,g,h,i	4	0	0	4	40	60	100
19CMP402	Entrepreneurial Development	IV	b,g,h,i	4	0	0	3	40	60	100
19CMP491	Project	III	c,d,f	0	0	20	8	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f	2	0	0	0	0	0	0
				10	0	20	15	160	240	400
							93	1040	1560	2600

## **PROGRAMME OUTCOMES (PO)**

- a) Postgraduates will develop an understanding of various commerce functions such as finance, accounting, financial analysis, project evaluation, cost accounting.
- b) Postgraduates will have exposure to solve complex commerce problems and analyze problems critically through research based or project based approach of learning.
- c) Postgraduates will excerpt information from various sources and apply mathematical, analytical, statistical and IT tools for financial and accounting analysis.
- d) Postgraduates will develop an ability to effectively communicate both orally and in written forms.
- e) Postgraduates will appreciate the importance of working independently and in a team in order to achieve common goals.
- f) Postgraduates will acquire critical and analytical thinking and will be able to apply the same in effective decision making.
- g) Postgraduates will acquire professional and intellectual integrity, professional code of conduct, ethics and values to contribute for sustainable development of society by becoming socially responsible citizen.

## **PROGRAMME SPECIFIC OUTCOMES (PSO)**

- h) Postgraduates will apply the lifelong learning and exhibit high level of commitment to identify a timely opportunity and use business innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society atlarge.
- i) Postgraduates will acquire managerial positions or take up entrepreneurial ventures by applying the skills and knowledgegained.

## **PROGRAM EDUCATIONAL OBJECTIVES (PEO)**

- I. Postgraduates will gain advanced knowledge in the domain of commerce, management and finance
- II. Postgraduates will be able to apply the accounting, finance and management tools and techniques to implement systematic decision making process.
- III. Postgraduates will attain research insights, professional skills and competencies to enhance lifelong learning and excel in diverse career path.
- IV. Postgraduates will adapt to a rapidly changing global environment and become socially responsible and value driven citizens committed to sustainable growth.

Program Educational Objectives				Pı Oı	rogran utcome	n es			
	a	b	c	d	e	f	g	h	i
Postgraduates will gain advanced knowledge in the domain of commerce, management and finance	✓				~				
Postgraduates will be able to apply the accounting, finance and management tools and techniques to implement systematic decision making process.	~				~				
Postgraduates will attain research insights, professional skills and competencies to enhance lifelong learning and excel in diverse career path.			~	~		~			
Postgraduates will adapt to a rapidly changing global environment and become socially responsible and value driven citizens committed to sustainable growth.		~					~	V	V

# M.COM. (CA) Master of Commerce (Computer Applications) CHOICE BASED CREDIT SYSTEM (CBCS)

**Curriculum** 2019 – 2020



## **DEPARTMENT OF COMMERCE**

## FACULTY OF ARTS, SCIENCE AND HUMANITIES

## **KARPAGAM ACADEMY OF HIGHER EDUCATION**

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore – 641 021, Tamil Nadu, India Phone: 0422- 2980011-2980015, Fax No: 0422 – 2980022 - 23 Email: info@karpagam.com, Web: www.kahedu.edu.in

## KARPAGAM ACADEMY OF HIGHER EDUCATION, (Deemed to be University) (Established Under Section 3 of UGC Act 1956) MASTER OF COMMERCE (Computer Applications) M.Com. (CA) (For the Students admitted during the year 2019–2020 Batch onwards)

## **Scheme of Examination**

		Obje a Out	ectives and comes	Instruc	tion H Week	ours	its	Max	imum M	arks
Course Code	Name of the Course	PEOs	POs	L	Т	Р	Credi	CIA	ESE	Total
								40	60	100
		<b>TT</b> 7	Semes	ter 1	1	_			_	
19CCP101	Managerial Economics	IV	b,g,h	3	1	0	4	40	60	100
19CCP102	Advanced Corporate Accounting	I,II, IV	a,e, b,g, h	3	1	0	4	40	60	100
19CCP103	Operations Research	IV	b,g,h	3	1	0	4	40	60	100
19CCP104	Relational Database Management System	I, II, III	a,ec,d ,f,i,j	4	0	0	4	40	60	100
19CCP105A	Financial Markets and Institutions	IV	b,g,h	4	0	0	4	40	60	100
19CCP105B	Organizational Behavior	I,II	a,e	4	0	0	4	40	60	100
19CCP105C	Retail Management	IV	b,g,h	4	0	0	4	40	60	100
19CCP111	Relational Database Management System (Practical)	I, II, III	a,ec,d ,f,i,j	0	0	4	2	40	60	100
19CCP112	Tally (Practical)	I, II, III	a,ec,d ,f,i,j	0	0	4	2	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f,i ,j	2	0	0	0	0	0	0
				28	2	0	26	200	300	500
			Semest	ter II						
19CCP201	Corporate Finance	I,II	a,e	3	1	0	4	40	60	100
19CCP202	Data Mining and Data Warehousing	I, II, III	a,ec,d ,f,i,j	4	0	0	4	40	60	100
19CCP203	Direct Taxation	III	c,d,f,i	3	1	0	4	40	60	100
19CCP204	JAVA Programming	I, II, III	a,ec,d ,f,i,j	4	0	0	4	40	60	100
19CCP205A	Security Analysis and Portfolio Management	III	c,d,f,i ,j	4	0	0	4	40	60	100
19CCP205B	Investment Banking and Financial Services	I,II, IV	a,e, b,g, h	4	0	0	4	40	60	100
19CCP205C	Consumer Behavior	IV	b,g,h	4	0	0	4	40	60	100

19CCP211	JAVA Programming (Practical)	I, II, III	a,ec,d ,f,i,j	0	0	4	2	40	60	100
19CCP212	Advanced Excel for Business (Practical)	I, II, III	a,ec,d ,f,i,j	0	0	4	2	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f,i	2	0	0	0	0	0	0
			-	20	2	8	24	280	420	700
			Semest	er III						
19CCP301	Software Models and Engineering	I,II	a,e	4	0	0	4	40	60	100
19CCP302	Business Research Methods and Techniques	III	c,d,f,i ,j	3	1	0	4	40	60	100
19CCP303	Indirect Taxation	III	c,d,f,i ,j	3	1	0	4	40	60	100
19CCP304	VB. Net	I, II, III	a,ec,d ,f,i,j	4	0	0	4	40	60	100
19CCP305A	Mergers, Acquisitions and Corporate Restructuring	I,II, IV	a,e, b,g, h	4	0	0	4	40	60	100
19CCP305B	Business Valuation	I,II, IV	a,e, b,g, h	4	0	0	4	40	60	100
19CCP305C	Accounting for Decision Making	IV	b,g,h	3	1	0	4	40	60	100
19CCP311	VB.Net (Practical)	I, II, III	a,ec,d ,f,i,j	0	0	4	2	40	60	100
19CCP312	SPSS (Practical)	I, II, III	a,ec,d ,f,i,j	0	0	4	2	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f,i ,j	2	0	0	0	0	0	0
				19/20	3/2	8	24	280	420	700
		1	Semest	er IV	T	1	[	1		
19CCP401	Digital Marketing	IV	b,g,h	4	0	0	4	40	60	100
19CCP402	Entrepreneurial Development	IV	b,g,h	4	0	0	4	40	60	100
19CCP411	Digital Marketing (Practical)	IV	b,g,h	0	0	4	2	40	60	100
19CCP491	Project	III	c,d,f,i ,j	0	0	16	8	80	120	200
				10	0	20	18	200	300	500
							90	1040	1560	2600

## PROGRAMME OUTCOMES (PO)

a) Postgraduates will develop an understanding of various commerce functions such as finance, accounting, financial analysis, project evaluation, cost accounting and gain expertise in

accounting, financial analysis, project evaluation, cost accounting and gain expertise in computer application.

- b) Postgraduates will have exposure to solve complex commerce problems and analyze problems critically through research based or project based approach of learning with the support of computer applications.
- c) Postgraduates will excerpt information from various sources and apply mathematical, analytical, statistical and IT tools for financial and accounting analysis.
- d) Postgraduates will develop an ability to effectively communicate both orally and in written

forms.

- e) Postgraduates will appreciate the importance of working independently and in a team in order to achieve common goals.
- f) Postgraduates will acquire critical and analytical thinking and will be able to apply the same in effective decision making.
- g) Postgraduates will evaluate the implications of uncertainty in global perspective and cross cultural issues that affect the functioning of the system or business.
- h) Postgraduates will acquire professional and intellectual integrity, professional code of conduct, ethics and values to contribute for sustainable development of society by becoming socially responsible citizen.

## PROGRAMME SPECIFIC OUTCOMES (PSO)

i) Postgraduates will acquire ability to employ management knowledge and skills in their career

advancement and personal enrichment

j) Postgraduates will acquire ability to utilize the programming skills or the latest computer application for developing a new software or usage of the existing tool in the decision-making process.

## PROGRAM EDUCATIONAL OBJECTIVES (PEO)

- I. Postgraduates will gain advanced knowledge in the domain of commerce, management and finance
- II. Postgraduates will understand the system functioning and develop the capability of modeling, designing, implementing and verifying a computing system to meet specified requirements while considering real-world constraints.
- III. Postgraduates will attain research insights, professional skills and competencies to enhance lifelong learning and excel in diverse career path
- IV. Postgraduates will adapt to a rapidly changing global environment and become socially

responsible and value driven citizens committed to sustainable growth.

Program Educational Objectives			Pro	ogram	Outco	omes				
	a	b	c	d	e	f	g	h	i	j
I. Postgraduates will gain advanced knowledge in the domain of commerce, management and finance	~				~					
II. Postgraduates will understand the system functioning and develop the capability of modeling, designing, implementing and verifying a computing system to meet specified requirements while considering real-world constraints.	~				V					
III. Postgraduates will attain research insights, professional skills and competencies to enhance lifelong learning and excel in diverse career path			V	~		~			~	~
IV. Postgraduates will adapt to a rapidly changing global environment and become socially responsible and value driven citizens committed to sustainable growth.		~					~	~		

# MASTER OF COMPUTER APPLICATIONS (MCA) CHOICE BASED CREDIT SYSTEM (CBCS)

**Curriculum** (2019 – 2022)



## DEPARTMENT OF COMPUTER APPLICATIONS FACULTY OF ARTS, SCIENCE AND HUMANITIES

## **KARPAGAM ACADEMY OF HIGHER EDUCATION**

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Eachanari(Post), Coimbatore – 641 021. Phone No. 0422-6471114, 6471115, 6453777 Fax No: 0422-2980022-3 E mail ID: info@karpagam.com Web: www.kahedu.edu.in

#### PROGRAM OUTCOMES: On successful completion of the program the student attains

a. Engineering Knowledge: Apply the knowledge of mathematics and computing fundamentals to various real time applications for any given requirement

b. Problem Analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

c. Design/ Development of Solutions: Design solutions for complex problems and design system components or processes that meets the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

d. Conduct Investigations of Difficult Problems: Use research-based information and methods including design of applications, analysis and interpretation of data, and synthesis of the information to provide valid results.

e. Recent Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to advancedsoftwareengineering activities with an understanding of the limitations.

f. The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

g. Environment and Sustainability: Understand the impact of the software engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

h. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

i. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse groups, and in multidisciplinary scenarios.

j. Communication: Communicate effectively on different engineering activities with the IT community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

k. Project Management and Finance: Demonstrate knowledge and understanding of the computer engineering and management principles and apply these techniques as a member and as leader in a team, to manage projects and in multidisciplinary environments.

1. Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **PROGRAM SPECIFIC OBJECTIVES (PSOs):**

m. Enable the students to select the suitable data model, appropriate architecture and platform to implement a system with high performance.

n. Enable the students to design and integrate various system based modules to provide user interactive solutions for various challenges.

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

**PEO I:** To enable the students to excel in the computing profession by providing high technical foundations in the field of computer applications.

**PEO II:** To provide students with various computing skills like analysis, design and development of innovative software products to meet the industry needs.

**PEO III:** To motivate students to pursue lifelong learning and to do research as computing experts and scientists.

**PEO IV:** To encourage students to communicate and function effectively in teams in multidisciplinary fields within the global, social and environmental context.

POs	a	b	c	d	e	f	g	h	i	j	k	l
PEO1	X	X	X	X	X							
PEO2		X	X	X		X		X		X	X	X
PEO3			X		X	X	X		X		X	X
PEO4	X	X			X	X		X		X	X	X

## **MAPPING of PEOs and POs**

## DEPARTMENT OF COMPUTER SCIENCE, APPLICATIONS & INFORMATION TECHNOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) - MCA (2019 – 2020 Batch and onwards)

Course Code	Name of the Course	Obje and co	ectives d out omes	Inst Hour	ruct s / V	ion Veek	lit(s)	Max	imum M	<b>Iarks</b>
		PEOs	POs	L	Т	Р	Cred	CIA	ESE	Total
								40	60	100
	SEN	<b>IESTE</b>	R - I	<b>r</b>	1	1	1	T	T	T
19CAP101	Information Technology	I,III	c,d,e	4	-	-	4	40	60	100
19CAP102	C Programming and Data Structures	I,IV	a,b,c	4	-	-	4	40	60	100
19CAP103	Computer Organization and Architecture	I ,II, IV	a,c,e,f	4	-	-	4	40	60	100
19CAP104	Mathematical Foundations	II	a,b,k	4	-	-	4	40	60	100
19CAP105	OCAP105 Introduction to Management Functions				-	-	4	40	60	100
19CAP111	Information Technology- Practical	I,II, V	c,d,e	-	-	4	2	40	60	100
19CAP112	Programming in C - Practical	I,III	a,b,c	-	-	5	2	40	60	100
19CAP113	Tally - Practical	I - IV	a,b,c. d	-	-	4	2	40	60	100
	Journal Paper Analysis & Presentation			2	-	-	-	-	-	-
	Semester Total			22	-	13	26	320	480	800
	SEM	ESTE	R - II							
19CAP201	Object Oriented Programming with C++	I-III	b,c,d, e	4	-	-	4	40	60	100
19CAP202	Operating System	I-III	a,b,c,f	4	-	-	4	40	60	100
19CAP203	Information Systems : Analysis, Design and Implementation	I-III	a,b,cd	4	-	-	4	40	60	100
19CAP204	Accounting and Management Control	I,IV	a,b,d, e	4	-	-	4	40	60	100
19CAP205	Probability and Combinations	I,II	a,b	4	-	-	4	40	60	100
19CAP211	Object Oriented Programming with C++ - Practical	I,II,I II	b,c,d, e,i,k	-	-	5	2	40	60	100
19CAP212	Operating System - Practical	I-IV	a,b,c	-	-	4	2	40	60	100
19CAP213	19CAP213 CASE Tools - Practical			-	-	4	2	40	60	100
	Journal Paper Analysis & Presentation	1	1	2	-	-	-	-	-	-
	Semester Total		Ī	22	-	13	26	320	480	800
	Semester Total				•					
19CAP301	Database Management Systems	I-III	a,b,cd	4	-	-	4	40	60	100

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			^							
100 4 0202	Computer Networks	T TTT	,e	Λ	<u> </u>		1	40	60	100
19CAP 302	Computer metworks	1-111	a, b, c, c, c, f = 1	4	-	-	4	40	00	100
100 4 D202	A dream and Lana and Camin as	T TIT	e,1,1	4			4	40	60	100
19CAP303	Advanced Java and Springs	1-111	b,c,e	4	-	-	4	40	60	100
19CAP304	Statistical Computing	11,111	a,b,c, d.e	4	-	-	4	40	60	100
19CAP305	Management Support Systems	I-IV	h,i,j,k,	4	-	-	4	40	60	100
19CAP311	Database Management Systems- Practical	I-III	a,b,cd ,e	-	-	5	2	40	60	100
19CAP312	Computer Network - Practical	I-III	a,b,c, e,f,j,l	-	-	4	2	40	60	100
19CAP313	Advanced Java and Springs- Practical	I-III	b,c,e	-	-	4	2	40	60	100
	Journal Paper Analysis & Presentation			2	-	-	-	-	-	-
	Semester Total			22	-	13	26	320	480	800
	SEM	ESTEF	R - IV			-				
19CAP401	J2EE	I-III	a,b,c, dei	4	-	-	4	40	60	100
19CAP402	Mobile Computing	I-III	a h c	4	-	_	4	40	60	100
190111 102		1	d,e,f,g					10	00	100
19CAP403	Organizational Behaviour	I-IV	a,f,g,h	4	-	-	4	40	60	100
1004 04040		T 111	,1,J,K,I							
19CAP404D	Database Administration	1-111	a,b,c,							
	Cryptography and Natwork	тш	e ahaf							
19CAI 4041	Security	1-111	,g							
19CAP404S	Software Testing	I-III	a,b,c, d,e	4	-	-	4	40	60	100
19CAP404W	XML	I-III	a,b,c,							
19CAP404B	Managerial Economics	I-IV	f,g,h,i							
	Distributed Database Management	TIT	,J,K,I							
19CAP405D	System	1-111	a,b,c, e,g,k							
19CAP405N	TCP/IP	I-III	a,b,dc .d.e.f,j							
19CAP405S	Object OrientedAnalysisand	I-III	a,b,c,	4	-	-	4	40	60	100
		ļ	u,c							
19CAP405W	Web Services	I-III	a,b,c, e,j							
19CAP405B	Corporate Planning	I-IV	f,g,h,i ,j,k,l							

19CAP411	J2EE - Practical	I-III	a,b,c, d,e,i,k	-	-	5	2	40	60	100
			,1							
19CAP412	Mobile Computing - Practical	I-III	a,b,c, d,e,f,g ,h	-	-	4	2	40	60	100
19CAP413D	DBA – Practical	I-III	a,b,c, e							
19CAP413N	Network security - Practical	I-III	a,b,c,f ,g,h							
19CAP413S	Software Testing – Practical	I-IV	a,b,c, d,e	-	-	4	2	40	60	100
19CAP413W	XML – Practical	I-III	a,b,c, d,e							
19CAP413B	WAP - Practical	I-III	a,b,c, d,e							
	Journal Paper Analysis & Presentation	-	-	2	-	-	-	-	-	-
	Semester Total	-	-	22	-	13	26	320	480	800
	SE	MESTE	R - V							
19CAP501	PHP5/ MySQL	I-III	a,b,c, e,f	4	-	-	4	40	60	100
19CAP502	.Net Programming	I-III	a,c,d, e	4	-	-	4	40	60	100
19CAP503	Optimization Techniques	II	a,b,d	4	-	-	4	40	60	100
19CAP504N	Network Architecture and Management	I-IV	b,c,e,l							
19CAP504S	Software Project Management	I-IV	a,c,d, e,i,k					10		
19CAP504W	Angular JS	Π	a,b	4	-	-	4	40	60	100
19CAP504B	MIS Framework	I-III	a,c,d							
19CAP504D	Data Mining and Data Warehousing	I-III	a,c,d,f ,k							
19CAP505N	Distributed Computing	I-III	a,c,d, e,f							
19CAP505S	Software Metrics	I-III	a,b,c, d,e,f,g					10		100
19CAP505W	Semantic Web	II	a,b	4	-	-	4	40	60	100
19CAP505B	Taxation Practices	I-III	a,c,d							
19CAP505D	Big Data Analytics	I-III	a,b,c, e							
19CAP511	PHP5/ MySQL (Practical)	I-III	a,b,c, e	-	-	5	2	40	60	100
19CAP512	.Net Programming (Practical)	I-III	a,b,c,	-	-	4	2	40	60	100

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			d,e							
19CAP513N	Network Simulator (Practical)	I-III	a,b,c, d,e							
19CAP513S	Software Development (Practical) Using Moodle	I-IV	a,c,d, e,i,k							
19CAP513W	Angular JS (Practical)	I-III	a,b,c, d,e	_	_	4	2	40	60	100
19CAP513B	MIS (Practical)	I-IV	a,b,c, d,h.i.j. k							
19CAP513D	Data Mining (Practical)	I-III	a,c,e,f							
	Journal Paper Analysis & Presentation	-	-	2	-	-	-	-	-	-
	Semester Total	-	-	22	-	13	26	320	480	800
	SEM	ESTER	R – VI							
19CAP691	Project and Viva Voce	I-III	a-l	-	-	-	15	80	120	200
Semester Total				-	-	-	15	80	120	200
Program Total				110	-	65	145	1680	2520	4200

## **Elective Courses\***

Elec	tive – 1 (19CAP404)	Elect	ive – 2 (19CAP405)
Course Code	Name of the Course (Theory & Practical)	Course Code	Name of the Course (Theory)
19CAP404D	Database Administration	19CAP405D	Distributed Database Management System
19CAP404N	Cryptography And Network Security	19CAP405N	TCP/IP
19CAP404S	Software Testing	19CAP405S	Object Oriented Analysis and Design with UML
19CAP404W	XML	19CAP405W	Web Services
19CAP404B	Managerial Economics	19CAP405B	Corporate Planning
19CAP413D	DBA - Practical		
19CAP413N	Network security- Practical		
19CAP413S	Software Testing- Practical		

19CAP413W	XML - Practical	
19CAP413B	WAP - Practical	

## **Elective Courses\***

Ele	ective - 1 (19CAP504)	Electi	ve – 2 (19CAP505)
Course Code	Name of the Course (Theory & Practical)	Course Code	Name of the Course (Theory)
19CAP504N	Network Architecture and Management	19CAP505N	Distributed Computing
19CAP504S	Software Project Management	19CAP505S	Software Metrics
19CAP504W	Angular JS	19CAP505W	Semantic Web
19CAP504B	MIS Framework	19CAP505B	Taxation Practices
19CAP504D	Data Mining and Data Warehousing	19CAP505D	Big Data Analytics
19CAP513N	Network Simulator (Practical)		
19CAP513S	Software Development (Practical) Using Moodle		
19CAP513W	Angular JS (Practical)		
19CAP513B	MIS (Practical)		
19CAP513D	Data Mining (Practical)		

## Specialization:

<b>D</b> - Database	
N - Network	

**S** - Software Engineering

W- Web Designing B - Business Management

## DEPARTMENT OF COMPUTER SCIENCE FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) – M.Sc. Computer Science (2019–2020 Batch and onwards) CURRICULUM

**PROGRAM OUTCOMES:** Post Graduate student of Computer Science programme will be able to

- a. Apply basic concepts of Computer Science to effectively involve in the research.
- b. Design software to meet required needs with realistic constraints such as economical, environmental, social, ethical and sustainable in the field of Computer Science.
- c. Design and conduct experiments as well as to analyze, interpret data on experiments relevant to Computer Science practice.
- d. implement software designs to provide working solutions, including use of appropriate programming languages, web-based systems and tools, design methodologies, and database systems
- e. To attain in depth knowledge and understanding the principles of programming for applying in broad range of languages and open source platforms.
- f. use IT skills and display mature computer literacy
- g. Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to computer science practice.
- h. Communicate effectively on complex research issues with research community and society, such as, being able to comprehend, write effective reports, design documentation and make effective presentations with clear instructions.
- i. Demonstrate knowledge and understanding of the computer science and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- j. Recognize the need for ability to engage in independent and life-long learning.

#### PROGRAM SPECIFIC OUTCOMES (PSOs)

k. Exhibit an outstanding association and active contribution in their professional including entrepreneurship using the information in Computer Science.

- 1. Contribute effectively as a team member/leader using common tools and adopt latest technologies in education and solve real world problems.
- m. Pursue life-long learning and research in specific fields of Computer Science and develop novel and research oriented methodologies in an effective manner.

## PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

**PEO I:** Understand analyze and develop computer programs in the areas related to Database systems and Big data Analytics, cloud computing, soft computing, IoT, Image processing, Green computing, web designing, mobile computing and networking for efficient design of computer based system of varying complexity.

**PEO II:** Apply standard software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality for business success.

**PEO III:** Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.

POs	a	b	С	d	e	f	g	h	i	j	k	1	m
PEO1	Х		Х	Х	Х	Х			Х	Х		Х	Х
PEO2	Х	Х	Х	Х	Х	Х	Х	Х			Х	Х	
PEO3	Х		Х	Х	Х	Х			Х	Х	Х		Х

## **MAPPING of PEOs and POs**

## DEPARTMENT OF COMPUTER SCIENCE FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) – M.Sc. Computer Science (2019–2020 Batch and onwards)

Course code	Name of the course	Ob iv an or cor	ject es nd ut nes	Inst hou	truc rs / י	tion week	lit(s)	Maximum Marks			
		PEOs	POs	L	Т	Р	Cred	CIA	ESE	Total	
	OD MDC/		T					40	60	100	
	SEMESI	EK -	l	4			4	40	60	100	
19CSP101	Python Programming	1	c, d	4	-	-	4	40	60	100	
19CSP102	Big Data Analytics	Ι	a, g	4	-	-	4	40	60	100	
19CSP103	Cryptography and Network Security	Ι	b, c	4	-	-	4	40	60	100	
19CSP104	Cloud Computing	III	b, g	4	-	-	4	40	60	100	
19CSP105A/ 19CSP105B/ 19CSP105C	Wireless and Mobile Computing / Geographical Information Systems / Soft Computing	I III II	b g c	4	-	-	4	40	60	100	
19CSP111	Python Programming - Practical	I	c, d	-	-	4	2	40	60	100	
19CSP112	Hadoop – Practical	Ι	b, c	-	-	4	2	40	60	100	
Journal Paper A	Analysis & Presentation	III	h	2	-	-	-	-	-	-	
	Semester Total			22	-	8	24	280	420	700	
	SEMEST	ER –	Π					I.		ı	
19CSP201	Internetworking with TCP/IP	Ι	с	4	-	-	4	40	60	100	
19CSP202	Cyber Security	Ι	b, g	4	-	-	4	40	60	100	
19CSP203	MongoDB	II	d	4	-	-	4	40	60	100	
19CSP204	Internet of Things	Ι	b	4	-	-	4	40	60	100	
19CSP205A/ 19CSP205B/	Artificial Intelligence / Machine	III	b,	4	-	-	4	40	60	100	
19CSP205C	Learning/ Neural Networks & Fuzzy logic		5								
19CSP211	Router Configuration – Practical	Ι	с	-	-	4	2	40	60	100	
19CSP212	MongoDB – Practical	Π	d	-	١	4	2	40	60	100	
Journ	hal Paper Analysis & Presentation	III	h	2	-	-	-	-	-	-	
	Semester Total			22	-	8	24	280	420	700	
	Program Total			44	-	16	48	560	840	1400	

	SEMESTI	E <b>R</b> – 1	III							
19CSP301	J2EE	Ι	c, d	4	-	-	4	40	60	100
19CSP302	Open Source Technologies	I, II	d g	4	-	-	4	40	60	100
19CSP303	Digital Image Processing	Ι	с	4	-	-	4	40	60	100
19CSP304	Green Computing	I, III	d	4	-	-	4	40	60	100
19CSP305A/	Web Engineering /	I,II	b		-	-		10	<i>c</i> 0	100
19CSP305B/	Wireless Application Protocol /		d	4			4	40	60	100
19CSP305C	Software Project Management	II T	I							
19CSP311	J2EE – Practical	1	c, d	-	-	4	2	40	60	100
19CSP312	Linux – Practical	Ι	d g	-	1	4	2	40	60	100
Journa	Paper Analysis & Presentation	III	h	2	1	-	I	-	-	-
	Semester Total			22	-	8	24	280	420	700
	SEMESTI	E <b>R</b> – 1	IV							
19CSP491	Project and Viva Voce	III	i j	-	-	-	15	80	120	200
	Semester Total				-	-	15	80	120	200
	Program Total					24	87	920	1380	2300

## Elective courses\*

Ele	ctive - 1	Ele	ective - 2	Ele	ctive - 3
Course code	Name of the course (Theory)	Course Code	Name of the course (Theory)	Course Code	Name of the course (Theory)
19CSP105A	Wireless and Mobile Computing	19CSP205A	Artificial Intelligence	19CSP305A	Web Engineering
19CSP105B	Geographical Information Systems	19CSP205B	Machine Learning	19CSP305B	Wireless Application Protocol
19CSP105C	Soft Computing	19CSP205C	Neural Networks & Fuzzy logic	19CSP305C	Software Project Management

# MBA

# Master of Business Administration CHOICE BASED CREDIT SYSTEM (CBCS)

**Curriculum** 2019 – 2021



## DEPARTMENT OF MANAGEMENT FACULTY OF ARTS, SCIENCE AND HUMANITIES

# KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore – 641 021, Tamil Nadu, India Phone: 0422- 2980011-2980015, Fax No: 0422 – 2980022 - 23 Email: info@karpagam.com, Web: www.kahedu.edu.in

#### DEPARTMENT OF MANAGEMENT FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) – M.B.A. CURRICULUM (2019–2020 Batch and onwards)

		Object outo	ives and comes	Inst hour	ruci s / v	tion veek	( <b>s</b> )	Maxi	imum N	ſarks
Course code	Name of the course	Os	S	-			Credit	CIA	ESE	Total
		PE	PC	L	Т	Р		40	60	100
		SEMI	ESTER – I							
19MBAP101	Fundamentals of Management Organizational Behaviour	I,II	a,b,c,d,e,f, i,j	4	0	0	3	40	60	100
19MBAP102	Business Communication	I,II,IV	a,b,c,d,e,f, g,i,j	4	0	0	3	40	60	100
19MBAP103	Managerial Economics	I,II,III,IV	a,b,d,e,f,g, i,j	3	1	0	3	40	60	100
19MBAP104	Legal Aspects of Business	I,II,IV	a,c,d,f,g,h, i,j	4	0	0	3	40	60	100
19MBAP105	Accounting for Managers	I,II,IV	a,b,c,d,e,f, h,i,j	4	1	0	4	40	60	100
19MBAP106	Statistics for Decision Making	I,III	a,b,c,d,e,f, i,j	5	1	0	4	40	60	100
19MBAP111	MS Office and Tally (Practical)	I,II,III	a,b,c,d,f,i,j	0	0	4	2	40	60	100
19MBAP112	Case Analysis and Presentation	I,II,III,IV	a,b,c,d,e,f, g,i,j	0	0	2	1	50	0	50
-	Journal paper Analysis and Presentation	I,II	a,b,c,d,j	2	0	0	0	0	0	0
Se	mester Total			26	3	6	23	330	420	750
		SEME	STER – II							
19MBAP201	Production and Operations Management	I,II,III,IV	a,b,c,d,e,f, g,h,i,j	4	1	0	4	40	60	100
19MBAP202	Marketing Management	I,II,III,IV	a,b,c,d,e,f, g,h,i,j	4	0	0	3	40	60	100
19MBAP203	Human Resource Management	I,II,III,IV	a,b,c,d,e,f, g,h,i,j	4	0	0	3	40	60	100
19MBAP204	Quantitative Techniques	I,II,III	a,b,c,d,e,f, i,j	4	1	0	4	40	60	100
19MBAP205	Financial Management	I,II,III,IV	a,b,c,d,e,f, g,h,i,j	4	1	0	4	40	60	100

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	Name of the course	Object outo	Objectives and outcomesInstruction hours / weekMaximum Mar					/larks		
Course code		Os	S	т	т	р	Credi	CIA	ESE	Total
		PE	P(	L	I	r		40	60	100
19MBAP206	Research Methodology for Management	I,II,III,IV	a,b,c,d,e,f, g,hi,j	4	0	0	4	40	60	100
19MBAP211	SPSS (Practical)	I,II,III	a,b,c,d,f,i,j	0	0	4	2	40	60	100
19MBAP212	Team Building and Leadership skills (Practical)	I,II	a,b,c,d,e,f, i,j	0	0	2	1	50	0	50
-	Journal paper Analysis and Presentation	I,II	a,b,c,d,j	2	0	0	0	0	0	0
Se	mester Total			26	3	6	25	330	420	750
		SEME	STER – III							
19MBAP301	Corporate Strategy	I,II,III,IV	a,b,c,d,f,g, h,i,j	3	0	0	3	40	60	100
19MBAP302	International Business	I,II,III,IV	a,c,d,f,g,h, i,j	3	0	0	3	40	60	100
	<sup>+</sup> Specialization I Elective 1			4	0	0	4	40	60	100
	<sup>+</sup> Specialization I Elective 2			4	0	0	4	40	60	100
	<sup>+</sup> Specialization II Elective 1			4	0	0	4	40	60	100
	<sup>+</sup> Specialization II Elective 2			4	0	0	4	40	60	100
19MBAP321	Internship	I,II,III,IV	a,b,c,d,e,f, g,h,i,j	0	0	11	6	80	120	200
-	Journal paper Analysis and Presentation	I,II	a,b,c,d,j	2	0	0	0	0	0	0
Se	mester Total			24	0	11	28	320	480	800
		SEME	STER – IV	1					1	
19MBAP401	Indian Ethos and Business Ethics	I,II,IV	a,f,g,h,i,j	2	0	0	1	50	0	50
	<sup>+</sup> Specialization I Elective 3	-	-	4	0	0	4	40	60	100
	<sup>+</sup> Specialization I Elective 4	-	-	4	0	0	4	40	60	100
	<sup>+</sup> Specialization I Elective 5	-	-	4	0	0	4	40	60	100
	<sup>+</sup> Specialization II Elective 3	-	-	4	0	0	4	40	60	100

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Course code		Objectives and outcomes		Instruction hours / week			t(s)	Maxi	imum N	larks
	Name of the course	PEOs	POs	т	т	р	Credi	CIA	ESE	Total
				L		1		40	60	100
	<sup>+</sup> Specialization II Elective 4	-	-	4	0	0	4	40	60	100
	<sup>+</sup> Specialization II Elective5	-	-	4	0	0	4	40	60	100
19MBAP411	Communication Practice	I,II	a,b,c,d,e,f, ,j	0	0	2	1	50	0	50
-	Journal paper Analysis and Presentation	I,II	a,b,c,d,j	2	0	0	0	0	0	0
-	Placement Readiness/Field Work	I,II	a,b,c,d,e,f,	5	0	0	0	0	0	0
Semester Total				33	0	2	26	340	360	700
Programme Total				109	6	25	102	1320	1680	3000

	SEMESTER	SEMESTER	SEMESTER	SEMESTER	
Category	1	2	3	4	TOTAL
Programme Core	23	25	6	2	56
<b>Programme Electives</b>					
Specialisation 1			8	12	20
Specialisation 2			8	12	20
Internship			6		6
TOTAL	23	25	28	26	102

SPECIALISATION OFFERED	NO.OF COURSES IN BASKET	COURSES IN SEMESTER 3	CREDITS	COURSES IN SEMESTER 4	CREDITS
Finance	7	2	8	3	12
Marketing Management	7	2	8	3	12
Human Resources Management	7	2	8	3	12
Management Information System	7	2	8	3	12
Entrepreneurship	7	2	8	3	12
Micro and Small Business Management	7	2	8	3	12
Business Analytics	7	2	8	3	12
International Business	7	2	8	3	12
Operations Management	7	2	8	3	12
Tourism Management	7	2	8	3	12

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ELECTIVE LIST - SEMESTER I	Π
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Semester	List of Specializations	Course Code	Name of the Elective Course	PEO	РО
		19MBAPF303A	Investment Analysis and Portfolio Management	I,II,III,IV	a,b,c,d,e,f,g,j
	Finance	19MBAPF303B	Financial Markets and Services	I,II,IV	a,b,c,d,e,f,g,j
		19MBAPF303C	Project Appraisal and Finance	I,II,III,IV	a,b,c,d,e,f,g,i
		19MBAPM303A	Services Marketing	I,II,IV	a,b,c,d,e,f,g
	Marketing Management	19MBAPM303B	Integrated Marketing Communication	I,II,IV	a,b,c,d,e,f,g,i
	gomene	19MBAPM303C	Retail Management	I,II,III,IV	a,b,c,d,e,f,g,i
	Human	19MBAPH303A	Industrial Relations and Labour Welfare	I,II,III,IV	a,b,c,d,e,f,g,h,i
	Resources	19MBAPH303B	Compensation and Benefits Management	I,II,III,IV	a,b,c,d,e,f,g,h,i
	Management	19MBAPH303C	Strategic HRM	I,II,IV	a,b,c,d,e,f,g,i
	Management	19MBAPS303A	Enterprise Resource Planning	I,II,III	a,b,c,d,e,f,g,i
	Information	19MBAPS303B	Managing Software Projects	I,II,III,IV	a,b,c,d,e,f,g,i
	System	19MBAPS303C	E-Commerce	I,II,III,IV	a,b,c,d,e,f,g,i
	Entrepreneurship	19MBAPE303A	Technology Management and Intellectual Property Right	I,II,III,IV	a,b,c,d,e,f,g,h,i
		19MBAPE303B	Social Entrepreneurship	I,II,III,IV	a,b,c,d,e,f,g,h,i
		19MBAPE303C	Venture Capital and Private Equity	I,II,III,IV	a,b,c,d,e,f,g,h,i
IV	Micro and Small Business Management	19MBAPB303A	Planning, Structuring, and Financing Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i
		19MBAPB303B	Finance and Accounting for Small Business:	I,II,III,IV	a,b,c,d,e,f,g,h,i
		19MBAPB303C	Marketing for Small Business	I,II,IV	a,b,c,d,e,f,g,h,i
		19MBAPA303A	Data Mining and Data warehousing	I,II,III,IV	a,b,c,d,e,f,g,i
	Business Analytics	19MBAPA303B	Data Visualization for Managers – Using R and Tableau	I,II,III,IV	a,b,c,d,e,f,g,i
		19MBAPA303C	Machine Language	I,II,III,IV	a,b,c,d,e,f,g,i
		19MBAPI303A	International Economics	I,II,III,IV	a,b,c,d,e,f,g,h,i
	International Business	19MBAPI303B	International Trade procedures and Documentation	I,II,IV	a,b,c,d,e,f,g,h,i
		19MBAPI303C	International Logistics Management	I,II,IV	a,b,c,d,e,f,g,h,i
	0	19MBAPO303A	Supply Chain Management	I,II,III,IV	a,b,c,d,e,f,g,h,i
	Operations Management	19MBAPO303B	Operations Strategy	I,II,III,IV	a,b,c,d,e,f,g,h,i
		19MBAPO303C	Total Quality Management	I,II,III,IV	a,b,c,d,e,f,g,h,i
		19MBAPT303A	Tourism Principles, Policies and Practices	I,II,IV	a,b,c,d,e,f,g,h,i
	Tourism Management	19MBAPT303B	Tourism Products of India	I,II,IV	a,b,c,d,e,f,g,h,i
		19MBAPT303C	Recreation Management	I,II,,IV	a,b,c,d,e,f,g,h,i

#### ELECTIVE LIST - SEMESTER IV

Semester	List of Specializations	Course Code	Name of the Elective Course	PEO	РО
		19MBAPF402A	Banking and Insurance	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Finance	19MBAPF402B	Mergers, Acquisitions and Corporate Restructuring	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPF402C	Financial Derivatives	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPF402D	Financial Econometrics	I,II,III,IV	a,b,c,d,e,f,g,i,j
		19MBAPM402A	New Product Development	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Marketing	19MBAPM402B	Consumer Behaviour	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Management	19MBAPM402C	Brand Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPM402D	Sales and Distribution Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
		19MBAPH402A	Organizational Change and Development	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Human	19MBAPH402B	Performance Management Systems	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Resources Management	19MBAPH402C	Competency Mapping	I,II,III,IV	a,b,c,d,e,f,g,i,j
		19MBAPH402D	Talent Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
		19MBAPS402A	Information Systems Audit and Control	I,II,III,IV	a,b,c,d,e,f,h,i
	Management	19MBAPS402B	Knowledge Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Information Systems	19MBAPS402C	Digital and Social Media Marketing	I,II,III,IV	a,b,c,d,e,f,g,i,j
	·	19MBAPS402D	System Analysis and Design	I,II,III,IV	a,b,c,d,e,f,g,i,j
		19MBAPE402A	Innovation Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Entrepreneurship	19MBAPE402B	Family Business Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPE402C	Entrepreneurial Leadership	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPE402D	Rural Entrepreneurship	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
IV		19MBAPB402A	Indian Models of Economy, Business and Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Business	19MBAPB402B	Institutional support to Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Management	19MBAPB402C	Policy Framework for Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPB402D	Contemporary Environment in Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPA402A	Human Resource Metrics and Analytics	I,II,III	a,b,c,d,e,f,i,j
	Business	19MBAPA402B	Marketing Analytics	I,II,III	a,b,c,d,e,f,i,j
	Analytics	19MBAPA402C	Big Data Analytics	I,II,III	a,b,c,d,e,f,i,j
		19MBAPA402D	Financial Analytics	I,II,III	a,b,c,d,e,f,i,j
		19MBAPI402A	International Finance	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	International	19MBAPI402B	International Marketing Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Business	19MBAPI402C	International HRM	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPI402D	Cross cultural Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPO402A	Sourcing Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Operations	19MBAPO402B	Material Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Management	19MBAPO402C	Supply Chain Analytics	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPO402D	Services Operations Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPT402A	Travel Agency and Tour Operations	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Tourism	19MBAPT402B	Ecotourism	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Management	19MBAPT402C	Event Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		19MBAPT402D	Healthcare Tourism	I,II,III,IV	a,b,c,d,e,f,g,h,i,j

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021

## **PROGRAMME OUTCOMES (PO)**

- a. Postgraduates students will be able to acquire in-depth management and functional domain knowledge with an ability to differentiate, evaluate, analyze existing knowledge and apply the new knowledge relevant to the changing business environment.
- b. Postgraduates students will be able to analyze complex business problems critically by applying intellectual and creative developments gained through research based or project based approach of learning.
- c. Postgraduates students will be able to excerpt information from various sources and apply appropriate management techniques and tools to analyze and interpret data demonstrating a higher order thinking skill.
- d. Postgraduates will communicate day-to-day managerial activities confidently and effectively in written and oral communication in the organisation and society at large.
- e. Postgraduates will possess knowledge and understanding of working in teams in order to achieve common goals to exhibit their leadership skills.
- f. Postgraduates will acquire managerial positions or take up entrepreneurial ventures by applying the skills and knowledge gained.
- g. Postgraduates will be able to evaluate the implications of changing environmental factors in global perspective and cross cultural issues that affect the functioning of the organization.
- h. Postgraduates will acquire professional and intellectual integrity, professional code of conduct, ethics and values to contribute for sustainable development of society by becoming socially responsible citizen.

## PROGRAMME SPECIFIC OUTCOMES (PSO)

- i. Postgraduates will develop lateral thinking and conceptualization of functional knowledge and put into consideration ethics, safety, diversity, cultural, society and environmental factors while evaluating potential solutions options to solve managerial problems.
- j. Postgraduates will apply the lifelong learning and exhibit high level of commitment to identify a timely opportunity and use business innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

- I. Postgraduates will acquire knowledge of management science and apply it to solve the real-time business problems.
- II. Postgraduates will attain professional skills to develop and communicate strategic, creative and innovative ideas to excel in diverse career path.
- III. Postgraduates will be able to apply the management tools and techniques to implement systematic decision making process.
- IV. Postgraduates will be able to adapt to a rapidly changing global environment and become socially responsible and value driven citizens committed to sustainable growth.

Program Educational Objectives	Program Outcomes									
	a	b	c	d	e	f	g	h	i	j
Postgraduates will acquire knowledge of management science and apply it to solve the real-time business problems.	$\checkmark$					$\checkmark$			$\checkmark$	$\checkmark$
Postgraduates will attain professional skills to develop and communicate strategic, creative and innovative ideas to excel in diverse career path.		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			$\checkmark$	$\checkmark$
Postgraduates will be able to apply the management tools and techniques to implement systematic decision making process.		$\checkmark$	$\checkmark$	$\checkmark$					$\checkmark$	$\checkmark$
Postgraduates will be able to adapt to a rapidly changing global environment and become socially responsible and value driven citizens committed to sustainable growth.							$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$

#### DEPARTMENT OF MATHEMATICS FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) – M.Sc. Mathematics

		Obje and Co	Instructio n Hours / Week			t(s)	Maximum Marks			
Course code	Name of the course	PEOs	POs	L	Т	Р	Credi	CIA	ESE	Total
								40	60	100
	SEN	IESTEF	K – I							
19MMP101	Algebra	III	a, c, e	4	0	0	4	40	60	100
19MMP102	Real Analysis	Ι	a, g, e	4	0	0	4	40	60	100
19MMP103	Numerical Analysis	Ι	b, d, g	4	0	0	4	40	60	100
19MMP104	Ordinary Differential Equations	II	b, d, e	4	0	0	4	40	60	100
19MMP105A	Advanced Discrete Mathematics	III	e							
19MMP105B	Number Theory	Ι	a, g	4	0	0	4	40	60	100
19MMP105C	Combinatorics	II	e							
19MMP106	Mechanics	II	g	4	0	0	4	40	60	100
<b>19MMP111</b> Numerical Analysis - Practical		Ι	а	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2	-	-	-	-	-	-
Semester Total				26	0	4	26	280	420	700
	SEM	ESTER	R - II							
19MMP201	Linear Algebra	III	c. e	4	0	0	4	40	60	100
19MMP202	Complex Analysis	I	a. c	4	0	0	4	40	60	100
19MMP203	Optimization Techniques	III	f	4	0	0	4	40	60	100
19MMP204	Partial Differential Equations	II	d, e	4	0	0	4	40	60	100
19MMP205A	Graph Theory	Ι	a							
19MMP205B	Differential Geometry	Ι	a, g	4	0	0	4	10	(0)	4.0.0
19MMP205C	Fundamentals of Actuarial Mathematics	III	b, g	4	0	0	4	40	60	100
19MMP206	Fluid Dynamics	II	c, f	4	0	0	4	40	60	100
19MMP211	9MMP211 Optimization Techniques – Practical		g	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2	-	-	-	-	-	-
Semester Total				26	0	4	26	280	420	700
	SEM	ESTER	– III	1			1	1	1	
19MMP301	Topology	III	c, e	4	0	0	4	40	60	100
19MMP302	Fuzzy Sets and Fuzzy Logic	III	c, e	4	0	0	4	40	60	100

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore – 641 021
# M. Sc. Mathematics

	Maggura Theory				•	0		40	60	100
19MMP303	Wiedsure Theory	111	t,g	4	0	0	4	40	60	100
19MMP304	Mathematical Statistics	Ι	i,j	4	0	0	4	40	60	100
19MMP305A	Formal Languages and Automata Theory	Ι	e,i							
19MMP305B	Magnetohydrodynamics	II	e,j	4	0	0	4	40	60	100
19MMP305C	Neural Networks	III	b, e							
19MMP306	Mathematical Methods	II	j,g	4	0	0	4	40	60	100
19MMP311Mathematical Statistics - Practical			a	0	0	4	2	40	60	100
Journal Paper and	alysis & Presentation			2	-	-	-	-	-	-
	Semester total			26	0	4	26	280	420	700
	SEMI	ESTER	– IV							
19MMP401	Functional Analysis	III	c, e	4	0	0	4	40	60	100
19MMP402	Stochastic Processes	Ι	g,e,j	3	0	0	3	40	60	100
19MMP491 Project		III	e	-	-	-	8	80	120	200
	Semester total			7	0	0	15	160	240	400
	Grand Total			85	0	12	93	1000	1500	2500

# **Electives Courses\***

	Elective I	Elec	tive II	Elective III			
Course code	Name of the course	Course code Name of the		Course code	Name of the		
			course		course		
19MMP105A	Advanced Discrete Mathematics	19MMP205A	Graph theory	19MMP305A	Formal Languages and Automata Theory		
19MMP105B	Number theory	19MMP205B	Differential Geometry	19MMP305B	Magneto hydrodynamics		
19MMP105C	Combinatorics	19MMP205C	Fundamentals of Actuarial Mathematics	19MMP305C	Neural Networks		

#### DEPARTMENT OF MATHEMATICS FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) – M.Sc. Mathematics

#### **PROGRAMME OUTCOMES (POs)**

- a. Solve intricate mathematical problems using the knowledge of pure and applied Mathematics.
- b. Explain the knowledge of modern issues in the field of mathematics.
- c. Proficiency in all lectureship exams approved by UGC.
- d. Solve differential equations governing real life issues.
- e. Pursue further studies and conduct research.
- f. Mathematical lifelong learning through continuous professional development.
- g. Employ technology in solving and understanding mathematical problems.

#### PROGRAM SPECIFIC OUTCOMES (PSOs)

- h. Acquire knowledge of mathematics and its applications in all the fields.
- i. Acquaint with the recent advances in applied mathematical sciences such as numerical computations and mathematical modeling.
- j. Capable of formulating and analyzing mathematical models of real life applications.

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

**PEO I** : To engender problem-solving skills and apply them to the problems of pure and applied Mathematics.

**PEO II** : To assimilate complicated mathematical concepts and arguments.

PEO III : To enhance your own learning and create mathematical thinking

#### **MAPPING OF POs AND PEOs**

POs	a	b	c	d	e	f	g	h	i	j
PEO I	Х		Х		Х			Х		Х
PEO II	Х			Х			Х			Х
PEO III		Х				Х			Х	

Karpagam Academy of Higher Education (Deemed to be University), Coimbatore - 641 021

# DEPARTMENT OF MICROBIOLOGY FACULTY OF ARTS, SCIENCES AND HUMANITIES PG PROGRAM – M. Sc. Microbiology (2019 – 2020 Batch & onwards)

Course	Name of the course	Obje and coi	ctives l out nes	Ins hou	truct rs / w	ion veek	it (s)	Marks		
code	Name of the course	PEOS	POs	L	Т	Р	Cred	CIA	ESE	Total
	SI	EMEST	ER-I							
19MBP101	а	4	0	0	4	40	60	100		
19MBP102	Microbial Physiology and Metabolism	II	а	4	0	0	4	40	60	100
19MBP103	Molecular genetics	II	b	4	0	0	4	40	60	100
19MBP104	Bioinstrumentation	VI	b	3	1	0	4	40	60	100
19MBP105A	Marine microbiology	Ι	а							
19MBP105B	VII	c,d	4	0	0	4	40	60	100	
19MBP105C	Biochemistry	II	Α							
19MBP111	Basic Practical – I	VI	b, e	0	0	4	2	40	60	100
19MBP112	VI	b, e	0	0	4	2	40	60	100	
Journ	al Paper Analysis & Presentation	IV	c,e	2	0	0	-	-	-	-
	Se	meste	r total	21	1	8	24	280	420	700
	SE	EMEST	ER–II							
19MBP201	Virology	Ι	a, b	3	1	0	4	40	60	100
19MBP202	Medical Bacteriology	Ι	a, c	4	0	0	4	40	60	100
19MBP203	Biostatistics and Research Methodology	VI	c,d,g	4	0	0	4	40	60	100
19MBP204	Environmental and agricultural microbiology	Ι	a,i	4	0	0	4	40	60	100
19MBP205A	Cell biology	Ι	a,c							
19MBP205BQuality assurance and quality control			a,d,e	4	0	0	4	40	60	100
19MBP205C	IV	a,e								
19MBP211	Ι	b,e,f	0	0	4	2	40	60	100	
19MBP212	Advanced Practical – IV	Ι	b,e,f	0	0	4	2	40	60	100
Journ	IV	c,e	2	0	0	-	-	-	-	
	Se	r total	21	1	8	24	280	420	700	

Course	Name of the course	Objectives and out comes		Instruction hours / week			it (s)	Marks		
code	Name of the course	PEOS	POs	L	Т	Р	Cred	CIA	ESE	Total
	SE	MEST	ER-III							
19MBP301	Advanced Immunology	II	b,d	4	0	0	4	40	60	100
19MBP302	Food Microbiology	IV	a,c	4	0	0	4	40	60	100
19MBP303	Medical Mycology and Parasitology	Ι	a,e,f	4	0	0	4	40	60	100
19MBP304	Microbial Technology and Intellectual Property Rights	V	b,d	4	0	0	4	40	60	100
19MBP305A	Biofertilizer and Biomanure Technology	Ι	a,i	4	0	0	4	40	(0)	100
19MBP305B	Laboratory animal care	V	b,d,f	4	0	0	4	40	60	100
19MBP305C	Bio nanotechnology	IV	a,d,g							
19MBP311	Application Oriented Practical – V	Ι	b,h	0	0	4	2	40	60	100
19MBP312 Application Oriented Practical – VI			b,j	0	0	4	2	40	60	100
Jouri	Journal Paper Analysis & Presentation				0	0	-	-	-	-
	Semester total					8	24	280	420	700

Course code	Nome of the course	Hrs /		Marks	Exam	Credit	
Course coue	Name of the course	Week	CIA	ESE	Total	Hrs	<b>(s)</b>
	SEMESTER -	- IV					
19MBP491	Project and Viva Voce	-	80	120	200	-	15
	-	80	120	200	-	15	
		90	920	1380	2300		87

# **Elective courses\***

Elective – 1	l (I9MBP105)	Elective -	2 (I9MBP205)	Elective – 3 (I9MBP305)			
Course code	Name of the course (Theory)	Course Code	Name of the course (Theory)	Course Code	Name of the course (Theory)		
19MBP105A	Marine Microbiology	I9MBP205A	Cell biology	I9MBP305A	Biofertilizer and Biomanure Technology		
19MBP105B	Computer Applications and Bioinformatics	I9MBP205B	Quality assurance and quality control	I9MBP305B	Laboratory animal care		
19MBP105C	Biochemistry	I9MBP205C	Bioprocess engineering	I9MBP305C	Bio nanotechnology		

Master of Science, Microbiology, 2019-2020, Karpagam Academy of Higher Education, Coimbatore - 641 021

# **Postgraduate Programme – M.Sc Microbiology**

**Programme Outcomes** of PG Microbiology: Students of all postgraduate microbiology degree Programmes at the time of graduation will be able to

a. <u>Science Observation</u>: Microbiology majors able to discuss science and scientific methodology as a way of knowing. Microbiology majors will make observations, develop hypotheses and design and execute experiments using appropriate methods. They will be able to explain how the nature of science is applied to everyday problems.

b. <u>Laboratory Skills</u>: Microbiology students will master the following laboratory skills: aseptic pure culture techniques, preparation of and viewing samples for microscopy, use appropriate methods to identify microorganisms, estimate the number of microorganisms in a sample and use common lab equipment. They will be able to practice safe microbiology using appropriate protective and emergency procedures. Student able to gain the good knowledge of the development process and the planning process involved in the microbial products and enhance the entrepreneurship.

c. <u>Data analysis skills</u>: Microbiology majors will be able to systematically collect record and analyze data, identify sources of error, interpret the result and reach logical conclusions. They will be able to appropriately format data into tables, graphs and charts for presentation and publication.

d. <u>Critical Thinking Skills</u>: Microbiology majors will be able to (1) differentiate between fact and opinion, (2) recognize and evaluate author bias and rhetoric, (3) develop inferential skill, (4) recognize logical fallacies and faulty reasoning and (5) make decisions and judgments by drawing logical conclusions using sound quantitative and statistically – based reasoning.

e. <u>Problem Solving Skills</u>: Microbiology majors will be competent problem-solvers. They should be able to assess the elements of a problem and develop and test a solution based on logic and the best possible information. Microbiology students should be able to analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations. They will use mathematical and graphing skills and reasoning to solve problems in microbiology

# **Programme Specific Outcomes (PSOs)**

f. Upon master graduation, Microbiology majors will mastered a set of advanced skills, which would be useful to function effectively as professionals and to their continued development and learning within the field of Microbiology.

g. Our candidates will be able to explain why microorganisms are ubiquitous in nature, inhabiting a multitude of habitats and occupying a wide range of ecological habitats.

h. Able to cite examples of the vital role of microorganisms in biotechnology, fermentation, medicine and other industries important to human well being.

i. Able to demonstrate that microorganisms have an indispensible role in the environment, including elemental cycles, biodegradation etc.

# PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

**Programme Educational Objectives** of PG Microbiology: The major objectives of the postgraduate course is

**PEO-I**: To provide detailed knowledge of Microbiology (bacteriology, virology, parasitology and mycology) and their application fields (Medical, Agricultural and Marine Microbiology). To understand the beneficial and harmful role of microorganisms in the environment and in the industries.

**PEO-II**: To understand the fundamentals of physiological reactions including metabolic pathways and biochemical reactions in microorganisms. To understand the fundamental concepts of immunology, biochemistry, biotechnology and genetics etc.

**PEO-III**: To develop human resource and entrepreneurs in Microbiology with the ability to independently start their own ventures or small biotech units in the field of biotechnology.

**PEO-IV**: Understand modern microbiology - practices and approaches with an emphasis in technology application in pharmaceutical, medical, industrial, environmental and agricultural areas.

**PEO-V**: Gain experience with standard molecular tools and approaches utilized: manipulate genes, gene products and organisms. Become familiar with handling of Laboratory animals for the research purpose. Interpret differences in data distributions via visual displays.

**PEO-VI**: Become familiar with public policy, biosafety, bioinformatics and intellectual property rights issues related to microbiologyapplications.

Pos	Α	В	c	d	e	f	g	h	Ι
PEO I	Х	Х				Х	Х	Х	
PEO II	Х	Х				Х			Х
PEO III	Х		Х	Х	Х	Х			
PEO IV	Х					Х	Х	Х	Х
PEO V		Х	Х	Х					
PEO VI				Х	Х	Х			Х

#### **M.Sc. PHYSICS**

#### **CHOICE BASED CREDIT SYSTEM (CBCS)**

**Curriculum and Syllabus** 

Students admitted from 2019 onwards



DEPARTMENT OF PHYSICS KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University Established Under Section 3 of UGC Act, 1956) Eachanari Post, Coimbatore – 641 021, INDIA. Phone: 0422-6453777, 6471113-5, 2980011-2980018; Fax No: 0422 – 2980022, 2980023 Email: info@karpagam.com Web: www.kahedu.edu.in

> DEPARTMENT OF PHYSICS FACULTY OF ARTS, SCIENCE AND HUMANITIES PG PROGRAM (CBCS) – M.Sc. Physics (2019–2020 Batch and onwards)

		Obje and co	ectives 1 out mes	Inst n h	truc our veek	ctio rs /	(s)	Maximum Marks		
Course code	Name of the course	PEOs	POs	L	Т	Р	Credit	CIA	ESE	Total
			<u> </u>					40	60	100
100101	SEMI	ESTER	<u> </u>	4			4	40	60	100
19PHP101	Condensed Matter Physics	1, 3	<u>a</u>	4	-	-	4	40	60	100
19PHP102	Electronic Devices and Circuits	2,4	b	4	-	-	4	40	60	100
19PHP103	Classical Mechanics and Relativity	5	e	4	-	-	4	40	60	100
19PHP104	Mathematical Physics	1	a, b	4	-	-	4	40	60	100
19PHP105A/ 19PHP105B/ 19PHP105C	Elective-I	3, 6	d, f	4	-	-	4	40	60	100
19PHP111	General Physics Practical – I	4	b, f	-	-	4	2	40	60	100
19PHP112	Electronics Practical – I	4	d	-	-	4	2	40	60	100
Journal P	aper Analysis & Presentation	5,7	d	2	-	I	-	-	-	-
	Semester Total			22	-	8	24	280	420	700
	SEME	ESTER	<u>– II</u>							
19PHP201	Thermodynamics and Statistical Mechanics	1	b	4	-	-	4	40	60	100
19PHP202	Quantum Mechanics – I	3 c		4	-	-	4	40	60	100
19PHP203	Nuclear Physics	2	d	4	-	-	4	40	60	100
19PHP204	Spectroscopy	5	g	4	-	-	4	40	60	100
19PHP205A/ 19PHP205B/ 19PHP205C	Elective-II	6,1	a, f	4	-	-	4	40	60	100
19PHP211	General Physics Practical – II	4	b, f	-	-	4	2	40	60	100
19PHP212	Electronics Practical – II	4	d	-	-	4	2	40	60	100
Journal P	aper Analysis & Presentation	5,7	d	2	-	-	-	-	-	-
	Semester Total	•		22	-	8	24	280	420	700
	SEME	STER	– III							
19PHP301	Quantum Mechanics – II	3	b, f	4	-		4	40	60	100
19PHP302	Laser and its Applications	4	e	4	-		4	40	60	100
19PHP303	Electromagnetic theory and Electrodynamics	7	a, b	4	-		4	40	60	100
19PHP304	Digital Electronics and Microprocessor	2	c	4	-		4	40	60	100
19PHP305A	Nanostructures and Characterization	1 d								
19PHP305B	Solar Energy and its utilization	2, 6 d		4	-		4	40	60	100
19PHP305C	Optoelectronics	2 d, e								
19PHP311	Advanced Physics Practical	4	b, f		-	4	2	40	60	100

19PHP312	Advanced Electronics Practical	4	d		-	4	2	40	60	100	
Journal I	5,7	d	2	-							
			22	-	8	24	280	420	700		
SEMESTER – IV											
19PHP491 Project			d, e, f		-		15	80	120	200	
Total					-		87	920	1380	2300	

#### **Elective Courses\***

Elective –	I (19PHP105)	Elective –	II (19PHP205)	Elective – III (19PHP305)			
Course code	Name of the course (Theory)	Course Code	Name of the course (Theory)	Course Code	Name of the course (Theory)		
19PHP105A	Material Characterization	19PHP205A	Digital Signal Processing	19PHP305A	Nanostructure Characterization		
19PHP105B	Astronomy and Astrophysics	19PHP205B	Computational Physics	19PHP305B	Solar Energy and its utilization		
19PHP105C	Crystal Growth Techniques	19PHP205C	Thin Film Physics	19PHP305C	Optoelectronics		

#### **PROGRAMME OUTCOMES**

At the end of the programme, the students will

**a**) Acquire scientific knowledge to identify, analyze and solve the complex problems in the field of theoretical & experimental physics.

**b**) Apply theoretical knowledge of physics principles and mathematical techniques in research.

**c**)They can get opportunities after M.Sc. program include doing research in leading national and international universities, laboratories and research institutes.

**d**)Gain the knowledge and understand the fundamental laws and principles along with its applications in research skills which include advanced laboratory techniques.

e) Gain skill in the acquisition of data using different laboratory instruments and in the analysis and interpretation of data using various algorithms.

# PROGRAMME SPECIFIC OUTCOMES

f)Recognize how observation, experiment and theory work together.

g) They acquire the knowledge to design and develop a device to meet the social needs.

**h**) Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

**PEO 1:** Understanding the advanced trends in Physics.

**PEO 2:**Perform procedures as per laboratory standards in the areas like electronics and communications, laser, Nuclear Physics, Solar energy and Thermal Physics.

**PEO 3:** Analyze the quantum methods in the solution of problems involving atomic spectra, blackbody radiation, the photoelectric effect, X-ray emission, the structure of the atom, and one-dimensional potentials.

**PEO 4:** To understand the classical experimental techniques and modern measurement technology including analog and digital electronics, laboratory test equipment, optics, lasers, and detectors

**PEO 5:** To develop and strong student competencies in Physics and its applications in a technology-rich, interactive environment.

PEO 6:To create a sense of ethical responsibilities among students.

**PEO 7:** To develop and strong student skills in research, analysis and interpretation of complex information.

Pos	a	b	c	d	e	f	g	h
PEO1		Х		Х	Х			
PEO2	Х		Х					Х
PEO3				Х		Х	Х	Х
PEO4		Х			Х			
PEO5	Х	Х		Х		Х		
PEO6	Х		Х	Х		Х	Х	Х
PEO7		Х	Х		Х		Х	Х



#### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEEIRNG FACULTY OF ENGINEEIRNG PG PROGRAM (CBCS) – M.E POWER SYSTEMS ENGINEERING (FULL TIME) (2019–2020 Batch and onwards)

Course Code	Name of the Course	ategory	Category Objectives and out comes		Instruction	hours/	week	redit(s)	]	Maximu Marks	im S	Page No.
		C	PEOs	POs	L	Т	Р	C	CIA	ESE	Total	
			SEME	STER	Ι							
19MEPS101	Power System Analysis	PCC	1,2,3	a,b, d,f	3	0	0	3	40	60	100	5
19MEPS102	Power System Dynamics-I	PCC	1,2,4	a,b, d,f	3	0	0	3	40	60	100	6
19MEPS103 A/B/C/D	Renewable Energy System/ SmartGrids/ High Power Converters/ Wind and Solar Systems	PE	1,2,4	a,b, d,f	3	0	0	3	40	60	100	7/8/ 10/ 11
19MEPS104 A/B/C/D	Electrical Power Distribution System/ Mathematical Methods for Power Engineering/ Pulse Width Modulation for PE Converters/ Electric and Hybrid Vehicles	PE	1,2,4	a,b, d,f	3	0	0	3	40	60	100	12/ 13/ 14/ 15

19MEPS105	Research Methodology and IPR	HSMC	1,2,4	a,b, d,f	3	0	0	2	40	60	100	17
19MEPS111	Power System Steady State Analysis Lab	PCC	1,2,3	a,b, d,f	0	0	3	2	40	60	100	18
19MEPS112 A/B	Power System Dynamics Lab/ Renewable Energy Lab	PCC	1,2,3	a,b, d,f	0	0	3	2	40	60	100	20
VAC 19MEPS151 A/B/C/D (Audit 1)	English for Research Paper Writing/ Disaster Management/ Sanskrit for Technical Knowledge/ Value Education	OE	1,2,3	a,b, d,f	0	0	3	2	100	0	100	
	Total				15	0	9	20	380	420	800	
			SE	MEST	ER II	[	1	1	I	1		I
19MEPS201	Digital Protection of Power System	PCC	1,2,3	a,b, d,f	3	0	0	3	40	60	100	21
19MEPS202	Power System Dynamics-II	PCC	1,2,3	a,b, d,f	3	0	0	3	40	60	100	22
19MEPS203 A/B/C/D	Restructured Power Systems/ Advanced Digital Signal Processing/ Dynamics of Electrical Machines/ Power Apparatus Design	PE	1,2,3	a,b, d,f	3	0	0	3	40	60	100	23/ 24/ 25/ 26

19MEPS204 A/B/C/D	Advanced Micro- Controller Based Systems/ SCADA System and Applications/ Power Quality/ Artificial Intelligence Techniques	PE	1,2,3	a,b, d,f	3	0	0	3	40	60	100	28/ 29/ 31/ 33
19MEPS211 A/B/C	Power System Protection Lab/ Power Quality Lab/ Artificial Intelligence Lab/	PCC	1,2, 3	a , b , d , f	0	0	3	2	40	60	100	34
VAC 19MEPS251 A/B/C/D (Audit 2)	Constitution of India/ Pedagogy Studies/ Stress Management by Yoga/ Personality Development through Life Enlightenment Skills	HSMC	1,2, 3	a , b , d , f	0	0	3	2	100	0	100	
	Total			•	12	0	6	16	300	300	600	
			SEMES	TER-	III		I	I		•		
19MEPS30 1 A/B/C	Power System Transients/ FACTS and Custom Power Devices/ Industrial Load Modeling and Control	PCC	1,2,3	a,b, d,f	3	0	0	3	40	60	100	35/ 36/ 38
19MEPS30 2 A/B/C/D/E/ F	Business Analytics/ Industrial Safety/ Operations Research/ Cost Management of Engineering Projects/ Composite	OE	1,2,3	a,b, d,f	3	0	0	3	40	60	100	39/ 41/ 43/ 44/ 46/ 48

Materials/ Waste to Energy											
Phase – I Dissertation	PCC			0	0	9	10	40	60	100	
Total				6	0	9	16	120	180	300	
SEMESTER -IV											
Phase-II Dissertation	PCC			0	0	18	12	120	180	300	
Total							12	120	180	300	
Program Total						42	64	920	1080	2000	
	Materials/ Waste to Energy Phase – I Dissertation Total Phase-II Dissertation Total Program To	Materials/ Waste to EnergyPPhase - I DissertationPCCTotalPCCPhase-II DissertationPCCPhase-II DissertationPCCPhase-II DissertationPCCPhase-II DissertationPCC	Materials/ Waste to EnergyImage: Constraint of the sector	Materials/ Waste to EnergyImage: Constraint of the sector	Materials/ Waste to EnergyImage: Constraint of the sector	Materials/ Waste to EnergyImage: Constraint of the sector	Materials/ Waste to EnergyImage: Constraint of the sector	Materials/ Waste to Energy       Image: Materials/ Waste to Energy       Image: Materials/ PCC       Image: Materials/ Materials/ Materials/       Image: Materials/ Material/ Materials/ Materials/ Materials/ Material/ M	Materials/ Waste to Energy       Image: Materials/ Waste to Energy       Image: Materials/ Procession       Image: Materials/ PCC       Image: Materials/ PCC	Materials/ Waste to Energy       Image: Materials/ Waste to Energy       Image: Materials/ Phase - I       Image: Materials/ Phase - I       Image: Materials/ Pase       Image: Materials/ Pase <thimage: <br="" materials="">Pase       Image: Materis/</thimage:>	Materials/ Waste to Energy       Image: Materials/ Wasterials/Waste to Energy       Im

L: Lecture Hour	<b>T</b> : Tutorial Hour	CIA: Continuous Internal Assessment
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**P:** Practical Hour **C**:No. of Credits **ESE**: End Semester Examinations

PCC – Programme Core Course PE - Program Elective

**OE** – Open Elective **HSMC**-Humanities, Social Science and Management Course

## **Program Outcomes:**

On successful completion of the programme,

- a. Graduates will be able to demonstrate the principles and practices of the electrical power industry regarding generation, transmission, distribution and electrical machines and their controls.
- b. Graduates will be able to apply their knowledge of electrical power principles, as well as mathematics and scientific principles, to new applications in electrical power.
- c. Graduates will be able to perform, analyze, and apply the results of experiments to electrical power application improvements.
- d. Graduates will be able to look at all options in design and development projects and creativity and choose the most appropriate option for the current project.
- e. Graduates will function effectively as a member of a project team.
- f. Graduates will be able to identify problems in electrical power systems, analyze the problems, and solve them using all of the required and available resources.
- g. Graduates will be able to effectively communicate technical project information in writing or in personal presentation and conversation.
- h. Graduates will be engaged in continuously learning the new practices, principles, and techniques of the electrical power industry.
- i. Graduates will work on application software packages for power system analysis and design.
- j. Graduates will develop indigenous software packages for power system planning and operational problems of utilities.

## **Program Specific Outcomes** (PSOs)

- k. Graduates will be able to demonstrate the principles and practices of the electrical power industry regarding generation, transmission, distribution and electrical machines and their controls.
- 1. Graduates will be able to apply their knowledge of electrical power principles, as well as mathematics and scientific principles, to new applications in electrical power.
- m. Graduates will be engaged in continuously learning the new practices, principles, and techniques of the electrical power industry.

## Programme Educational Objectives (PEOs)

PEO 1: To prepare the students to have career in the electrical power Industry/research organization/teaching.

PEO 2: To provide good foundation in mathematics and computational technology to analyze and solve problems encountered in electrical power industry.

PEO 3: Pursue lifelong learning and continuous improvement of their knowledge in the electrical power industry.

PEO 4: To understand the national and global issues related to the electrical power industry and to be considerate of the impact of these issues on the environment and within different cultures.

PEO 5:Apply the highest professional and ethical standards to their activities in the electrical power industry.

PEO 6:To provide the students with knowledge to be involved with the technology advancements and future developments in power generation, control and management as well as with alternate and new energy resources.

Program						Prog	ram O	utcom	e				
Educational Objective	a	b	c	d	e	f	g	h	i	j	k	l	m
PEO 1									$\checkmark$				$\checkmark$
PEO 2									$\checkmark$				$\checkmark$
PEO 3											V		$\checkmark$
PEO 4													$\checkmark$
PEO 5													$\checkmark$
PEO 6													$\checkmark$
PEO 7								$\checkmark$					$\checkmark$

**KARPAGAM ACADEMY OF HIGHER EDUCATION** 



(Deemed to be University Established Under Section 3 of UGC Act 1956) Coimbatore – 641 021. INDIA

#### DEPARTMENT OF CIVIL ENGINEERING

## M.E. WATER RESOURCES AND ENVIRONMENTAL ENGINEERING (FULL TIME) Curriculum Structure (2019 BATCH ONWARDS)

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

- I. To prepare students to excel in research and to succeed in Water resources and Environmental engineering profession through global, rigorous post graduate education
- II. To provide students with a solid foundation in mathematical, scientific and engineering fundamentals required to solve in Water resources and Environmental engineering problems
- III. To train students with good scientific and engineering knowledge so as to comprehend, analyze, design, and create novel products and solutions for the real-life problems
- IV. To inculcate students in professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate in Water resources and Environmental engineering issues to broader social context.
- V. To provide student with an academic environment aware of excellence, leadership, written ethical codes and guidelines, and the life-long learning needed for a successful professional career

## **PROGRAMME OUTCOMES (POs):**

On successful completion of the programme,

- a. Graduates will demonstrate knowledge of mathematics, science and engineering.
- b. Graduates will demonstrate an ability to design a system, component or process as per needs and specifications.
- c. Graduates will demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks.

- d. Graduate will demonstrate skills to use modern engineering tools, software and equipment to analyze problems.
- e. Graduates will demonstrate knowledge of professional and ethical responsibilities.
- f. Graduate will be able to communicate effectively in both verbal and written form.
- g. Graduate will develop confidence for self education and ability for life-long learning.

#### **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

- h. Graduates will demonstrate an ability to identify, formulate and solve engineering problems.
- i. Graduate will demonstrate an ability to design and conduct experiments, analyze and interpret data.
- j. Graduate will show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues.

#### **MAPPING:**

PEOs	a	b	с	d	e	f	g	h	i	j
Ι	$\checkmark$			$\checkmark$			$\checkmark$	$\checkmark$	$\checkmark$	
II		$\checkmark$			$\checkmark$				$\checkmark$	$\checkmark$
III			$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	
IV	$\checkmark$			$\checkmark$			$\checkmark$			$\checkmark$
V			$\checkmark$			$\checkmark$			$\checkmark$	$\checkmark$

KARPAGAM ACADEMY OF HIGHER EDUCATION



(Deemed to be University Established Under Section 3 of UGC Act 1956) Coimbatore – 641 021. INDIA

# DEPARTMENT OF CIVIL ENGINEERING M.E. WATER RESOURCES AND ENVIRONMENTAL ENGINEERING (FULL TIME) COURSE OF STUDY AND SCHEME OF EXAMINATIONS

(2019 BATCH ONWARDS)

			OBJE	CTIVE	INST	RICTI	ION		MAX	KIMUM	MARKS
COURSE	NAME OF THE	EGORY	S A O CO	ND UT MES	HIGH H /V	OURS VEEK		EDITS	CIA	ESE	TOTAL
CODE	COURSE	CATI	PEO' s	PO's	L	Т	Р	CRI	40	60	100
			SEMES	TER –	I						
19MEWE101	Surface Water Hydrology	PC	I, II	a,b,h	3	0	0	3	40	60	100
19MEWE102	Air pollution and control	PC	I, II	a,c,j	3	0	0	3	40	60	100
19MEWE103	Research Methodology and IPR	PC	III	c,d,i	2	0	0	2	40	60	100
19MEWE1E0	1. Industrial Wastewater Pollution – Prevention and		I, III	a,b,j							
	Control 2. <u>Soil Pollution</u> Engineering	PE	I, III	d,f,i	3	0	0	3	40	60	100
	3. Design of Biological		I, IV	e,f,i							
	4. <u>Climate change and</u> <u>Adaptation</u>		I, II, V	a,b,g							
19MEWE1E0	<ol> <li><u>Water Supply</u> <u>Distribution and</u> <u>Buried Pipelines</u></li> <li><u>Ground Water and</u> <u>Drainage</u> <u>Engineering</u></li> <li>Rural Water Supply and On-Site Sanitation</li> <li>Advanced Ground Water Hydrology</li> <li><u>River Engineering</u></li> <li>Probability and statistical methods</li> </ol>	PE	I, III I, III I, IV I, IV I, II, V III, V II, V	a,b,d, h c,d,f, i e,f,g, j a,b,g, i a,d,f a,f,h, i	3	0	0	3	40	60	100
19MEWE111	Environmental	CL	III	c,d,i	0	0	2	2	40	60	100

	Engineering lab										
10MEWE112	Geotechnical engineering	CI	ш	a d i	0	0	2	C	40	60	100
19MEWE112	lab	CL	111	C,u,I	0	0	2	Z	40	00	100
	Tota	1			14	0	4	18	280	420	700
	1	S	EMEST	ER – II	[	1			1	Γ	
	Design of Hydraulic										
19MEWE201	and Environmental	PC	I, II	a,b,j	3	0	0	3	40	60	100
	Engineering Structures										
19MEWE202	Environmental Geo-	DC	тп	a,b,c,	3	0	0	3	40	60	100
	technology	гC	1, 11	i	5	U	0	5	40	00	100
19MEWE2E0	1. Environmental										
	Impact Assessment		I, III	a.b.d.							
	of Water Resources			i,,,,,,,							
	Development			5							
	2. Environmental		I, III	c.d.f.							
	Quality Monitoring	PE		i	3	0	0	3	40	60	100
	3. Environment,		I, IV	e,f,g,							
	Health and Safety			h							
	in Industries		I, II,	a,b,g,							
	4. Environmental		V	i							
	Hydraulics										
19MEWE2E0	5. Solid and Hazardous										
	waste management		1, 111	a.b.d.							
	6. Groundwater			h							
	Modeling and										
	Management		1, 111	c,d,f,							
	7. Landfill Engineering	DE	I IV	h	2	0	0	2	40	60	100
	and Remediation	ΓĽ	1, 1 V	e,f,g,	5	0	0	3	40	00	100
	Technology		тт	i							
	8. Air and Water		1, 11, V	a,b,g,							
	Quality Modeling		v	j							
	9. Flood and Drought		шу	a,d,f							
	Management		111, <b>v</b>								
19MEWE211	Geographical	CL	ш	cdi	0	0	2	2	40	60	100
	Information system lab	01		0,0,1	Ŭ	Ŭ	_				100
19MFWF212	Numerical Analysis	PC	ш	cdi	0	0	2	2	40	60	100
191012 10 1212	Lab	10		0,0,1	U	U	2	4	40	00	100
19MEWE213	Mini Project	CL	III	c,d,j	0	0	4	2	40	60	100*
	Total				12	0	8	18	280	420	700
		SI	EMEST	ER – II	I	1			I	I	
	1. Rehabilitation and		I, III	a,b,d,							
10MEWE2E0	Modernisation of	ЪΓ		i	2	0	0	2	40	60	100
19MEWE3EU	Irrigation Systems	ΓĽ			3	0		3	40	00	100
	2. Watershed		I, III	c,d,f,							

	Conservation and			h,j							
	Management			~5							
	3 Urban Water		I IV								
	Resources		1, 1 ,	e.f.g.							
	Management		тп	Li							
	Water Dower and		V	<i>,</i> ,							
	4. Water Power and		· ·	a.bh							
	Dam Engineering		шν	g							
	5. Coastal Engineering			a,d,f							
	1. Business Analytics										
	2. Industrial Safety		I, III								
	3. Operations		I, III	a,b,							
	Research		I, IV	c,d,f							
	4. Cost Management			e,f,g,							
	of Engineering		I, II,	1							
	Projects			1.							
	5. Composite			a,b,j							
	Materials	0.5	11, v	a,u,i	2		0	2	40	60	100
19MEWEOE0	6. Waste to Energy	OE		a,1,J	3	0	0	3	40	60	100
	7. Remote Sensing		тт								
	and GIS			hei							
	Applications in		1 V	0,0,1							
	Environmental										
	Management		тпт	cei							
	8. Resource and		V	0,0,1							
	Energy Recovery										
	from Waste										
19MEWE391	Project Work – Phase I	PW	III	c,d,i	0	0	20	10	40	60	100
	Total				6	0	20	16	120	180	300
		S	EMEST	ER – IV	7	T	T	[	1	1	
19MEWE491	Project Work – Phase	PW	III	c,d,i	0	0	32	16	120	180	300
	Total		I	1	0	0	32	16	120	180	300
1					-	-		-	-		

L-Lecture T-Tutorial P-Practical C-Credit CIA – Continuous Internal Assessment ESE – End semester Examination

Total credits = 68

Total Marks = 2000

\* To be evaluated internally by a committee of members

Review 1& 2

Final presentation and viva voce

60 marks40 marks



## M.ARCH (Advance Design) - CURRICULUM 2019-2020 batch (New syllabus)

#### **PROGRAMME EDUCATIONAL OBJECTIES (PEOs):**

Master of Architecture curriculum is designed to prepare the graduates having knowledge and Skillful aptitude

- I. To become a successful Professional
- II. To imbibe and implant a strong foundation in Advanced design skills and technical aspects with research-oriented thinking and implementation
- III. To learn the critical thinking process with the application of theoretical aspects and parameters for a quantifiable result.
- IV. To Expertise the architectural and technical knowledge with field study and experimentation.
- V. To bring out various ideas in advanced level for the society in future.

#### **PROGRAMME OUTCOME (PO):**

- 1. Ability to gain deep knowledge and understanding of Advanced Level Architectural design, Building science and simulation, digital applications, housing design.
- 2. Ability to Research, understand, analyse, synthesize and review the process of design outcome and publish as a report.
- 3. Ability to review the new technological developments in the profession of architecture and construction.
- 4. Ability to understand real life situation with enhanced approach towards the Architectural practice.

#### **PROGRAMME SPECIFIC OUTCOME (PSO):**

5. Ability to understand the overall design parameters with advanced level of analytical thought process and a quantifiable product based on research.

# MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOME:

A broad relation between the Programme objectives and the outcome is given in the following table

PEO	PO1	PO2	PO3	PO4	PSO5
Ι					
II					
III					
IV					
V					



#### M.ARCH (ADVANCE DESIGN) - CURRICULUM 2019-2020 batch (New syllabus) Choice Based Credit System

#### Subject Legend:

ART – Theory -0, ARP – Practical-1, ARS – Studio-2, ARE Elective-3, L- Lecture, T- Theory, P/S- Practical /StudioC- Credits Abbreviation: CIA – Continuous Internal Assessment; ESE – End Semester Exam Exam Hours: Theory (T)-3 Hrs Practical (P)-6 Hrs Studio(S) - 6 Hrs

Course code	Name of the course	Object and o come	ives out es	Instructio n hours / week			lit(s)	Maximum Marks			
		PEOS					Cred	CIA	ESE	Total	
								40	60	100	
	SF	EMESTER	R - I								
19MARS111	Research Methodology I	I, II, III	2,4,5	1	-	2	2	40	60	100	
19MARS112	Design Systems	II, III	1,3,5	2	-	4	4	80	120	200	
19MARS113	Design Research & Field Studies	I, IV	2,4,5	1	-	2	2	40	60	100	
19MARS114	Advanced Design Studio I	I, IV, V	3,4,5	3	-	9	8	160	240	400	
19MARES*	Advanced Elective I	II, III, V	2,3,4 ,5	2	-	4	4	80	120	200	
	Semester Total			08	-	22	20	460	540	1000	
*19MARESS1 19MARESH1	<ul> <li>Introduction to Sustainable Architec</li> <li>Introduction to Housing Design</li> </ul>	ture									
	SE	MESTER	– II								
19MARS211	Research Methodology II	I,II,III	2,4,5	1	-	2	2	40	60	100	
19MARS212	Documentation & Presentation	I,IV	2,4,5	1	-	2	2	40	60	100	
19MARS213	Advanced Design Studio II	I,IV,V	3,4,5	3	-	9	7	160	240	400	
19MARES*	Advanced Elective II	II,III,V	2,3,4 ,5	2	-	4	4	80	120	200	
19MARES**	Advanced Elective III	II,III,V	2,3,4 ,5	2	-	4	4	80	120	200	
	Semester Total			08	-	22	19	460	540	1000	
*19MARESS2 19MARESH2	<ul> <li>Building Performance Analysis</li> <li>Housing Policies and Schemes</li> </ul>	) MARE	SS3 SH3	- Sus - Su	stainab stainał	le Desig ble Hous	gn Strate sing	egies			

		Objectives and out comes			weel	K	it(s)			
		A Constant of the second secon		P/ S	Credi	CIA	ESE	Total		
	SEMISTED III							40	60	100
	S	EMESTEF	R - III							
19MARS311	Dissertation I	I,III,IV, V	1,2,3, 4	2	-	10	7	160	240	400
19MARES*	Advanced Elective IV	II,III,V	2,3,4	2	-	4	4	80	120	200
19MARES**	Advanced Elective V	II,III,V	2,3,4	2	-	4	4	80	120	200
Se	emester Total			06	-	18	15	320	480	800
*19MARESS4 19MARES	4 - Sustainable Building Systems SH4 - Community Participation	in Housing	**19MA 19MA	ARES RESH	S5- S1 I5	ustaina - Spe	ble Ti cial T	rends ar	nd Theor Housing	ies
	SI	EMESTEF	R – IV							
19MARS411	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$								480	800
Se	Semester Total 1 - 20 6 -						1 6	320	480	800

# <u>Credit Details :</u>

	70 aradita
-	20 credits
-	23 credits
27 cr	edits
	27 cr - -

# <u>Total Marks :</u>

Semester	<b>Total Credits</b>	Marks
Semester- I	20	1000
Semester- II	19	1000
Semester- III	15	800
Semester- IV	16	800
Total	70	3600



# M.PLAN (TOWN AND COUNTRY PLANNING) CURRICULUM 2019 - 2020 batch (CBCS)

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs): Masters of Planning curriculum is designed imbibe aptitude and knowledge

- 1. To educate Students about the social and economical, legal and political, environmental and physical, governance and management aspects of planning.
- 2. To involve in industry and community collaborative work
- 3. To imbibe knowledge in concepts, and theories, methods and techniques, social realities and technological advancement.
- 4. To acquire advanced knowledge in Planning practices by exposed to multi disciplinary learning environment and also engage in individual and group work.
- 5. To update themselves abreast of new developments in the field of Planning through lifelong learning.
- 6. Be a part of high performing professionals of prestigious private, public or community organizations of socio-economic, environment and spatial planning relevance.
- 7. To create world class teaching, research, training and consultancy activities by
  - a. Engaging experienced academics, professionals as part of teaching and evaluation of planning projects, dissertation and thesis and
  - b. Student and faculty exchange program with a partnered university of the world.
- 8. To emulate and inspire high ethical values in professional practice.

## PROGRAM OUTCOME:

- 1. Ability to gain knowledge in social and economical, legal and political, environmental and physical, governance and management aspects of planning and create livable human settlements in rural, urban and regional areas.
- 2. Students gain knowledge through class room learning, field visits.
- 3. Students to get opportunities to publish research paper, display exhibits, present papers in conferences and seminars.
- 4. Students are also exposed to build confidence and capacity to work in academic, professional, corporate and voluntary sector work environment towards preparation, execution, implementation and monitoring of planning assignments.
- 5. Ability to gain knowledge in concepts, and theories, methods and techniques and social realities
- 6. Ability to review, comprehend and report technological developments in the profession of planning
- 7. Ability to gain advanced knowledge in Planning practices by being exposed to multi disciplinary learning environment.
- 8. To gain leadership, decision making qualities and display commitment towards adding knowledge.
- 9. Ability to understand ethical and professional responsibilities.

# MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOME:

A broad relation between the programme objectives and the outcome is given in the following table

PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
1	$\checkmark$								
2			$\checkmark$	$\checkmark$		$\checkmark$			
3	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$		$\checkmark$		
4			$\checkmark$			$\checkmark$	$\checkmark$		
5		$\checkmark$	$\checkmark$			$\checkmark$		$\checkmark$	
6				$\checkmark$				$\checkmark$	$\checkmark$
7	$\checkmark$		$\checkmark$		$\checkmark$				
8									$\checkmark$

# M. PLAN (TOWN AND COUNTRY PLANNING)

MASTER OF TOWN AND COUNTRY PLANNING

Curriculum – Full Time (4 Semesters)

2019 - 2020 Batch (CBCS)

Semester	·I											
Sub. Code	Course Title	Program Outcome	Program Education	EM / EN	Ins Hr	struc s / W	tion ′eek		Mark	S	C	E H
			al objectives	/ SD	L	Т	Р	CIA	ESE	Total		
19MPN101	Planning Theory and Practice	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
19MPN102	Socio – Economic and Spatial aspects of Human Settlements and Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
19MPN103	Traffic and Transportation Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
19MPN121	Planning Studio I	PO1, PO2, PO4, PO5, PO6, PSO8	I, II, IV,V,VI, VIII	EM /EN/ SD	3	0	10	160	240	400	8	6
19MPNE**	Elective I				2	0	8	120	180	300	6	6
	Report Writing			SD								
		Sub Total			14	0	18	400	600	1000	23	
			Elect	ive I								
Sub. Code	<b>Course Title</b>	Program	Program	EM/	Ins	truc	tion		Mark	5	С	Ε
		Outcome	Education	EN/	Hrs	Hrs / Week				Н		
				SD	I.	Т	P	CIA	ESE	Total		
			objectives		2	-	-	Chi	LUL	rotur		
19MPNE1A	Public Transport Planning	PO1, PO2, PO5	III,	EM	2	0	8	120	180	300	6	6
19MPNE1B	Transport Economics	PO1, PO2, PO5, PO7	I, III	EM	2	0	8	120	180	300	6	6
19MPNE1C	Disaster Management	PO1, PO2, PO5	III,	EM	2	0	8	120	180	300	6	6
19MPNE1D	Real Estate And Housing Markets	PO1, PO2, PO5, PO7	I, III	EN	2	0	8	120	180	300	6	6
19MPNE1E	Materials, Technology and Infrastructure	PO1, PO2, PO5, PO7	I, III	EN	2	0	8	120	180	300	6	6

Sub. Code	Course Title	Program Program H		EM	Ins	truc	tion		Mark	S	C	Ε
		Outcome	Educational	/ EN	Hr	s / W	'eek					Н
			objectives	/ SD	L	Т	Р	CIA	ESE	Total		
19MPN201	City Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
19MPN202	Regional Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
19MPN203	Research Methodology	PO1, PO3, PO5	III, VII	EM/ SD	3	0	0	40	60	100	3	3
19MPN221	Planning Studio II	PO1, PO2, PO4, PO5, PO6, PSO8	I, II, IV,V,VI, VIII	EM/ EN/ SD	3	0	10	160	240	400	8	6
19MPNE**	Elective II				2	0	8	120	180	300	6	6
	Current trends in planning			EM								
		Sub Total			14	0	18	400	600	1000	23	

Elective II												
Sub. Code	Course Title	Program Outcome	Program Educational	EM/ EN /	Ins Hr	struct s / W	tion Teek		Mark	5	С	E H
			objectives	SD	L	Т	Р	CIA	ESE	Total		
19MPNE2A	Rural and Urban Housing	PO1, PO2, PO5	I, III, VII		2	0	8	120	180	300	6	6
19MPNE2B	Planning Legislation and Professional Practice	PO1, PO2, PO5, PSO9	I, VII	EN	2	0	8	120	180	300	6	6
19MPNE2C	GIS Modeling in Urban and Regional Planning	PO1, PO2, PO5, PO7	I, III, IV	EM/ SD	2	0	8	120	180	300	6	6
19MPNE2D	Urban Development And Management	PO1, PO2, PO5, PO7	I, III, IV	EN	2	0	8	120	180	300	6	6
19MPNE2E	Inclusive urban planning	PO1, PO2, PO5, PO7	I, III, IV	EM	2	0	8	120	180	300	6	6

## Semester III

Sub. Code	Course Title	Program	Program	EM/	1/ Instruction		tion		С	E		
		Outcome	Educationa	EN /	Hr	s / W	eek					Η
			l objectives	SD	L	Т		CIA	ESE	Total		
19MPN301	Environmental	PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3
	Planning											
19MPN302	Project	PO1, PO3	I,III, VII	EN	3	0	0	40	60	100	3	3
	Formulation and											
	Implementation											
19MPN321	Planning Studio	PO1, PO2,	I, II, III	EM/	3	0	10	160	240	400	8	6
	III	PO4, PO5,	IV,V,VI, VII,	EN/								
		100,1508	VIII	SD								
19MPN322	Dissertation	PO1, PO2,	I, II,	EM/	3	0	6	120	180	300	6	6

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		PO3, PO5, PO6, PO7	IV,V,VI, VIII	EN/ SD								
19MPNE**	Elective III				3	0	0	40	60	100	3	3
		Sub Total			15	0	16	400	600	1000	23	
			Elective	III								
Sub. Code	Course Title	Program	EM/	Ins	truct	ion		Marks	6	С	Ε	
		Outcome	Educationa	EN /	Hr	s / W	eek	ek				Н
			l objectives	SD	L	Т	Р	CIA	ESE	Total		
19MPNE3A	Environmental Design	PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3
19MPNE3B	Environmental Impact Assessment	PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3
19MPNE3C	Environmental Legislation, Evaluation and Practices	PO1, PO3, PSO9	I,VI,VIII	EN	3	0	0	40	60	100	3	3
19MPNE3D	Web based Applications to urban and Regional Planning	PO1, PO3, PO6, PO7	I, II,IV,V	EM	3	0	0	40	60	100	3	3
19MPNE3E	Planning for tourism	PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3

#### Semester IV

Sub. Code	Course Title	Program Outcome	m Program ne Educational		Instruction Hrs / Week			camEM/InstructionionalEN /Hrs / Week			C	E H
			objectives	SD	L	Т	Р	CIA	ESE	Total		
19MPN401	Urban Governance and institutional Management	PO1, PO3, PO4, PSO9	I,II, III	EM	3	0	0	40	60	100	3	3
19MPN421	Thesis (Viva Voce)	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PSO8	I, II, III IV,V,VI, VII, VIII	EM/ EN/ SD	4	0	28	320	480	800	18	6
	(	Sub Total Grand Total			7 50	0	28 80	360 1560	540 2340	900 3900	21 90	

L-Lecture, T-Tutorial, P-Practical, CIA-Continuous Internal Assessment, ESE-End semester Examination, C-Credits, EH-Exam hours

# FACULTY OF PHARMACY PHARM.D PROGRAMME (2019–2020 Batch and onwards)

	Name of the course	Obje and cor	ctives out nes	Instr	uction / wee	n hours ek	lit(s)	Maximum Marks			
Course code		PEOs	POs	L	Т	Р	Cred	CIA	ESE	Total	
YEAR - I								50	70	100	
19PD101T	Human Anatomy and	2	k	3	1	-	4	30	70	100	
	Physiology Theory										
19PD102T	Pharmaceutics Theory	3	a	2	1	-	3	30	70	100	
19PD103T	Medicinal Biochemistry Theory	2	a,k	3	1	-	4	30	70	100	
19PD104T	Pharmaceutical Organic Chemistry Theory	3	а	3	1	-	4	30	70	100	
19PD105T	Pharmaceutical Inorganic Chemistry Theory	2	a	2	1	-	3	30	70	100	
19PD106RMT /	Remedial Mathematics/ Biology Theory	6	c/a	3	1	-	4	30	70	100	
19PD106RBT											
19PD107P	Human Anatomy and Physiology Practical	2	b	-	-	3	2	30	70	100	
19PD108P	Pharmaceutics Practical	3	a,b	-	-	3	2	30	70	100	
19PD109P	Medicinal Biochemistry Practical	2	b,k	-	-	3	2	30	70	100	
19PD110P	Pharmaceutical Organic Chemistry Practical	2	b	-	-	3	2	30	70	100	
19PD111P	Pharmaceutical Inorganic Chemistry Practical	2	b	-	-	3	2	30	70	100	
19PD112RBP	Remedial Biology Practical	2	b	-	-	3*	2	30	70	100	
	Total			16	6	15/ 18*	34	360	840	1200	
*Applicable only	for Remedial Biology	•							•		
YEAR - II							T				
19PD201T	Pathophysiology Theory	6	b,f,i	3	1	-	4	30	70	100	
19PD202T	Pharmaceutical Microbiology Theory	3	k	3	1	-	4	30	70	100	
19PD203T	Pharmacognosy & Phytopharmaceuticals Theory	2	a	3	1	-	4	30	70	100	
19PD204T	Pharmacology-I Theory	3	a.d.k	3	1	-	4	30	70	100	
19PD205T	Community PharmacyTheory	1,4	a,f,i	2	1	-	3	30	70	100	
19PD206T	Pharmacotherapeutics-I Theory	3	a,f,k	3	1	-	4	30	70	100	
19PD207P	Pharmaceutical Microbiology Practical	3	a,b	-	-	3	2	30	70	100	
19PD208P	Pharmacognosy & Phytopharmaceuticals Practical	2	a.b	-	-	3	2	30	70	100	

19PD209P	Pharmacotherapeutics-I Practical	3	b,c,g	-	-	3	2	30	70	100
	Total			17	6	9	29	270	630	900

		Obje and co	Instruction hours / week				()	Maximum Marks			
Course code	Name of the course	PEOs	POs	L	Т	F	•	Credit(s	CIA	ESE	Total
									30	70	100
<b>YEAK - III</b>		2	11	2	1	1		4	20	70	100
19PD3011	Pharmacology-II Theory	3	a,d,K	3	1	-	4	4	30	70	100
19PD302T	Pharmaceutical Analysis Theory	2	C Cl	2	1	-		5	30	70	100
19PD3031	Pharmacotherapeutics-IIT heory	3	a,f,K	3		-	4	4	30	/0	100
19PD304T	Pharmaceutical JurisprudenceTheory	5	a,e,g	3	1	-	4	4	30	70	100
19PD305T	Medicinal ChemistryTheory	2	a.k	2	1	-		3	30	70	100
19PD306T	Pharmaceutical FormulationsTheory	4	a,c,k	3	1	-	4	4	30	70	100
19PD307P	Pharmacology-II Practical	3	a,d,k			3		2	30	70	100
19PD308P	Pharmaceutical Analysis Practical	2	с	-	-	3	1	2	30	70	100
19PD309P	Pharmacotherapeutics-II Practical	3	a,f,k	-	-	3		2	30	70	100
19PD310P	Medicinal Chemistry Practical	2	a,b	-	-	3		2	30	70	100
19PD311P	Pharmaceutical Formulations Practical	4	a,c	-	-	3		2	30	70	100
	Total			16	6	15	5 3	32	330	770	1100
YEAR - IV											
19PD401T	Pharmacotherapeutics-III Theory	3	a.f.k	3		1	-	4	30	70	100
19PD402T	Hospital Pharmacy Theory	1,6	a,f,g,i, k	3		1	-	4	30	70	100
19PD403T	Clinical Pharmacy Theory	1,6	a,f,g,i, k	3		1	-	4	30	70	100
19PD404T	Biostatistics & Research MethodologyTheory	2	b,c,d,k	2		-	-	2	30	70	100
19PD405T	Biopharmaceutics & Pharmacokinetics Theory	5	a,c,k	3		1	-	4	30	70	100
19PD406T	Clinical Toxicology Theory	3	a,g,k,i	2		1		3	30	70	100
19PD407P	Pharmacotherapeutics-III Practical	3	a,f,k	-		-	3	2	30	70	100
19PD408P	Hospital Pharmacy Practical	1,6	a,f,g,i, k	-		-	3	2	30	70	100
19PD409P	Clinical Pharmacy Practical	6	a,f,g,i, k	-		-	3	2	30	70	100
19PD410P	Biopharmaceutics &Pharmacokinetics Practical	3,5	a,c,k	-		-	3	2	30	70	100
	Total	1	1	1	6	5	12	29	300	700	1000

Course code	Name of the course	Object out	tives and comes	Instruction hours / week			edit(s)	Maximum Marks		
		PEOs	POs	L	Т	Р	$\mathbf{Cr}$	CIA	ESE	Total
								30	70	100
YEAR V										
19PD501T	Clinical ResearchTheory	1,4,6	a,f,i,g,k	3	1	-	4	30	70	100
19PD502T	Pharmacoepidemiology and Pharmacoeconomics Theory	3,6	a,d,j	3	1	-	4	30	70	100
19PD503T	Clinical Pharmacokinetics & Pharmacotherapeutics Drug Monitoring Theory	3,5	a,c,k	2	1	-	3	30	70	100
19PD504S	Clerkship *	1,3,5,6	c,e,f,g,h, i,k	-	1	-	1	30	70	100
19PD505P	Project work (Six Months)	1,3,5,6	a,b,c,d,e, f,g,h,i,j,k	-	-	20	20	-	100**	100
	Total			8	4	20	32	120	380	500

\*Attending ward rounds on daily basis

\*\* 30 marks – Viva- Voice (oral)

70 marks - Thesis work

## YEAR VI

Internship or residency training including postings in speciality units. Student should independently provide the clinical pharmacy services to the allotted wards.

(i) Six months in General Medicine department, and

(ii) Two months each in three other speciality departments.

#### **PROGRAM OUTCOMES (PO's)**

- a. Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and practice of pharmacy.
- b. **Planning Abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
- c. **Problem analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- d. **Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
- e. Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
- f. **Professional Identity:** Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
- g. **Pharmaceutical Ethics:** Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- h. **Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
- i. **The Pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

- j. **Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- k. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

#### **PROGRAM SPECIFIC OUTCOMES (PSOs)**

**PSO I:** Understand different classes of drugs, their mechanism of action, dynamics, kinetics, structure activity relationships, pathophysiology and pharmacotherapeutics of various diseases, ability to synthesize, develop and/or evaluate various pharmaceuticals and their formulations and cosmeceuticals products.

**PSO m:**Develop skills in qualitative and quantitative analysis of various pharmaceuticals. Acquire technical knowledge and hands on training on equipments, instruments and software used in the field of pharmaceutical sciences.

**PSO n:** To inculcate the practice of pharmacyand train pharmacists to play an important role in patient care,health and wellness and population-based care as members of the health care team

**PSO o:** To exhibit behaviors and values that are consistent with the trust given to the profession, professionalism in interactions with patients, professionalism in interactions with other healthcare providers, professionalism in interactions with society

**PSO p**: To strengthen the professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate pharmaceutical sciences issues to broader social context.

**PSO q:** To stream a lifelong career of personal and practicing professional growth with ethical codes and self-esteem.

#### **PROGRAM EDUCATIONAL OBJECTIVES (PEOs)**

**PEO 1:** Synthesize population-based drug information to address patient medication adherence, prescribing patterns, and treatment protocol adherence to document issues, alert prescribers, design interventions, and assess intervention effectiveness.

**PEO 2:** To provide students with a strong and well defined concepts in the various fields of pharmaceutical sciences viz., pharmaceutics, pharmaceutical chemistry, pharmacology and pharmacognosy according to the requirement of pharmaceutical industries, community and hospital pharmacy and also to develop a sense of teamwork and awareness amongst students towards the importance of interdisciplinary approach for developing competence in solving complex problems in the area of Pharmaceutical Sciences.

**PEO 3:** Identify physicochemical properties of drug substances that affect solubility, pharmacodynamic and pharmacokinetic properties, pharmacologic actions, and stability when designing patient-specific care plans.

**PEO 4:** Formulate and implement a care plan in cooperation with patients and other healthcare providers based on established, evidence-based standards of practice; provide medication therapy management services for patients with acute & chronic health problems. **PEO 5:** Integrate knowledge of chemical, physical, and biopharmaceutical principles to preparesafe and effective prescriptions (sterile and non-sterile) in conformity with all applicable federal and state laws and regulations.

**PEO 6:** Provide health care information regarding nutrition, lifestyle, and other non-drug measures that promote health or prevent the progression of a disease or medical condition.Demonstrate a comprehensive approach to practice and care, includes problem solving, educator, patient advocacy, interprofessional collaboration, cultural sensitivity, communication.

РО	a	b	C	d	e	f	g	h	i	j	k	PSO 1	PSO m	PSO n	PSO o	PSO p	PSO q
PEO 1	Х	Х		Х	Х	Х	Х	Х	Х		Х	Х		Х	Х	Х	Х
PEO 2	Х		Х				Х				Х	Х	Х			Х	Х
PEO 3	Х	Х	Х			Х			Х		Χ	Х	Х				
PEO 4	Х	Х	Х			Х	Х	Х		Х	Х			Х	Х	Х	Х
PEO 5	Х						Х	Х	Х	Х	Х		Х		Х		
PEO 6	Х		Х			Х	Х	Х	Х	Х	Х			Х	X	Х	Х

#### MAPPING
### FACULTY OF PHARMACY PG PROGRAM (CBSS) – M.PHARM (2019–2020 Batch and onwards)

Course code	Name of the course	Obj an co	ectives d out omes	Ins hou	struct irs / v	tion veek	edit(s)	Max	imum	Marks
		ĒO	SOS	L	Т	Р	Cre	CIA	ESE	Total
		<b></b>					25	75	100	
	<b>ER</b> -		4			4	25	75	100	
19MPA101T	Techniques	1,2	,j	4	-	-	4	25	/5	100
19MPA102T	Advanced Pharmaceutical Analysis	1,2	a,c,d,h ,i,j	4	-	-	4	25	75	100
19MPA103T	Pharmaceutical Validation	1,2	a,d,h,j	4	-	-	4	25	75	100
19MPA104T	Food Analysis	1,2, 3	a,b,h,i	4	-	-	4	25	75	100
19MPA105P	Pharmaceutical Analysis Practical I	1,2, 4	a,b,c,d ,h,I,j	-	-	12	6	50	100	150
-	Seminar/Assignment	-	-	7	-	-	4	-	-	100
	Semester Total			23	-	12	26	150	400	650
	SEMEST	<u> ER –</u>	II							
19MPA201T	Advanced Instrumental Analysis	1,2, 4	a,b,c,d ,h,i,j	4	-	-	4	25	75	100
19MPA202T	Modern Bio-Analytical Techniques	1,2	a,b,c,d ,h,i,j	4	-	-	4	25	75	100
19MPA203T	Quality Control and Quality Assurance	1,2	a,d,f,h	4	-	-	4	25	75	100
19MPA204T	Herbal and Cosmetic analysis	1,2	a,b,c,d ,f,h,j	4	-	-	4	25	75	100
19MPA205P	Pharmaceutical Analysis Practical II	1,2, 4	a,b,c,d	-	-	12	6	50	100	150
-	Seminar/Assignment	-	-	7	-	-	4	-	-	100
	Semester Total			23	-	12	26	150	400	650
	SEMEST	<b>ER -</b> ]	III							
19MPA301T	Research Methodology and Biostatistics*	2,5	b,c,j	4	-	-	4	25	75	100
-	Journal club	-	-	1	-	-	1	25	-	25
-	Discussion / Presentation (Proposal Presentation)	-	-	2	-	-	2	50	-	50
-	Research Work	1,2,	a,b,c,d	28	-	-	14	-	350	350
		3,4, 5	,e,1,g, h,i,j							
	Semester Total			35	-	-	21	100	425	525
	SEMEST	ER –	IV		1			<b>.</b> -		
-	Journal club	-	-	1	-	-	1	25	-	25
- Research work			a,b,c,d ,e,f,g, h,i,j	31	-	-	16	75	-	75
-	- Discussion / Final Presentation			3	-	-	3	-	400	400
	Semester Total				-	-	20	100	400	500

\* Non-University Exam

#### PROGRAMME OUTCOMES (PO)

- a. **Pharmacy Knowledge:** Demonstrate knowledge of the basic pharmaceutical sciences and the ability to acquire, manage and use current information for problem solving. Describe the synthesis, formulation, analysis, pharmacological, pharmacognostical, biotechnological and regulatory aspects of drugs and biopharmaceuticals. Identify the rules and regulations involved in the drug discovery and development, manufacture, distribution and sale of medicines.
- b. **Planning Abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines using modern tools.
- c. **Research:** An ability to independently carry out research /investigation and development work to solve practical problems. Apply critical thinking skills, including investigation, application, analysis, creativity, evaluation of information, data and documents related to research investigation.
- d. **Problem analysis:**Develop problem-based learning approach and analytical thinking in his/her academic and professional life. Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- e. **Leadership qualities:** Demonstrate the ability to plan and implement professional activities. Act efficiently as a leader in the diverse areas of the profession.
- f. **Communication Skills:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions. Imbibe the skills of scientific communication and research writing.
- g. **The Pharmacist and society:**Apply the knowledge and skills gained through education to gain recognition in professional circle and society. Participate in healthcare initiatives to create awareness in society about the effective and safe use of medicines.
- h. Professional Ethics:Exercise ethical practices and moral values in personal and professional endeavors. Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- i. Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

j. Life-long learning: Tackle professional challenges through lifelong learning attitude. Work in a team and participate in lifelong learning and continuous improvement in the profession.

### PROGRAMME SPECIFIC OUTCOMES (PSOs)

**PSO k:** Understand a core and basic knowledge in different subjects of Pharmaceutical Sciences. To prepare graduate to success in technical or professional careers in various pharmaceutical industry and/ or institute and /or Health care system through excellent real time exposure to rigorous education.

**PSO I:**Analyse the relationships among Pharmaceutics, Pharmaceutical and Medicinal Chemistry, Pharmacology and Pharmacognosy subjects. Understand the applications of Pharmaceutical Sciences in drug and formulation development, drug analysis, drug safety and efficacy in medicine.

PSO m: Perform procedures as per laboratory standards in the areas of Pharmaceutical Sciences.

**PSO n:** To strengthen the professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate pharmaceutical sciences issues to broader social context.

**PSO o:**To streams a lifelong career of personal and practicing professional growth with ethical codes and self-esteem for a highly productive career and to relate the concepts of Pharmaceutical Sciences towards serving the cause of the society.

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

#### PEO 1

To provide a comprehensive and advanced pharmaceutical education leading to M. Pharm. Degree.

### **PEO 2**

To integrate pharmacy knowledge and skills with pharmaceutical research.

### PEO 3

To develop pharmacists to contribute effectively in the social health care system.

### PEO 4

To provide hands on training through state of art infrastructure to inculcate research aptitude in pharmaceutical sciences.

### PEO 5

To inculcate leadership and entrepreneurship capabilities in future pharmacy professionals.

### MAPPING

PO	a	b	c	d	e	f	g	h	i	j	PSO k	PSO 1	PSO m	PSO n	PSO o
PEO 1	Х						Х	Х		Х	Х	Х	Х	Х	
PEO 2	Х	Х	Х	Х		Х		Х		Х	Х	Х	Х	Х	Х
PEO 3	Х	Х		Х		Х	Х	Х	Х	Х	Х	Х		Х	Х
PEO 4	Х	Х	Х	Х						Х	Х	Х	Х	Х	Х
PEO 5	Х	Х	Х	Х	Х	Х		Х	Х	Х				Х	Х



### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEEIRNG FACULTY OF ENGINEEIRNG PG PROGRAM (CBCS) – M.E POWER SYSTEMS ENGINEERING (PART TIME) (2019–2020 Batch and onwards)

Course Code	Name of the Course	tegory	Objectives and out comes hours / week		Week	edit(s)	Maximum Marks			Page No.		
		Ca	PEOs	POs	L	Т	Р	Cr	CIA	ESE	Total	
			SE	MEST	<b>ER -</b> 1	ſ	1	1	1			I
19PMEPS101	Power System Analysis	PC C	1, 2, 3	a, b, d, f	3	0	0	3	40	60	100	4
19PMEPS102	Power System Dynamics-I	PC C	1, 2, 4	a, b, d, f	3	0	0	3	40	60	100	5
19PMEPS103 A/B/C/D	Renewable Energy System/ Smart grids/ High Power Converters/ Wind and Solar Systems	PE	1, 2, 4	a, b, d, f	3	0	0	3	40	60	100	6/7/9 /10
	Total				9	0	0	9	120	180	300	9
			SE	MEST	ER - I	I	-				-	
19PMEPS201	Digital Protection of Power System	PC C	1, 2, 3	a, b, d, f	3	0	0	3	40	60	100	11
19PMEPS202	Power System Dynamics-II	PC C	1, 2, 4	a, b, d, f	3	0	0	3	40	60	100	12

19PMEPS203 A/B/C/D	Electrical Power Distribution System/ Mathematical Methods for Power Engineering/ Pulse Width Modulation for PE Converters/ Electric and Hybrid Vehicles	PE	1, 2, 4	a, b, d, f	3	0	0	3	40	60	100	13/1 4/ 15/1 6
	Total				9	0	0	9	120	180	300	9
			SE	MEST	ER- II	I						
19PMEPS301 A/B/C/D	Restructured Power Systems/Advance d Digital Signal Processing / Dynamics of Electrical Machines/ Power Apparatus Design	PE	1, 2, 3	a, b, d, f	3	0	0	3	40	60	100	17/1 8/ 19/2 0
19PMEPS302 A/B/C/D	Advanced Micro- Controller Based Systems/SCADA System and Applications/ Power Quality/ Artificial IntelligenceTech niques	PE	1, 2, 3	a, b, d, f	3	0	0	3	40	60	100	22/2 3/ 25/2 7
19PMEPS303	Research Methodology and IPR	HS M C	1, 2, 4	a, b, d	3	0	0	2	40	60	100	28
19PMEPS311	Power System Steady State Analysis Lab	PC C			0	0	3	2	40	60	100	30
	Total				9	0	3	10	160	240	400	
			SE	MEST	'ER IV	7						
19PMEPS401 A/B/C	Power System Transients/ FACTS and Custom Power Devices/Industria 1 Load Modeling and Control	PC C	1, 2, 3	a, b, d, f	3	0	0	3	40	60	100	31/3 2/ 34

19PMEPS402 A/B/C/D/E/F	Business Analytics/ Industrial Safety/ Operations Research/ Cost Management of Engineering Projects/ Composite Materials/ Waste to Energy	OE	1, 2, 4	a, d, f, h	3	0	0	3	40	60	100	36/3 8/ 40/4 1/ 43/4 5
19PMEPS411 A/B	Power System Dynamics Lab/ Renewable Energy Lab	PC C			0	0	3	2	40	60	100	47
	Total				6	0	3	8	120	180	300	
			SEME	STER	-V		1					
19PMEPS511 A/B/C/D/E	Power System Protection Lab/Power Quality Lab/Artificial intelligence Lab/Power electronics applications to Power Systems Lab /Smart grids Lab	РСС			0	0	3	2	40	60	100	48/4 9
19PMEPS591	Project Phase I				0	0	9	6	40	60	100	
	Total				0	0	12	8	80	120	200	
SEMES					ER -V	I						
19PMEPS691	Phase-II Dissertation	PCC			0	0	18	12	120	180	300	
	Total				0	0	18	12	120	180	300	
	Program Total					0	36	56	720	1080	1800	

L: Lecture Hour	T: Tutorial Hour	(

CIA: Continuous Internal Assessment

**P:** Practical Hour

C:No. of Credits

**ESE**: End Semester Examinations

**PCC** – Programme Core Course **PE** - Program Elective

**OE** – Open Elective **HSMC**-Humanities, Social Science and Management Course

### **Program Outcomes:**

On successful completion of the programme,

- a. Graduates will be able to demonstrate the principles and practices of the electrical power industry regarding generation, transmission, distribution and electrical machines and their controls.
- b. Graduates will be able to apply their knowledge of electrical power principles, as well as mathematics and scientific principles, to new applications in electrical power.
- c. Graduates will be able to perform, analyze, and apply the results of experiments to electrical power application improvements.
- d. Graduates will be able to look at all options in design and development projects and creativity and choose the most appropriate option for the current project.
- e. Graduates will function effectively as a member of a project team.
- f. Graduates will be able to identify problems in electrical power systems, analyze the problems, and solve them using all of the required and available resources.
- g. Graduates will be able to effectively communicate technical project information in writing or in personal presentation and conversation.
- h. Graduates will be engaged in continuously learning the new practices, principles, and techniques of the electrical power industry.
- i. Graduates will work on application software packages for power system analysis and design.
- j. Graduates will develop indigenous software packages for power system planning and operational problems of utilities.

### **Program Sific Outcomes** (PSOs)

- k. Graduates will be able to demonstrate the principles and practices of the electrical power industry regarding generation, transmission, distribution and electrical machines and their controls.
- 1. Graduates will be able to apply their knowledge of electrical power principles, as well as mathematics and scientific principles, to new applications in electrical power.
- m. Graduates will be engaged in continuously learning the new practices, principles, and techniques of the electrical power industry.

#### Programme Educational Objectives (PEOs)

PEO 1: To prepare the students to have career in the electrical power Industry/research organization/teaching.

PEO 2: To provide good foundation in mathematics and computational technology to analyze and solve problems encountered in electrical power industry.

PEO 3: Pursue lifelong learning and continuous improvement of their knowledge in the electrical power industry.

PEO 4: To understand the national and global issues related to the electrical power industry and to be considerate of the impact of these issues on the environment and within different cultures.

PEO 5:Apply the highest professional and ethical standards to their activities in the electrical power industry.

PEO 6:To provide the students with knowledge to be involved with the technology advancements and future developments in power generation, control and management as well as with alternate and new energy resources.

Program					Progra	am Outc	ome			
Objective	a	b	С	d	e	f	g	h	i	j
PEO 1		V								
PEO 2		V								
PEO 3										
PEO 4										
PEO 5		V				$\checkmark$				$\checkmark$
PEO 6			$\checkmark$							
PEO 7			$\checkmark$	$\checkmark$		$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$



### **KARPAGAM ACADEMY OF HIGHER EDUCATION**

(Deemed to be University) (Established Under Section 3 of UGC Act 1956) Coimbatore – 641 021. INDIA FACULTY OF ENGINEERING

### DEPARTMENT OF CIVIL ENGINEERING

### M.E. WATER RESOURCES AND ENVIRONMENTAL ENGINEERING (PART TIME) Curriculum Structure (2019 BATCH ONWARDS)

### **PROGRAMME EDUCATIONAL COURSE OBJECTIVESSS (PEOs) :**

- I. To prepare students to excel in research and to succeed in Water resources and Environmental engineering profession through global, rigorous post graduate education
- II. To provide students with a solid foundation in mathematical, scientific and engineering fundamentals required to solve in Water resources and Environmental engineering problems
- III. To train students with good scientific and engineering knowledge so as to comprehend, analyze, design, and create novel products and solutions for the real life problems
- IV. To inculcate students in professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate in Water resources and Environmental engineering issues to broader social context.
- V. To provide student with an academic environment aware of excellence, leadership, written ethical codes and guidelines, and the life-long learning needed for a successful professional career

### **PROGRAMME OUTCOMES (POs):**

On successful completion of the programme,

- a. Graduates will demonstrate knowledge of mathematics, science and engineering.
- b. Graduates will demonstrate an ability to design a system, component or process as per needs and specifications.
- c. Graduates will demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks.

- d. Graduate will demonstrate skills to use modern engineering tools, software and equipment to analyze problems.
- e. Graduates will demonstrate knowledge of professional and ethical responsibilities.
- f. Graduate will be able to communicate effectively in both verbal and written form.
- g. Graduate will develop confidence for self education and ability for life-long learning.

### **PROGRAMME SPECIFIC OUTCOMES (PSOs):**

- h. Graduates will demonstrate an ability to identify, formulate and solve engineering problems.
- i. Graduate will demonstrate an ability to design and conduct experiments, analyze and interpret data.
- j. Graduate will show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues.

PEOs	а	b	с	d	e	f	g	h	i	j
Ι	$\checkmark$			$\checkmark$			$\checkmark$	$\checkmark$	$\checkmark$	
II		$\checkmark$			$\checkmark$				$\checkmark$	$\checkmark$
III			$\checkmark$		$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	
IV	$\checkmark$			$\checkmark$			$\checkmark$			$\checkmark$
V		$\checkmark$	$\checkmark$			$\checkmark$				

### **MAPPING:**



### KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University Established Under Section 3 of UGC Act 1956) Coimbatore – 641 021. INDIA

### DEPARTMENT OF CIVIL ENGINEERING

M.E. WATER RESOURCES AND ENVIRONMENTAL ENGINEERING (PART

TIME)

# COURSE OF STUDY AND SCHEME OF EXAMINATIONS (2019 BATCH ONWARDS)

		COU OBJEC	RSE TIVES	INS	TRU	CTI	ST	MAXIMUM MARKS		
COURSE CODE	NAME OF THE COURSE	S AND CON	OUT AES	ON /\	HOU WEE	JRS K	REDI	CIA	ESE	TOTAL
		PEO's	PO's	L	Т	Р	C	40	60	100
	S	EMESTI	E <b>R – I</b>	-		-	-			
19PMEWE101	Surface Water Hydrology	I,II	a,b,h	3	0	0	3	40	60	100
19PMEWE102	Probability and statistical methods	I,II	a,b,c, i	3	0	0	3	40	60	100
	1. Industrial Wastewater Pollution – Prevention And Control	I,III	a,b,d, j							
19PMEWE1E0	<ol> <li>Soil Pollution Engineering</li> <li>During Of Biological</li> </ol>	I,III	c,d,f, i	3	0	0	3	40	60	100
	3. Design Of Biological Treatment Systems	I,IV	e,f,g, i							
	4. Climate change and Adaptation	I,II,V	a,b,g							
19PMEWE111	Environmental Engineering lab	III	c,d,i	0	0	2	2	40	60	100
	Total			9	0	2	11	160	240	400
	SI	EMESTE	CR – II							
19PMEWE201	Design of Hydraulic and Environmental Engineering Structures	I,II	a,b,i	3	0	0	3	40	60	100
19PMEWE202	Air pollution and control	I,II	a,b,c	3	0	0	3	40	60	100
19PMEWE2E0	<ol> <li>Water Supply Distribution And Buried Pipelines</li> <li>Ground Water and Drainage Engineering</li> <li>Rural Water</li> </ol>	I,III I,III I,IV	a,b,d, i c,d,f, j e,f,g, i	3	0	0	3	40	60	100
	Supply And On Site Sanitation 4. Remote Sensing	I,II,V III,V	a,ð,g, h a,d,f							

	and GIS									
	Applications in									
	Environmental									
	Management									
	5 River Engineering									
	Geotechnical engineering					-		10		100
19PMEWE211	lab	111	c,d,1	0	0	2	2	40	60	100
	Total			9	0	2	11	160	240	400
	SE	MESTE	R – III							
10DMEWE301	Environmental Geo-	тп	o h i	3	0	0	3	40	60	100
	technology	1,11	a,0,1	5	0	0	5	40	00	100
19PMEWE302	Research Methodology and IPR	I,II	a,b,c, h	2	0	0	2	40	60	100
	1. Environmental Impact									
	Assessment of Water		a.b.d.							
	Resources	1,111	h,i							
	Development									
10DMEWE2E0	2. Environmental Quality	T 111		2	0	0	2	40	60	100
19PME WESEU	Monitoring	1,111	c,d,f,	3	0	0	5	40	00	100
	3. Environment, Health	I IV	i							
	and Safety in Industries	1,1 V	e,f,g,							
	4. Environmental	тпу	I,h							
	Hydraulics	1,11, V	a,b,g							
100 100 11	Geographical Information	TTT	. 1 .	0	0	2	2	40	(0)	100
19PMEWE311	system lab	111	C,d,1	0	0	2	2	40	60	100
	Total			8	0	2	10	160	240	400
	SE	CMESTE	R – IV							
	1. Solid and Hazardous	I,III	a,b,d							
	waste management									
	2. Groundwater Modeling		c,d,f,							
	and Management	I,III	i							
19PMEWE4E0	3. Landfill Engineering And			3	0	0	3	40	60	100
	Remediation Technology	I,IV	e,f,g	5	Ŭ	Ŭ	5	10	00	100
	4. Air and Water Quality									
	Modeling	I,II,V	a,b,h							
	5. Flood and Drought									
	Management	III,V	a,d,i							
	6. Rehabilitation And									
	Modernisation of	I,III	a,b,j							
19PMEWE4E0	Irrigation Systems			3	0	0	3	40	60	100
	7. Watershed									
	Conservation And	I,III	c,d,h							

			r							
	Management 8. Urban Water Resources	I,IV	e,f,i							
	Management 9. Water Power and Dam	I,II,V	a,b,i							
	Engineering 10. Coastal Engineering	III,V	a,d,j							
19PMEWE411	Numerical Analysis Lab	III	c,d,i	0	0	2	2	40	60	100
19PMEWE412	Mini Project	III	c,d,i	0	0	4	2	40	60	100*
	Total	ı		6	0	6	10	160	240	400
	SI	EMESTE	$\mathbf{E}\mathbf{R} - \mathbf{V}$							
19PMEWEOE0	<ol> <li>Business Analytics</li> <li>Industrial Safety</li> <li>Operations Research</li> <li>Cost Management of Engineering Projects</li> <li>Composite Materials</li> <li>Waste to Energy</li> <li>Advanced Ground Water Hydrology</li> <li>Resource And Energy Recovery</li> </ol>	I,III I,III I,IV I,II,V II,V III,V III,IV	a,b,d c,d,,h e,f,g a,b,g a,d,f a,f,i b,e,g, h,g c,e,g, i	3	0	0	3	40	60	100
19PMEWE591	Project Work – Phase I	III	c,d	0	0	20	10	40	60	100
	Total			3	0	20	13	80	120	200
	SE	MESTE	$\mathbf{R} - \mathbf{VI}$							
19PMEWE691	III	c,d,i	0	0	32	16	120	180	300	
			0	0	32	16	120	180	300	

L-Lecture T-Tutorial P-Practical C-Credit

CIA – Continuous Internal Assessment

**ESE – End semester Examination** 

Total credits = 71 Total Marks = 2100

\* To be evaluated internally by a committee of members Review 1& 2

– 60 marks

Final presentation and viva voce – 40 marks

# KARPAGAM ACADEMY OF HIGHER EDUCATION

Deemed to be University (Established Under Section 3 of UGC Act 1956) EachanariPost,Pollachi Main Road,Coimbatore -641021



### COURSE OF STUDY AND SCHEME OF EXAMINATION M.Phil. & Ph.D. COURSE IN ASTROLOGY 2019-2020

### PART-I COURSE WORK SYLLABUS FOR M.Phil. & Ph.D COURSE IN ASTROLOGY - (2019-2020)

SI.NO	TITLE OF THE COURSE	NO.OF THE SUBJECT	CREDIT	EXAM HOURS	MARKS
1.	PAPER I	01	4	3	100
2	PAPER II	01	4	3	100
3	PAPER III	01	4	3	100
	TOTAL	03	12	9	300

### PART-I COURSE WORK SYLLABUS FOR M.Phil. and Ph.D COURSE IN ASTROLOGY (2019-2020)

SUB.CODE	TITLE OF THE COURSE	NO.OF THE SUBJECT	CREDIT	EXAM HOURS	MARKS
PAPER-I (C	COMPULSORY)				
19RAS101	RESEARCH METHODOLOGY	01	4	3	100
PAPER –II	(COMPULSORY)				
19RAS201	PREDICTION ASTROLOGY	01	4	3	100
PAPER-III	(ANY ONE)				
19RAS301	HISTORY OF ASTROLOGY	01	4	3	100
19RAS302	ASTROLOGY PREDICTIONS IN K.P METHOD	01	4	3	100
19RAS303	WESTERN ASTROLOGY	01	4	3	100
19RAS304	MARRIAGE MATCHING	01	4	3	100
19RAS305	CASE STUDIES IN HOROSCOPE	01	4	3	100

-2-



### DEPARTMENT OF BIOCHEMISTRY FACULTY OF ARTS, SCIENCE AND HUMANITIES KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University, Established Under Section 3 of UGC Act 1956) Eachanari PO, Coimbatore – 641 021, India.

### M.Phil / Ph.D– BIOCHEMISTRY (Effective from the academic year 2019 - 2020 and onwards)

### PREAMBLE

- The degree of Master of Philosophy [M.Phil] /Doctor of Philosophy (Ph.D) is awarded to a candidate who has submitted a thesis on the basis of original and independent research in any biochemistry field of research.
- This makes a contribution to the advancement of knowledge, which can be useful to the society.

1



### **DEPARTMENT OF BIOCHEMISTRY** FACULTY OF ARTS, SCIENCE AND HUMANITIES **RESEARCH PROGRAM – M.Phil / PhD in Biochemistry** (2019-2020 and onwards)

### Curriculum

Course code	Name of the course	Instruction hours / week	credits	Maximum Marks (100)
19RBC101	Research Methodology and Pedagogy	4	4	100
19RBC201	Advanced paper in Biochemistry	4	4	100
19RBC301A	Enzyme and Enzyme technology			
19RBC301B	Cancer Biology and immunology			
19RBC301C	Medicinal Plants and Plant therapeutics			
19RBC301D	Clinical Biochemistry and Toxicology	4	4	100
19RBC301E	Plant Molecular Biotechnology			
19RBC301F	Animal Tissue Culture			
19RBC301G	Fish nutrition and tissue culture	1		
Program Tot	tal	12	12	300



#### DEPARTMENT OF BIOTECHNOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES RESEARCH PROGRAM – M. Phil / PhD in Biotechnology (2019–2020 Batch and onwards) Curriculum

		Object	ives and	lns*	Marks		
Code	Course	Outo	comes	115	marito	Exam	Credit
0000	oouroo	ΡΕΟ΄	PO's &	hours / week	Total	Hrs	orean
		S	PSO's		Total		
	Paper – I: Research	I, II,	a, c, e				
19RBT101	Methodology and	III		4	100	3	4
	Pedagogy						
19RBT201	Paper – II: Recent	I,II	b, d				
	Trends in			4	100	3	4
	Biotechnology						
	Paper – III *						
19RBT301	Paper – III: Animal	II, III	d, f, g				
1000000	Biotechnology						
19RB1302	Paper – III:	11, 111	d, f, g				
	Biotechnology for crop						
	improvement						
19RBT303	Paper – III:	II, III	d, f, g				
	Environmental						
	Biotechnology						
19RBT304	Paper – III:	11, 111	a, f, g	4	100	3	4
100000005	Paper – III: Medicinal		dfa				
19RB1305	Plant Biotechnology	,	-, -, -, -, -, -, -, -, -, -, -, -, -, -				
19RBT306	Paper – III: Plant Tissue	III, IV	f, g, h, i				
	Culture						
19RBT307	Paper – III: Food	III, IV	f, g, h, i				
	Technology						
10RBT308	Paper – III: Structural	III, IV	f, g, h,				
17101500	Biology		i				
	G. total			12	300	9	12

### **KARPAGAM ACADEMY OF HIGHER EDUCATION**

Deemed to be University

(Established Under Section 3 of UGC Act 1956)

EachanariPost,Pollachi Main Road,

Coimbatore -641021



### **COURSE OF STUDY & SCHEME OF EXAMINATION**

### M.Phil. & Ph.D. COURSE IN CHEMISTRY

2019-2020

### Part-I Course Work Syllabus for M.Phil and Ph.D Chemistry

Subject Code	Title of the Course	Credit	Exam Hours	Marks					
Paper-1(Compulsory)									
19RCH101	Research Methodology and	4	3	100					
	Pedogogy								
	Paper-II(Compulsory)								
19RCH201	Physical Methods in Chemistry	4	3	100					
Paper-III(Any One)									
19RCH301 A	Organic Chemistry	4	3	100					
19RCH301B	Physical Organic chemistry	4	3	100					
19RCH301C	Electro Chemistry	4	3	100					
19RCH301D	Environmental Chemistry	4	3	100					
19RCH301E	Chemistry of Crystalline solids	4	3	100					
19RCH301F	Organometallic Chemistry of	4	3	100					
	Transition metals								
19RCH301G	Chemistry of Biomolecules	4	3	100					
19RCH301H	Polymer Chemistry	4	3	100					



### DEPAERTMENT OF COMMERCE

### FACULTY OF ARTS SCIENCE AND HUMANITIES M.Phil. / Ph.D in Commerce (2019-2020 batch and onwards)

Course code	Name of the course		Instruction hours / week			Exam Duration	Maximum Marks	Page No.
		L	Т	Р	C			
19RCOM101	<b>Paper I</b> – Research Methodology and Pedagogy	4	-	-	4	3 hrs	100	1
19RCOM 201	<b>Paper – II</b> – Statistical Analysis for Business Research	4	-	-	4	3 hrs	3 hrs 100	
19RCOM301	<b>Paper III</b> – <b>Special Paper I</b> – Financial Management							4
19RCOM302	Paper III- Special Paper II – Marketing Management	4	-	-	4	3 hrs	100	5
19RCOM303	<b>Paper III – Special Paper III –</b> Human Resource Management							6

### KARPAGAM ACADEMY OF HIGHER EDUCATION

#### (Deemed to beUniversity) (Established Under Section 3 of UGC Act, 1956) FACULTY OF ARTS, SCIENCE AND HUMANITIES DEPARTMENT OF COMPUTER SCIENCE M. Phil./ Ph.D., (Scheme of Examination for 2019 – 2020 onwards)

Code	Course(s)	ESE(Marks)	Exam Hrs
19RCS101	Research Methodology and Pedagogy	100	3
19RCS201	Advanced Trends in Computer Science	100	3
19RCS301	Cryptography and Network Security	100	3
19RCS302	AdvancedNetworking	100	3
19RCS303	Data Mining and Warehousing	100	3
19RCS304	Digital Image Processing	100	3
19RCS305	Soft Computing	100	3
19RCS306	Web Technology	100	3
19RCS307	Software Engineering	100	3
19RCS308	Cyber Security	100	3
19RCS309	Mobile Computing	100	3
19RCS310	Cloud Computing	100	3

### FACULTY OF ARTS, SCIENCE & HUMANITIES RESEARCH PROGRAM – M.Phil / PhD in English (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours / week	credits	Maximum Marks (100)
19RENG101	Research Methodology and Pedagogy	4	4	100
19RENG 201	Modern Literary Theory and Criticism	4	4	100
19RENG 301	English Language Teaching			
19RENG 302	Drama			
19RENG 303	Fiction	4	4	100
19RENG 304	Poetry			
19RENG 305	Linguistics			
	Program Total	12	12	300

## **RESEARCH PROGRAM M.Phil./Ph.D. in Management** (2019-2020 Batch and onwards)



### DEPARTMENT OF MANAGEMENT

### FACULTY OF ARTS, SCIENCE AND HUMANITIES

### KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore – 641 021, Tamil Nadu, India Phone: 0422- 2980011-2980015, Fax No: 0422 – 2980022 - 23 Email: info@karpagam.com, Web: www.kahedu.edu.in

DEPARTMENT OF MANAGEMENT FACULTY OF ARTS, SCIENCE AND HUMANITIES M.Phil./Ph.D. in Management (2019-2020 Batch and onwards)

Course code	Name of the course	Instru ction hours/ week	Credit(s)	Maximum Marks (100)
19RMGT101	Paper-I:Research Methodology And Pedagogy	4	4	100
19RMGT201	Paper-II:General Management	4	4	100
19RMGT301	Paper III: Special Paper I - Advanced Entrepreneurship	4	4	100
19RMGT302	Paper-III:SpecialPaperII-AdvancedFinancialManagement	4	4	100
19RMGT303	Paper-III: Special Paper III -Advanced Marketing Management	4	4	100
19RMGT304	Paper-III: Special Paper IV -Advanced Operations Management	4	4	100
19RMGT305	Paper-III: Special Paper V -Corporate Human Resource Management	4	4	100
19RMGT306	<b>Paper-III: Special Paper VI</b> –Corporate Social Responsibility, Business Ethics and Corporate Governance	4	4	100
19RMGT307	Paper-III: Special Paper VII – Project Management	4	4	100
19RMGT308	Paper-III: Special Paper VIII –System Management	4	4	100
19RMGT309	Paper-III: Special Paper IX -Advertising and Salesmanship	4	4	100
19RMGT310	Paper-III: Special Paper X -Service Marketing	4	4	100
	PROGRAM TOTAL	12	12	300

#### DEPARTMENT OF MICROBIOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES RESEARCH PROGRAM – M.Phil / PhD in Microbiology (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours/ week	Credits	Maximum Marks (100)
19RMB101	Research Methodology and Pedagogy	4	4	100
19RMB201	Recent Trends in Microbiology	4	4	100
19RMB301	Industrial and Pharmaceutical Microbiology			
19RMB302	Immunotechnology and Biotechnology			
19RMB303	Virology	4	4	100
19RMB304	Medical Microbiology			
	Program Total	12	12	300

### DEPARTMENT OF PHYSICS FACULTY OF ARTS, SCIENCE & HUMANITIES RESEARCH PROGRAM – M.Phil / PhD in PHYSICS (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours / week	credits	Maximum Marks (100)
19RPHY101	Research Methodology and Pedagogy	4	4	100
19RPHY201	Advanced Physics	4	4	100
19RPHY301	Solar Energy and Utilization			
19RPHY302	Molecular Spectroscopy			
19RPHY303	Thin Film Physics			
19RPHY304	Crystal Growth			
19RPHY305	Solid state Ionics	4	4	100
19RPHY306	Concepts of Nanophysics and Nanotechnology			
19RPHY307	Laser Physics			
19RPHY308	Fluorescence Spectroscopy			
19RPHY309	Experimental Techniques In Materials Science			
	Program Total	12	12	300



### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Coimbatore – 641 021. (Deemed to be University Established Under Section 3 of UGC Act 1956)

### **DEPARTMENT OF TAMIL**

#### M.Phil & Ph.D CURRICULUM (2019-2020)

S.No	Subject Code	Name of the Course	Credits	Exam duration (Hrs)	Max Marks
1	19RTAM101	Paper-I: Research Methodology and Pedagogy	4	3	100
2	19RTAM201	Paper-II: History of Tamil Literature	4	3	100
		Paper III: Special Paper			
3	19RTAM301	Sanga Ilakkiyam			
4	19RTAM302	Ara Ilakkiyam			
5	19RTAM303	Bhakthi Ilakkiyam	4	3	100
6	19RTAM304	Ikkaala Ilakkiyam		5	100
7	19RTAM305	Naattuppuraviyal			
		Total	12		300



### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Coimbatore – 641 021. (Deemed to be University Established Under Section 3 of UGC Act 1956)

### **DEPARTMENT OF HINDI**

#### M.Phil & Ph.D CURRICULUM (2019-2020)

S.No	Subject Code	Name of the Course	Credits	Exam duration (Hrs)	Max Marks
1	19RHIN101	Paper-I: Research Methodology and Pedagogy	4	3	100
2	19RHIN201	<b>Paper-II:</b> Modern trends in Hindi Literature	4	3	100
		Paper III: Special Paper			
3	19RHIN301	Translation studies			
4	19RHIN302	Comparative Indian Literature	-		
5	19RHIN303	Hindi Bhakthi Kavya		3	100
6	19RHIN304	Modern poetry	•	5	100
7	19RHIN305	Modern Hindi Drama			
8	19RHIN306	Modern Novel			
		Total	12		300

# Ph.D CIVIL ENGINEERING CURRICULUM 2019 -2020

# Department of Civil Engineering Faculty of Engineering



### KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University Established Under Section 3 of UGC Act 1956)

COIMBATORE 641 021. INDIA.

### DEPARTMENT OF CIVIL ENGINEERING FACULTY OF ENGINEERING RESEARCH PROGRAM – M.Phil / Ph.D in Civil Engineering 2019-2020 Batch and onwards

Subject Code	Paper I	Instruction Hours / week	Credits	Maximum Marks (100)
19RCE101	Paper- I: Research Methodology and Pedagogy	4	4	100
19RCE201	Paper- II: Advance Structural Engineering	4	4	100
19RCE202	Paper- II: Advanced Environmental Engineering			
19RCE203	Paper- II: Slope Stability And Land Slides			
19RCE204	Paper- II: Structural Dynamics and Earthquake Engineering			
19RCE205	Paper- II: Theoretical Soil Mechanics			
19RCE206	Paper- II: Soil Dynamics And Machine Foundations			
19RCE207	Paper- II: Soil Structure Interaction			
19RCE208	Paper- II: Rock Mechanics In Engineering Practice			
19RCE209	Paper- II: Reinforced Soil Structures			
19RCE210	Paper- II: Earthquake Analysis And Design of Structures			
19RCE211	Paper- II: Experimental Stress Analysis			
19RCE212	Paper- II: Rehabilitation & Modernization of Irrigation Structures			
19RCE301	Paper- III: Advanced Concrete Technology	4	4	100
19RCE302	Paper- III: Prefabricated Structures			
19RCE303	Paper- III: High Performance Concrete			
19RCE304	Paper- III: Ground Improvement Techniques			
19RCE305	Paper- III: Geopolymer Cement and Concrete			
19RCE306	Paper- III: Pavement Engineering			
19RCE307	Paper- III: Solid and Hazardous Waste Management			
19RCE308	Paper- III: Remote Sensing and GIS applications in Environmental Engineering			
19RCE309	Paper- III: Groundwater modeling and Management			
19RCE310	Paper- III: Industrial Waste water pollution – Prevention and Control			
19RCE311	Paper- III: Environmental Policies and Legislations			
Program Total		12	12	300

## Ph.D. COMPUTER SCIENCE AND ENGINEERING

## **CURRICULUM AND SYLLABI 2019**

## **Department of Computer Science and Engineering**

## **FACULTY OF ENGINEERING**



KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 Of UGC Act 1956) Pollachi Main Road, Eachanari Post, Coimbatore – 641 021. INDIA Phone No: 0422-6471113-4, 6453777 Fax No: 0422 – 2980022-23 Email ID: info@karpagam.com Web: www.kahedu.edu.in
#### DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING FACULTY OF ENGINEERING RESEARCH PROGRAM – PhD in Computer Science and Engineering (2019–2020 Batch and onwards)

Course code	Name of the course	Instruction hours / week	credits	Maximum Marks (100)
1000000101				
19RCSE101	Research Methodology and pedagogy	4	4	100
19RCSE201	Soft Computing			
19RCSE202	Digital Image Processing			
19RCSE203	Cryptography and Network Security			
19RCSE204	Data Warehousing and Data Mining			
19RCSE205	Agent Based Intelligent Systems			100
19RCSE206	Network Routing Algorithms		4	100
19RCSE207	Internet of Things			
19RCSE208	Natural Language Processing			
19RCSE209	Machine Learning			
19RCSE210	Virtual Reality			
19RCSE301	Ad hoc Networks			
19RCSE302	Big Data			
19RCSE303	Performance Evaluation of Computer			
	Systems and Networks			
19RCSE304	Distributed Computing			
19RCSE305	Component Based Technology			
19RCSE306	XML and Web Services			
19RCSE307	Fuzzy Logic, Neural Networks And			
	Applications	4	4	100
19RCSE308	Ontology and Semantic Networks			
19RCSE309	Visualization Techniques			
19RCSE310	Virtualization Techniques			
19RCSE311	Grid Computing			
19RCSE312	Advanced Database			
19RCSE313	Embedded Systems			
19RCSE314	Cloud Computing			
19RCSE315	Bio Informatics			
	Program Total	12	12	300

# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

# **DOCTORATE IN PHILOSOPHY (Ph.D.)**

# (REGULAR PROGRAMME)

CURRICULUM (2019 -2020)



# KARPAGAM ACADEMY OF HIGHER EDUCATION (Established Under Section 3 of UGC Act 1956) COIMBATORE 641 021 INDIA

### <u>PART – I COURSE WORK SYLLABUS FOR Ph.D COURSE IN ELECTRONICS</u> <u>AND COMMUNICATION ENGINEERING</u>

SL.N O	Course code	TITLE OF THE COURSE	С	EXA M. HRS	MAR KS
1	19RECE101	PAPER I-Research Methodology and Pedagogy	4	3	100
2	19RECE201	PAPER II Trends in Electronics	4	3	100
3	19RECE202	PAPER II Mobile communication	4	3	100
4	19RECE203	PAPER II Microcontroller System Design and Applications	4	3	100
5	19RECE204	PAPER II Soft Computing	4	3	100
6	19RECE205	PAPER II Basics of Nanotechnology	4	3	100
7	19RECE206	PAPER II Wireless Sensor Networks	4	3	100
8	19RECE207	PAPER II VLSI signal processing	4	3	100
9	19RECE208	PAPER II Wavelets and multi-resolution processing	4	3	100
10	19RECE209	PAPER II Computer Vision and Image processing	4	3	100
11	19RECE301	Paper III-Special Paper I: Solid State Device Modeling and Simulation	4	3	100
12	19RECE302	Paper III-Special Paper II: Low Power VLSI Design	4	3	100
13	19RECE303	Paper III-Special Paper III: Testing of VLSI Circuits	4	3	100

23	19RECE313	Paper III-Special Paper XII : Digital System Design Using Verilog	4	3	100
22	19RECE312	Paper III-Special Paper XII: Pattern Recognition	4	3	100
21	19RECE311	Paper III-Special Paper XI: VLSI design methodologies and programming in HDL	4	3	100
20	19RECE310	Paper III-Special Paper X: Embedded Networking	4	3	100
19	19RECE309	Paper III-Special Paper IX: Bio- Medical Signal Processing	4	3	100
18	19RECE308	Paper III-Special PaperVIII: : Cryptography and Network Security	4	3	100
17	19RECE307	Paper III-Special Paper VII: Network Routing Algorithms	4	3	100
16	19RECE306	Paper III-Special Paper VI: Advanced Digital Image Processing	4	3	100
15	19RECE305	Paper III-Special Paper V: Mobile Ad- Hoc Networks	4	3	100
14	19RECE304	Paper III-Special Paper IV: Optical Fiber Communication	4	3	100



(Established Under Section 3 of UGC Act 1956) Eachanari Post, Pollachi Main Road, Coimbatore - 641021,India

#### FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### **PhD Course Work Subjects**

### (Effective from the academic year 2019-2020 onwards)

Paper No.		Subject Code	Subject	Credit	ESE	total
Paper 1		19REEE101	Research Methodology and Pedagogy	3	100	100
		19REEE201	Renewable Energy Sources	3	100	100
		19REEE202	Advances in Power Electronics	3	100	100
Pap	er II	19REEE203	Advances in Power Systems	3	100	100
-		19REEE204	Distributed Generation	3	100	100
		19REEE205	Smart Grids	3	100	100
		19REEE206	Advanced Control Systems	3	100	100
	Special Paper I	19REEE301	Analysis of Inverter Circuits	3	100	100
	Special Paper II	19REEE302	Analysis of Converter Circuits	3	100	100
	Special Paper III	19REEE303	Power Quality Assessment and Mitigation	3	100	100
	Special Paper IV	19REEE304	Computer Aided Design of Electrical Apparatus	3	100	100
	Special Paper V	19REEE305	Energy Auditing, Energy Efficiency and Energy Conversion	3	100	100
	Special Paper VI	19REEE306	Power Electronics Applications to Power Systems	3	100	100
Paper III	Special Paper VII	19REEE307	Special Electrical Machines	3	100	100
	Special Paper VIII	19REEE308	Advanced Bio-Medical Digital Signal Processing	3	100	100
	Special Paper IX	19REEE309	Power Sector Economics, Management and Restructuring	3	100	100
	Special Paper X	19REEE310	Wind Energy Conversion Systems	3	100	100
	Special Paper XI	19REEE311	Theory and Design of Neuro-Fuzzy Controllers	3	100	100
	Special Paper XII	19REEE312	Soft Computing Techniques	3	100	100
	Special Paper XIII	19REEE313	Flexible AC Transmission Systems	3	100	100



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#### FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Special Paper XIV	19REEE314	HVDC Systems	3	100	100
Special Paper XV	19REEE315	Digital Power System Protection	3	100	100
Special Paper XVI	19REEE316	Optimization Techniques	3	100	100
Special Paper XVII	19REEE317	Embedded Systems	3	100	100
PaperXVIII	19REEE318	Artificial Intelligence Applications to Power Systems	3	100	100

# Ph.D MECHANICAL ENGINEERING CURRICULUM 2019 - 2020

# Department of Mechanical Engineering Faculty of Engineering



# KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University Established Under Section 3 of UGC Act 1956)

COIMBATORE 641 021. INDIA.

### DEPARTMENT OF Mechanical ENGINEERING FACULTY OF ENGINEERING RESEARCH PROGRAM – Ph.D in Mechanical Engineering 2019-2020 Batch and onwards

		Instruction		Maximum Marka
Subject Code	Paper I	week	Credits	(100)
19RME101	Paper- I: RESEARCH METHODOLOGY	4	4	100
19RME201	Paper- II: OPTIMIZATION TECHNIQUES			
19RME202	Paper- II: COMPUTATIONAL METHODS			
19RME203	Paper- II: MODELING SIMULATION AND ANALYSIS	4	4	100
19RME204	Paper- II: QUALITY CONCEPTS IN DESIGN			
19RME205	Paper- II: FINITE ELEMENT ANALYSIS			
19RME206	Paper- II: COMPUTATIONAL FLUID DYNAMICS			
19RME301	Paper- III: TRIBOLOGY IN DESIGN			
19RME302	Paper- III: ADVANCED MANUFACTURING PROCESSES			
19RME303	Paper- III: PHYSICS OF SOLAR ENGINEERING			
19RME304	Paper- III WIND ENERGY TECHNOLOGIES			
19RME305	Paper- III: ADVANCED HEAT AND MASS TRANSFER	4	4	100
19RME306	Paper- III: ADDITIVE MANUFACTURING			
19RME307	Paper- III AUTOMOBILE SYSTEMS			
19RME308	Paper- III: LEAN MANUFACTURING			
19RME309	Paper- III: SURFACE ENGINEERING			

	Paper- III: INDUSTRIAL
19RME310	ROBOTICS & EXPERT SYSTEMS
19RME311	Paper- III: ADVANCED THERMODYNAMICS
	Paper- III: ADVANCED
	INTERNAL COMBUSTION
19RME312	
	Paper- III: REFRIGERATION SYSTEMS DESIGN
19RME313	
1710112313	Paper- III: COMPOSITE AND
	POLYMER MATERIALS
19RME314	
	Paper- III: ADVANCES IN
	PROCESSES
19RME315	Paper- III: MANUEACTURING
	SYSTEMS ENGINEERING
19RME316	
	Paper- III: SUPPLY CHAIN
19RME317	MANAGEMENT
	Paper- III: ENGINEERING
19RME318	METALLURGY
	Paper- III: INDUSTRIAL SAFETY
19RME319	Demort III: DDODUCT DESIGN
10DME220	AND TOOLING
19RME520	Paper- III: POWDER
19RME321	METALLURGY
1)10/12/21	Paper- III: SMART
19RME322	MANUFACTURING
	Paper- III: CRYOGENIC
19RME323	ENGINEERING
	Paper- III: APPLIED ELASTICITY
100140224	
19KME324	Paper- III: NON-TRADITIONAL
	PARAMETER IN DESIGN
19RME325	
	Paper- III: VACUUM
19RME326	TECHNOLOGY
	Paper- III: VIBRATION
	ANALYSIS & DIAGNOSTICS
19RME327	

	Paper- III: DESIGN OF MATERIAL HANDLING			
19RME328	EQUIPMENT			
	Paper- III: INTELLIGENT			
	AND ITS APPLICATION			
19RME329				
	Paper- III: SOFT COMPUTING			
	MANUFACTURING			
19RME330				
19RME331	Paper- III: GAS TURBINES AND JET PROPULSION			
	Paper- III: ALTERNATIVE FUELS			
19RME332	FOR IC ENGINES			
19RME333	Paper- III: AIRCRAFT AND ROCKET PROPULSION			
	Paper- III: ENERGY			
19RME334	MANAGEMENT			
	Paper- III: SUPERCONDUCTING			
	DEVICES			
19RME335				
	Paper- III: AIR SEPARATION			
100000000	AND INDUSTRIAL GASES			
19KME336	Paper- III: FUEL CELL			
19RME337	TECHNOLOGY			
	Paper- III: MICRO-MACHINING			
	AND PRECISION ENGINEERING			
19RME338				
1/10/10/00	Program Total	12	12	300

# FACULTY OF PHARMACY KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University Under Section 3 of UGC Act 1956)

Coimbatore – 641021.

**Ph.D in Pharmacy** 

# **Curriculum 2019-2020**



(Established Under Section 3 of UGC Act, 1956)

# FACULTY OF PHARMACY

# RESEARCH PROGRAM – PhD in Pharmacy (2019–2020 Batch and onwards)

SUB.CODE	TITLE OF THE COURSE	CREDITS	EXAM HRS	MARKS
PAPER - I (	COMPULSORY)			
19PYR101	Research Methodology and Pedagogy	4	3	100
PAPER - II	(COMPULSORY)			
19PYR 201	Analytical and Biological screening	4	3	100
	methods in Pharmaceutical Research			
PAPER - III	(ANY ONE)			
19PYR 301	Pharmaceutics	4	3	100
19PYR 302	Pharmaceutical Chemistry	4	3	100
19PYR 303	Pharmacology	4	3	100
19PYR 304	Pharmacognosy	4	3	100
19PYR 305	Pharmaceutical Analysis	4	3	100

# FACULTY OF ENGINEERING DEGREE OF DOCTOR OF PHILOSOPHY IN BIOTECHNOLOGY

# **DEPARTMENT OF BIOTECHNOLOGY**

# (REGULAR PROGRAMME)

CURRICULUM (2019 -2020)



(Deemed to be University) (Established Under Section 3 of UGC Act, 1956)

KARPAGAM ACADEMY OF HIGHER EDUCATION Deemed to be University (Established Under Section 3 of UGC Act 1956) COIMBATORE 641 021 INDIA



Deemed to be University (Established Under Section 3 of UGC Act 1956) Eachanari Post Coimbatore -641021, INDIA

# PART – I COURSE WORK SYLLABUS FOR Ph.D COURSE IN BIOTECHNOLOGY (2019-2020)

SL.NO	TITLE OF THE COURSE	NO. OF SUBJECT	С	EXAM. HRS	MARKS
1	PAPER I	01	4	3	100
2	PAPER II	01	4	3	100
3	PAPER III	01	4	3	100
	TOTAL	03	12	9	300

## PART – I COURSE WORK SYLLABUS FOR Ph.D COURSE IN BIOTECHNOLOGY

SUB.CODE	TITLE OF THE COURSE	CREDITS	EXAM HRS	MARKS			
PAPER - I (C	PAPER - I (COMPULSORY)						
19RBTE101	Research Methodology and Pedagogy	4	3	100			
PAPER - II (	ANY ONE)						
19RBTE201	Advances in Biotechnology	4	3	100			
19RBTE202	Clinical Biochemistry	4	3	100			
19RBTE203	Instrumental methods of Analysis in	4	3	100			
	Bio-technology						
19RBTE204	Biophysics and Structural Biology	4	3	100			
19RBTE205	Advances in Plant Genetic Engineering	4	3	100			
PAPER - III	PAPER - III (ANY ONE)						
19RBTE301	Advances in Microbial Technology	4	3	100			
19RBTE302	Bioprocess Modelling and Simulation	4	3	100			
19RBTE303	Molecular Modeling and Drug	4	3	100			
	Designing						
19RBTE304	Nanobiotechnology	4	3	100			
19RBTE305	Environmental Biotechnology	4	3	100			
19RBTE306	Pharmaceutical Biotechnology	4	3	100			
19RBTE307	Advanced Systems Biology	4	3	100			
19RBTE308	Advances in Cancer Biology	4	3	100			
19RBTE309	Advanced Drug Delivery Systems	4	3	100			
19RBTE310	Cell Culture Techniques	4	3	100			

## <u>(2019-2020)</u>

Deemed to be University (Established Under Section 3 of UGC Act 1956) EachanariPost,Pollachi Main Road,Coimbatore -641021



# COURSE OF STUDY AND SCHEME OF EXAMINATION M.Phil. & Ph.D. COURSE IN ASTROLOGY 2019-2020

# PART-I COURSE WORK SYLLABUS FOR M.Phil. & Ph.D COURSE IN ASTROLOGY - (2019-2020)

SI.NO	TITLE OF THE COURSE	NO.OF THE SUBJECT	CREDIT	EXAM HOURS	MARKS
1.	PAPER I	01	4	3	100
2	PAPER II	01	4	3	100
3	PAPER III	01	4	3	100
	TOTAL	03	12	9	300

## PART-I COURSE WORK SYLLABUS FOR M.Phil. and Ph.D COURSE IN ASTROLOGY (2019-2020)

SUB.CODE	TITLE OF THE COURSE	NO.OF THE SUBJECT	CREDIT	EXAM HOURS	MARKS
PAPER-I (C	COMPULSORY)				
19RAS101	RESEARCH METHODOLOGY	01	4	3	100
PAPER –II	(COMPULSORY)				
19RAS201	PREDICTION ASTROLOGY	01	4	3	100
PAPER-III	(ANY ONE)				
19RAS301	HISTORY OF ASTROLOGY	01	4	3	100
19RAS302	ASTROLOGY PREDICTIONS IN K.P METHOD	01	4	3	100
19RAS303	WESTERN ASTROLOGY	01	4	3	100
19RAS304	MARRIAGE MATCHING	01	4	3	100
19RAS305	CASE STUDIES IN HOROSCOPE	01	4	3	100

-2-



## DEPARTMENT OF BIOCHEMISTRY FACULTY OF ARTS, SCIENCE AND HUMANITIES KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University, Established Under Section 3 of UGC Act 1956) Eachanari PO, Coimbatore – 641 021, India.

## M.Phil / Ph.D– BIOCHEMISTRY (Effective from the academic year 2019 - 2020 and onwards)

## PREAMBLE

- The degree of Master of Philosophy [M.Phil] /Doctor of Philosophy (Ph.D) is awarded to a candidate who has submitted a thesis on the basis of original and independent research in any biochemistry field of research.
- This makes a contribution to the advancement of knowledge, which can be useful to the society.

1



### **DEPARTMENT OF BIOCHEMISTRY** FACULTY OF ARTS, SCIENCE AND HUMANITIES **RESEARCH PROGRAM – M.Phil / PhD in Biochemistry** (2019-2020 and onwards)

### Curriculum

Course code	Name of the course	Instruction hours / week	credits	Maximum Marks (100)
19RBC101	Research Methodology and Pedagogy	4	4	100
19RBC201	Advanced paper in Biochemistry	4	4	100
19RBC301A	Enzyme and Enzyme technology			
19RBC301B	Cancer Biology and immunology			
19RBC301C	Medicinal Plants and Plant therapeutics			
19RBC301D	Clinical Biochemistry and Toxicology	4	4	100
19RBC301E	Plant Molecular Biotechnology			
19RBC301F	Animal Tissue Culture			
19RBC301G	Fish nutrition and tissue culture	1		
Program Tot	tal	12	12	300



#### DEPARTMENT OF BIOTECHNOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES RESEARCH PROGRAM – M. Phil / PhD in Biotechnology (2019–2020 Batch and onwards) Curriculum

		Objectives and		tives and			
Code	Course	Outo	comes	115	marito	Exam	Credit
0000	oouroo	ΡΕΟ΄	PO's & hours / week		Total	Hrs	Cleuit
		S	PSO's		Total		
	Paper – I: Research	I, II,	a, c, e				
19RBT101	Methodology and	III		4	100	3	4
	Pedagogy						
19RBT201	Paper – II: Recent	I,II	b, d				
	Trends in			4	100	3	4
	Biotechnology						
	Paper – III *						
19RBT301	Paper – III: Animal	II, III	d, f, g				
1000000	Biotechnology						
19RB1302	Paper – III:	11, 111	d, f, g				
	Biotechnology for crop						
	improvement						
19RBT303	Paper – III:	II, III	d, f, g				
	Environmental						
	Biotechnology						
19RBT304	Paper – III:	11, 111	a, f, g	4	100	3	4
100000005	Paper – III: Medicinal		dfa				
19RB1305	Plant Biotechnology	,	<u>.</u> , ., g				
19RBT306	Paper – III: Plant Tissue	III, IV	f, g, h, i				
	Culture						
19RBT307	Paper – III: Food	III, IV	f, g, h, i				
	Technology						
10RBT308	Paper – III: Structural	III, IV	f, g, h,				
17101500	Biology		i				
	G. total			12	300	9	12

Deemed to be University

(Established Under Section 3 of UGC Act 1956)

EachanariPost,Pollachi Main Road,

Coimbatore -641021



# **COURSE OF STUDY & SCHEME OF EXAMINATION**

## M.Phil. & Ph.D. COURSE IN CHEMISTRY

2019-2020

# Part-I Course Work Syllabus for M.Phil and Ph.D Chemistry

Subject Code	Title of the Course	Credit	Exam Hours	Marks					
Paper-1(Compulsory)									
19RCH101	Research Methodology and	4	3	100					
	Pedogogy								
	Paper-II(Compulsory)								
19RCH201	Physical Methods in Chemistry	4	3	100					
Paper-III(Any One)									
19RCH301 A	Organic Chemistry	4	3	100					
19RCH301B	Physical Organic chemistry	4	3	100					
19RCH301C	Electro Chemistry	4	3	100					
19RCH301D	Environmental Chemistry	4	3	100					
19RCH301E	Chemistry of Crystalline solids	4	3	100					
19RCH301F	Organometallic Chemistry of	4	3	100					
	Transition metals								
19RCH301G	Chemistry of Biomolecules	4	3	100					
19RCH301H	Polymer Chemistry	4	3	100					



## DEPAERTMENT OF COMMERCE

#### FACULTY OF ARTS SCIENCE AND HUMANITIES M.Phil. / Ph.D in Commerce (2019-2020 batch and onwards)

Course code	Name of the course	Instruction hours / week		Instruction hours / week		Exam Duration	Maximum Marks	Page No.
		L	Т	Р	C			
19RCOM101	<b>Paper I</b> – Research Methodology and Pedagogy	4	-	-	4	3 hrs	100	1
19RCOM 201	<b>Paper – II</b> – Statistical Analysis for Business Research	4	-	-	4	3 hrs	3 hrs 100	
19RCOM301	<b>Paper III</b> – <b>Special Paper I</b> – Financial Management							4
19RCOM302	Paper III- Special Paper II – Marketing Management	4	-	-	4	3 hrs	100	5
19RCOM303	<b>Paper III – Special Paper III –</b> Human Resource Management							6

#### (Deemed to beUniversity) (Established Under Section 3 of UGC Act, 1956) FACULTY OF ARTS, SCIENCE AND HUMANITIES DEPARTMENT OF COMPUTER SCIENCE M. Phil./ Ph.D., (Scheme of Examination for 2019 – 2020 onwards)

Code	Course(s)	ESE(Marks)	Exam Hrs
19RCS101	Research Methodology and Pedagogy	100	3
19RCS201	Advanced Trends in Computer Science	100	3
19RCS301	Cryptography and Network Security	100	3
19RCS302	AdvancedNetworking	100	3
19RCS303	Data Mining and Warehousing	100	3
19RCS304	Digital Image Processing	100	3
19RCS305	Soft Computing	100	3
19RCS306	Web Technology	100	3
19RCS307	Software Engineering	100	3
19RCS308	Cyber Security	100	3
19RCS309	Mobile Computing	100	3
19RCS310	Cloud Computing	100	3

## FACULTY OF ARTS, SCIENCE & HUMANITIES RESEARCH PROGRAM – M.Phil / PhD in English (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours / week	credits	Maximum Marks (100)
19RENG101	Research Methodology and Pedagogy	4	4	100
19RENG 201	Modern Literary Theory and Criticism	4	4	100
19RENG 301	English Language Teaching			
19RENG 302	Drama			
19RENG 303	Fiction	4	4	100
19RENG 304	Poetry			
19RENG 305	Linguistics			
	Program Total	12	12	300

# **RESEARCH PROGRAM M.Phil./Ph.D. in Management** (2019-2020 Batch and onwards)



# DEPARTMENT OF MANAGEMENT

# FACULTY OF ARTS, SCIENCE AND HUMANITIES

# KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari (Post), Coimbatore – 641 021, Tamil Nadu, India Phone: 0422- 2980011-2980015, Fax No: 0422 – 2980022 - 23 Email: info@karpagam.com, Web: www.kahedu.edu.in

DEPARTMENT OF MANAGEMENT FACULTY OF ARTS, SCIENCE AND HUMANITIES M.Phil./Ph.D. in Management (2019-2020 Batch and onwards)

Course code	Name of the course	Instru ction hours/ week	Credit(s)	Maximum Marks (100)
19RMGT101	Paper-I:Research Methodology And Pedagogy	4	4	100
19RMGT201	Paper-II:General Management	4	4	100
19RMGT301	Paper III: Special Paper I - Advanced Entrepreneurship	4	4	100
19RMGT302	Paper-III:SpecialPaperII-AdvancedFinancialManagement	4	4	100
19RMGT303	Paper-III: Special Paper III -Advanced Marketing Management	4	4	100
19RMGT304	Paper-III: Special Paper IV -Advanced Operations Management	4	4	100
19RMGT305	Paper-III: Special Paper V -Corporate Human Resource Management	4	4	100
19RMGT306	<b>Paper-III: Special Paper VI</b> –Corporate Social Responsibility, Business Ethics and Corporate Governance	4	4	100
19RMGT307	Paper-III: Special Paper VII – Project Management	4	4	100
19RMGT308	Paper-III: Special Paper VIII –System Management	4	4	100
19RMGT309	Paper-III: Special Paper IX -Advertising and Salesmanship	4	4	100
19RMGT310	Paper-III: Special Paper X -Service Marketing	4	4	100
	PROGRAM TOTAL	12	12	300



(Deemed to be University) (Established Under Section 3 of UGC Act, 1956)

#### DEPARTMENT OF MATHEMATICS FACULTY OF ARTS, SCIENCE AND HUMANITIES RESEARCH PROGRAM – M.Phil / Ph.D in Mathematics (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours / week	Credits	Maximum Marks (100)
	Paper-I			
19RMAT101	Research Methodology and Pedagogy	4	4	100
	Paper-II			
19RMAT201	Advanced Algebra and its Applications			
19RMAT202	Algebra and Mathematical Analysis		4	100
19RMAT203	Partial Differential Equations	4		100
19RMAT204	Stochastic Processes			
	Paper-III			
19RMAT301	Fuzzy Mathematics			
19RMAT302	Advanced Topics in Fluid Dynamics			
19RMAT303	Hydrodynamic and Hydromagnetic Stability	4	4	100
19RMAT304	Queueing Theory			
	Program Total	12	12	300

#### DEPARTMENT OF MICROBIOLOGY FACULTY OF ARTS, SCIENCE AND HUMANITIES RESEARCH PROGRAM – M.Phil / PhD in Microbiology (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours/ week	Credits	Maximum Marks (100)
19RMB101	Research Methodology and Pedagogy	4	4	100
19RMB201	Recent Trends in Microbiology	4	4	100
19RMB301	Industrial and Pharmaceutical Microbiology			
19RMB302	Immunotechnology and Biotechnology			
19RMB303	Virology	4	4	100
19RMB304	Medical Microbiology			
	Program Total	12	12	300

#### DEPARTMENT OF PHYSICS FACULTY OF ARTS, SCIENCE & HUMANITIES RESEARCH PROGRAM – M.Phil / PhD in PHYSICS (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours / week	credits	Maximum Marks (100)
19RPHY101	Research Methodology and Pedagogy	4 4		100
19RPHY201	Advanced Physics	4	4	100
19RPHY301	Solar Energy and Utilization			
19RPHY302	Molecular Spectroscopy			
19RPHY303	Thin Film Physics			
19RPHY304	Crystal Growth			
19RPHY305	Solid state Ionics	4	4	100
19RPHY306	Concepts of Nanophysics and Nanotechnology			
19RPHY307	Laser Physics			
19RPHY308	Fluorescence Spectroscopy			
19RPHY309	Experimental Techniques In Materials Science			
	Program Total	12	12	300



### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Coimbatore – 641 021. (Deemed to be University Established Under Section 3 of UGC Act 1956)

### **DEPARTMENT OF TAMIL**

#### M.Phil & Ph.D CURRICULUM (2019-2020)

S.No	Subject Code	Name of the Course	Credits	Exam duration (Hrs)	Max Marks
1	19RTAM101	Paper-I: Research Methodology and Pedagogy	4	3	100
2	19RTAM201	Paper-II: History of Tamil Literature	4	3	100
		Paper III: Special Paper			
3	19RTAM301	Sanga Ilakkiyam			
4	19RTAM302	Ara Ilakkiyam	-		
5	19RTAM303	Bhakthi Ilakkiyam	4	3	100
6	19RTAM304	Ikkaala Ilakkiyam		5	100
7	19RTAM305	Naattuppuraviyal			
		Total	12		300



### KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Coimbatore – 641 021. (Deemed to be University Established Under Section 3 of UGC Act 1956)

### **DEPARTMENT OF HINDI**

#### M.Phil & Ph.D CURRICULUM (2019-2020)

S.No	Subject Code	Name of the Course	Credits	Exam duration (Hrs)	Max Marks		
1	19RHIN101	Paper-I: Research Methodology and Pedagogy	4	3	100		
2	19RHIN201	<b>Paper-II:</b> Modern trends in Hindi Literature	4	3	100		
	Paper III: Special Paper						
3	19RHIN301	Translation studies		3	100		
4	19RHIN302	Comparative Indian Literature	4				
5	19RHIN303	Hindi Bhakthi Kavya					
6	19RHIN304	Modern poetry					
7	19RHIN305	Modern Hindi Drama					
8	19RHIN306	Modern Novel					
		Total	12		300		



(Deemed to be University) (Established Under Section 3 of UGC Act, 1956)

#### DEPARTMENT OF MATHEMATICS FACULTY OF ARTS, SCIENCE AND HUMANITIES RESEARCH PROGRAM – M.Phil / Ph.D in Mathematics (2019–2020 Batch and onwards) Curriculum

Course code	Name of the course	Instruction hours / week	Credits	Maximum Marks (100)					
Paper-I									
19RMAT101	Research Methodology and Pedagogy	4	4	100					
Paper-II									
19RMAT201	Advanced Algebra and its Applications								
19RMAT202	02 Algebra and Mathematical Analysis			100					
19RMAT203	Partial Differential Equations	4	4	100					
19RMAT204	Stochastic Processes								
Paper-III									
19RMAT301	Fuzzy Mathematics		4	100					
19RMAT302	Advanced Topics in Fluid Dynamics								
19RMAT303	Hydrodynamic and Hydromagnetic Stability	4							
19RMAT304	Queueing Theory								
	12	12	300						