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, Tamilnadu, India.

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This is to certify that the enclosed pages (2 to 358) consists of the Curriculum followed for various programmes offered between the academic years 2018-2019.

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.

CBE-21

Common Colour Coding For the Courses In The Curriculum

Colour	Particular
Blue	Employability
Green	Entrepreneurship
Red	Skill Development

KARPAGAM ACADEMY OF HIGHER EDUCATION

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Eachanari Post,Pollachi Main Road,Coimbatore -641021

M.Sc.APPLIED ASTROLOGY COURSE (2018-2019)

Enable | Enlighten | Enrich

KARPAGAM
ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

COURSE OF STUDY AND SCHEME OF EXAMINATION

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

Course Code	Name of the Course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	TOTAL
		Objectives & Out Comes		Instruction hours / week				Mamimum Marks		
SEMESTER - I										
18ASP101	அடிப்படை ஜோதிடவியல் - I Fundamentals of Astrology-I	1	1	4	0	0	4	40	60	100
18ASP102	ஜோதிடவியலில் கோள்கள் - I Planets in Astrology-I	1	1,8	4	0	0	4	40	60	100
18ASP103	பிரசன்ன ஜோதிட முறைகள் - I Horary Astrological methods I	3	5	4	0	0	4	40	60	100
18ASP104	ராசிகள் பாவகங்கள் நட்சத்திரங்கள்-I Rasi – Bhava – Star Constellations -I	1	2	4	0	0	4	40	60	100
18ASP105B	அடிப்படை வாஸ்து – 1 Fundamental Vasthu -I	2	4	4	0	0	4	40	60	100
18ASP111	பலன் சொல்லும் முறைகள் - I Predictive methods in Astrology-I	1,2	4,10	0	0	4	2	40	60	100
18ASP112	Prediction – Marriage, Education	1,2	11	0	0	4	2	40	60	100
	Total						24	280	420	700
SEMESTER II										
18ASP201	அடிப்படை ஜோதிடவியல் -II Fundamentals of Astrology-II	1	1	4	0	0	4	40	60	100
18ASP202	ஜோதிடவியலில் கோள்கள் -II Planets in Astrology-II	1	1	4	0	0	4	40	60	100
18ASP203	பிரசன்ன ஜோதிட முறைகள் - II Horary Astrological methods-II	2	5	4	0	0	4	40	60	100
18ASP204	ராசிகள் பாவகங்கள் நட்சத்திரங்கள்II Rasi – Bhava – Star Constelations-II	1	2	4	0	0	4	40	60	100
18ASP205B	Modern vasthu II	2	4	4	0	0	4	40	60	100
18ASP211	பலன் சொல்லும் முறைகள் - II Predictive methods in Astrology-II	2	2,6	0	0	4	2	40	60	100
18ASP212	Prediction – Job, Business	3	6,11	4	0	4	2	40	60	100
	Total						24	280	420	700

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SEMESTER III											
18ASP301	புதிய ஜோதிட முறைகள் Modern Astrological Methods	2	3,6	4	0	0	4	40	60		
18ASP302	ஜோதிடவிதிகளில் முகூர்த்தங்கள் - Muhurtha in Astrology	3	7	4	0	0	4	40	60	100	
18ASP303	மருத்துவ ஜோதிடம் Medical Astrology	3	8	4	0	0	4	40	60	100	
18ASP304	ஜோதிட கணித முறைகள் Casting Horoscope	1	9	4	0	0	4	40	60	100	
18ASP305B	Ashtavargam	2	10	4	0	0	4	40	60	100	
18ASP311	Marriage Matching – Practical	1	11	4	0	0	4	40	60	100	
18ASP312	Prediction Overall - Practical	1,8	11	0	0	4	4	40	60	100	
							28	280	420	700	
SEMESTER IV											
18ASP491	Project	2.3	2,11	0	0	0	15	80	120	200	

The following are the Elective papers

	List of Elective Papers	
S.No	Course Code	Subjects
1.	18ASP105(A)	எண்கணிதம் (Numerology)
2.	18ASP105(B)	ஆடிப்படை வாஸ்த்து – I (Fundamentals of Vasthu – I)
3.	18ASP105(C)	அங்கலட்சனம் மற்றும் மச்சங்கள் (Samuthrika Lakshanam)
4.	18ASP205(A)	நவரத்தினங்கள் (Gemology)
5.	18ASP205(B)	நவீன வாஸ்த்து – II (Modern Vasthu – II)
6.	18ASP205(C)	கைரேகை சாஸ்திரம் (Palmistry)
7.	18ASP305(A)	தாஜிகம் (Thajigam)
8.	18ASP305(B)	அஷ்டவர்க்கம் (Astavargam)
9.	18ASP305(C)	16 வர்க்க சக்கரங்களும் பலன்களும் (Predictions through 16 Varga Chakras)

Programme outcomes

1) 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

4) 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 தீர்வை 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	X	X			X		X							
PEO 2		X	X	X	X				X	X	X			X
PEO 3						X	X	X			X	X	X	X

KARPAGAM ACADEMY OF HIGHER EDUCATION
Coimbatore – 641 021
DEPARTMENT OF BIOCHEMISTRY
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS)-B.Sc., Biochemistry
(2018–2019 and onwards)

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER – I										
18LSU 101	Language -I	I	a	4	-	-	4	40	60	100
18ENU101	English	I	a	4	-	-	4	40	60	100
18BCU101	Molecules of Life	I	b, k	3	1	-	4	40	60	100
18BCU102	Cell biology	I	d, k	4	-	-	4	40	60	100
18BCU103	Membrane Biology and Bioenergetics	I	d	4	-	-	4	40	60	100
18BCU111	Molecules of Life- Practical	III	d	-	-	3	2	40	60	100
18BCU112	Cell biology - Practical	III	d	-	-	3	2	40	60	100
18BCU113	Membrane Biology and Bioenergetics - Practical	III	d	-	-	4	2	40	60	100
Semester Total				19	1	10	26	320	480	800
SEMESTER – II										
18LSU 201	Language – II	I	a	4	-	-	4	40	60	100
18BCU201	Proteins	III	e k	3	1	-	4	40	60	100
18BCU202	Enzymes	III	e	4	-	-	4	40	60	100
18BCU203	Human Physiology	I	e	4	-	-	4	40	60	100
18BCU211	Proteins – Practical	III	e	-	-	3	2	40	60	100
18BCU212	Enzymes- Practical	III	e	-	-	3	2	40	60	100
18BCU213	Human Physiology - Practical	III	e	-	-	4	2	40	60	100
18AEC 201	Environmental Studies	IV	h	4	-	-	4	40	60	100
Semester Total				19	1	10	26	320	480	800
SEMESTER – III										
18BCU301	Metabolism of Carbohydrates and Lipids	I	f	4			4	40	60	100
18BCU302	Metabolism of Amino acids and Nucleic acids	I	f	4			4	40	60	100
18BCU303	Chemistry-I	I	f	3	1	-	4	40	60	100
18BCU311	Metabolism of Carbohydrates and Lipids – Practical	III	c, f	-	-	4	2	40	60	100
18BCU312	Metabolism of Amino acids and Nucleic acids- Practical	III	c, f	-	-	4	2	40	60	100
18BCU313	Chemistry Practical - I	III	c, f	-	-	4	2	40	60	100
18BCU304A	Tools and Techniques in Biochemistry	II	c, f, m	3	-	-	3	40	60	100
18BCU304B	Concepts in Genetics	I	c, f, n							
18BCU314A	Tools and Techniques in Biochemistry – Practical	III	c, f	-	-	3	1	40	60	100

Code	Course Title			L	T	P	C			
18BCU314B	Concepts in Genetics - Practical	III	c, f							
	Semester Total			14	1	15	22	320	480	800
	SEMESTER – IV									
18BCU401	Gene Organization, Replication and Repair	I, II	g, k	4	-		4	40	60	100
18BCU402	Gene Expression and Regulation	I, II	g, k	4	-		4	40	60	100
18BCU403	Chemistry-II	I, II	g	3	1	-	4	40	60	100
18BCU411	Gene Organisation, Replication and Repair-Practical	III	c, g	-	-	4	2	40	60	100
18BCU412	Gene Expression and Regulation- Practical	III	c, g	-	-	4	2	40	60	100
18BCU413	Chemistry Practical - II	III	c, f	-	-	4	2	40	60	100
18BCU404A	Bioinformatics	III	c, g	3	-	-	3	40	60	100
18BCU404B	Protein Purification Techniques		c, g							
18BCU414A	Bioinformatics – Practical	III	c, g, m	-	-	3	1	40	60	100
18BCU414B	Protein Purification Techniques - Practical		c, g							
	Semester Total			14	1	15	22	320	480	800
	SEMESTER – V									
18BCU501	Hormone: Biochemistry and Function	V	d, e	3	1	-	4	40	60	100
18BCU502A	Clinical Biochemistry	II, III	d, e	3	-	-	3	40	60	100
18BCU502B	Biochemical Correlation of Diseases	II, III	d, e, n							
18BCU503A	Basic Microbiology	I	d, e, l, n	4	-	-	4	40	60	100
18BCU503B	Nutritional Biochemistry	I	i, l							
18BCU504A	Plant Biochemistry	V	d, l	4	-	-	4	40	60	100
18BCU504B	Molecular Basis of Infectious diseases	V	d, e							
18BCU511	Hormone: Biochemistry and Function-Practical	III	J			4	2	40	60	100
18BCU512A	Clinical Biochemistry- Practical	III	j	-	-	3	1	40	60	100
18BCU512B	Biochemical Correlation of Diseases- Practical	III	j							
18BCU513A	Basic Microbiology- Practical	III	j	-	-	4	2	40	60	100
18BCU513B	Nutritional Biochemistry- Practical	III	j							
18BCU514A	Plant Biochemistry-- Practical	III	j	-	-	4	2	40	60	100
18BCU514B	Molecular Basis of Infectious diseases practical	III	j							
	Semester Total			15	-	15	22	320	480	800
	SEMESTER – VI									
18BCU601	Immunology	V	i, j	3	1	-	4	40	60	100
18BCU602A	Genetic Engineering and Biotechnology	I	g, l, n	3	-	-	3	40	60	100
18BCU602B	Research Methodology	V	i, j							
18BCU603A	Drug Biochemistry	II	i, j, k, l	4	-	-	4	40	60	100
18BCU603B	Biostatistics	III	e, l							
18BCU611	Immunology practical	III	e	-	-	4	2	40	60	100
18BCU612A	Genetic Engineering and Biotechnology-Practical	III	e	-	-	3	1	40	60	100
18BCU612B	Research Methodology - Practical	III	i, j							
18BCU613A	Drug Biochemistry- Practical	II	d	-	-	4	2	40	60	100
18BCU613B	Biostatistics practical	III	e							

18BCU691	Project		IV	j	2	-	6	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc							Good			
Semester Total					**13**	**-**	**17**	**22**	**280**	**420**	**700**
Program Total					**94**	**4**	**82**	**140**	**1880**	**2820**	**4700**

Blue – Employability

Green – Entrepreneurship

Red – Skill Development

Ability Enhancement Courses (AEC)		
Semester	**Course Code**	**Name of the Course**
I	18LSU101	Language –I
	18ENU101	English
II	18LSU201	Language –II
	18AEC201	Environmental Studies

Generic Elective Courses (GE) /Allied Courses		
Semester	**Course Code**	**Name of the Course**
I	18BCU303	Chemistry - I
	18BCU313	Chemistry – I Practical
II	18BCU403	Chemistry - II
	18BCU413	Chemistry – II Practical

Core Courses (CC)		
Semester	**Course Code**	**Name of the Course**
I	18BCU101	Molecules of Life
	18BCU102	Cell biology
	18BCU103	Membrane Biology and Bioenergetics
	19BCU111	Molecules of Life- Practical
	19BCU112	Cell biology - Practical
	18BCU113	Membrane Biology and Bioenergetics - Practical
II	18BCU201	Proteins
	18BCU202	Enzymes
	18BCU203	Human Physiology
	18BCU211	Proteins - Practical
	18BCU212	Enzymes- Practical
	18BCU213	Human Physiology - Practical
III	18BCU301	Metabolism of Carbohydrates and Lipids
	18BCU302	Metabolism of Amino acids and Nucleic acids
	18BCU311	Metabolism of Carbohydrates and Lipids - Practical
	18BCU312	Metabolism of Amino acids and Nucleic acids- Practical
IV	18BCU401	Gene Organization, Replication and Repair
	18BCU402	Gene Expression and Regulation

	18BCU411	Gene Organisation, Replication and Repair- Practical
	18BCU412	Gene Expression and Regulation- Practical
V	18BCU501	Hormone: Biochemistry and Function
	18BCU511	Hormone: Biochemistry and Function-Practical
VI	18BCU601	Immunology
	18BCU611	Immunology practical
	18BCU691	Project

Skill Enhancement Courses(SEC)		
Semester	**Course Code**	**Name of the Course**
III	18BCU304A	Tools and Techniques in Biochemistry
	18BCU304B	Concepts in Genetics
III	18BCU314A	Tools and Techniques in Biochemistry - Practical
	18BCU314B	Concepts in Genetics - Practical
IV	18BCU404A	Bioinformatics
	18BCU404B	Protein Purification Techniques
IV	18BCU414A	Bioinformatics - Practical
	18BCU414B	Protein Purification Techniques - Practical
V	18BCU502A	Clinical Biochemistry
	18BCU502B	Biochemical Correlations and Diseases
V	18BCU512A	Clinical Biochemistry- Practical
	18BCU512B	Biochemical Correlations and Diseases- Practical
VI	18BCU602A	Genetic Engineering and Biotechnology
	18BCU602B	Research Methodology
VI	18BCU612A	Genetic Engineering and Biotechnology- Practical
	18BCU612B	Research Methodology - Practical

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
V	18BCU503A	Basic Microbiology
	18BCU503B	Nutritional Biochemistry
	18BCU504A	Plant Biochemistry
	18BCU504B	Molecular basis of infectious diseases
V	18BCU513A	Basic Microbiology- Practical
	18BCU513B	Nutritional Biochemistry- Practical
	18BCU514A	Plant Biochemistry- Practical
	18BCU514B	Molecular basis of infectious diseases practical
VI	18BCU603A	Drug Biochemistry
	18BCU603B	Biostatistics
	18BCU613A	Drug Biochemistry- Practical
	18BCU613B	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.

l. Be able to integrate knowledge learned in discipline specific courses like Microbiology, 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.

Mapping of PEOs and POs

POs	a	b	c	d	e	f	g	h	i	j	k	l	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

KARPAGAM ACADEMY OF HIGHER EDUCATION
Coimbatore – 641 021
DEPARTMENT OF BIOCHEMISTRY
FACULTY OF ARTS ,SCIENCE AND HUMANITIES
PG PROGRAM (CBCS)- M.Sc., Biochemistry
(2018–2019 and onwards)

Course code	Name of the course	Objectives and out comes PEOs	POs	L	T	P	Credit(s)	CIA 40	ESE 60	Total 100
SEMESTER - I										
18BCP101	Chemistry of Biopolymers	I	a	4	-	-	4	40	60	100
18BCP102	Enzymes and Microbial Technology	II	d	4	-	-	4	40	60	100
18BCP103	Bioinstrumentation and Good Laboratory Practices	II	d, e, h	4	-	-	4	40	60	100
18BCP104	Cellular Biochemistry	III	a	4	-	-	4	40	60	100
18BCP105A	Plant Biochemistry	III	a	4	-	-	4	40	60	100
18BCP105B	Ecology and Evolutionary biology	I	c, f							
18BCP105C	Biopharmaceutics	I	d							
18BCP111	Practical – I Quantitative Estimation and Separation Techniques	II	a	-	-	4	2	40	60	100
18BCP112	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	-	-	-	-	-	-
Semester Total				22	-	8	24	280	420	700
SEMESTER – II										
18BCP201	Regulation of Metabolic Pathways	II	a	4	-	-	4	40	60	100
18BCP202	Molecular Biology	II	a, b	4	-	-	4	40	60	100
18BCP203	Developmental Genetics	II	a, b	4	-	-	4	40	60	100
18BCP204	Bioinformatics	III	d	4	-	-	4	40	60	100
18BCP205A	Recombinant DNA Technology	I	d	4	-	-	4	40	60	100
18BCP205B	Animal Tissue Culture	III	d, e							
18BCP205C	Genomics and Proteomics	III	d							
18BCP211	Practical – III Molecular Biology and Animal Biotechnology	II	d, g	-	-	4	2	40	60	100
18BCP212	Practical – IV Biological Databases and Analysis	III	d, g	-	-	4	2	40	60	100
	Journal paper analysis and Presentation	I-III	a, e	2	-	-	-	-	-	-
Semester Total				22	-	8	24	280	420	700
SEMESTER – III										
18BCP301	Immunology	I	a	4	-	-	4	40	60	100
18BCP302	Clinical Biochemistry	I, III	a, d	4	-	-	4	40	60	100
18BCP303	Endocrinology	II	a, d	4	-	-	4	40	60	100
18BCP304	Drug Biochemistry	III	a, d	4	-	-	4	40	60	100
18BCP305A	Biostatistics and Research Methodolology	III	e, g	4	-	-	4	40	60	100
18BCP305B	Clinical Research and IPR	III	d, e							
18BCP305C	Dietetic Management of Disease	I	d							
18BCP311	Practical – V Clinical Enzymes And Immunology	I, II	d, e, j	-	-	4	2	40	60	100
18BCP312	Practical – VI Clinical Biochemistry and	I	d, e,	-	-	4	2	40	60	100

	Animal Studies		i							
	Journal paper analysis and Presentation	I-III	d, e, j	2	-	-	-	-	-	-
Semester Total				22	-	8	24	280	420	700
SEMESTER – IV										
18BCP491	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

Blue – Employability
Green – Entrepreneurship
Red – Skill Development

Elective courses *

Elective – 1 (18BCP105)*		Core Elective – 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)**
18BCP105-A	Plant Biochemistry	18BCP205-A	Recombinant DNA Technology	18BCP305-A	Biostatistics and Research Methodolology
18BCP105-B	Ecology and Evolutionary biology	18BCP205-B	Animal Tissue Culture	18BCP305-B	Clinical Research and IPR
18BCP105-C	Biopharmaceutics	18BCP205-C	Genomics and Proteomics	18BCP305-C	Dietetic Management of Disease

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

Code: 18BCP101

18	-	Academic Year
BC	-	Biochemistry
P	-	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 OUTCOME(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 Programme 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 programme are conducted on various health initiatives.

d. **Identification and Differential Diagnosis:** To acquire biochemist position 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 is 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 programme 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 OBJECTIVE (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 programme 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.

Mapping of PEOs and POs

POs	a	b	c	d	e	f	g	i	j	k
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

DEPARTMENT OF BIOTECHNOLOGY
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc., Biotechnology
(2018–2019 Batch and Onwards)

Course code	Name of the course	Objectives and Outcomes		Instruction hours / week			Credit(s)	Marks		
		PEO's	PO's	L	T	P		CIA	ESE	Total
SEMESTER - I										
18LSU101	Language -I	-	-	04	00	00	4	40	60	100
18ENU101	English	-	-	04	00	00	4	40	60	100
18BTU101	Biochemistry and Metabolism	I	a, b	04	00	00	4	40	60	100
18BTU102	Cell Biology	I	a, b	04	00	00	4	40	60	100
18BTU103	Chemistry -I	I	a	04	00	00	4	40	60	100
18BTU111	Biochemistry and Metabolism Practical	I	a, b	00	00	04	2	40	60	100
18BTU112	Cell Biology Practical	I	a, b	00	00	03	2	40	60	100
18BTU113	Chemistry Practical - I	I	a	00	00	03	2	40	60	100
Semester total				20	00	10	26	320	480	800
SEMESTER - II										
18LSU201	Language - II	-	-	04	00	00	4	40	60	100
18BTU201	Genetics	II	e	04	00	00	4	40	60	100
18BTU202	Chemistry - II	I	a	04	00	00	4	40	60	100
18BTU203	General Microbiology	I	c	04	00	00	4	40	60	100
18BTU211	Genetics Practical	II	e	00	00	03	2	40	60	100
18BTU212	Chemistry Practical - II	I	a	00	00	03	2	40	60	100
18BTU213	General Microbiology Practical	I	c	00	00	04	2	40	60	100
18AEC201	Environmental Studies	I, IV	d, o	04	00	00	4	40	60	100
Semester total				20	00	10	26	320	480	800

Course code	Name of the course	Objectives and Outcomes		Instruction hours / week			Credit(s)	Marks		
		PEO´s	PO´s	L	T	P		CIA	ESE	Total
SEMESTER - III										
18BTU301	Plant Physiology	II	e	04	00	00	4	40	60	100
18BTU302	Molecular Biology	II	e	04	00	00	4	40	60	100
18BTU303	Immunology	II	f	04	00	00	4	40	60	100
18BTU304A	I.P.R., Entrepreneurship, Bioethics and Biosafety	IV	m, o	03	00	00	3	40	60	100
18BTU304B	Bio - Analytical Tool	IV	m, n, o	03	00	00	3	40	60	100
18BTU311	Plant Physiology Practical	II, IV	e, n	00	00	04	2	40	60	100
18BTU312	Molecular Biology Practical	II, IV	e, n	00	00	04	2	40	60	100
18BTU313	Immunology Practical	II	f, n	00	00	04	2	40	60	100
18BTU314A	I.P.R., Entrepreneurship, Bioethics and Biosafety Practical	II, IV	m, o	03	00	03	1	40	60	100
18BTU314B	Bio - Analytical Tool Practical	IV	m, n, o	03	00	03	1	40	60	100
Semester total				15	00	15	22	320	480	800
SEMESTER - IV										
18BTU401	Bioprocess Technology	II	g, h	04	00	00	4	40	60	100
18BTU402	Recombinant DNA Technology	II	e, g	04	00	00	4	40	60	100
18BTU403	Genomics and Proteomics	II, III	e, g, h, j, l	04	00	00	4	40	60	100
18BTU404A	Industrial Fermentation	II	g, h	03	00	00	3	40	60	100
18BTU404B	Enzymology	II	e, g, h	03	00	00	3	40	60	100
18BTU411	Bioprocess Technology Practical	II, IV	g, h, n	00	00	04	2	40	60	100
18BTU412	Recombinant DNA Technology Practical	II, IV	e, g, n	00	00	04	2	40	60	100
18BTU413	Genomics and Proteomics Practical	II, III IV	e, h, g, j, l, n	00	00	04	2	40	60	100
18BTU414A	Industrial Fermentation	II, IV	g, h, n	00	00	03	1	40	60	100

Course code	Name of the course	PEO´s	PO´s	L	T	P	Credit(s)	CIA	ESE	Total
	Practical									
18BTU414B	Enzymology Practical	II, IV	e, g, h, n	00	00	03	1	40	60	100
	Semester total			15	00	15	22	320	480	800

SEMESTER - V

Course code	Name of the course	PEO´s	PO´s	L	T	P	Credit(s)	CIA	ESE	Total
18BTU501A	Plant Diversity - I	I	a	03	00	00	3	40	60	100
18BTU501B	Basics of Forensic Science	IV	l							
18BTU502A	Bioinformatics	III, IV	j, l	04	00	00	4	40	60	100
18BTU502B	Plant Diversity - II	I	a							
18BTU503A	Plant Biotechnology	II, III	i, g	04	00	00	4	40	60	100
18BTU503B	Evolutionary Biology	I, III	b, i							
18BTU504A	Animal Biotechnology	III	i	04	00	00	4	40	60	100
18BTU504B	Animal Diversity - I	I	a							
18BTU511A	Plant Diversity Practical - I	III, IV	l, n	00	00	03	1	40	60	100
18BTU511B	Basics of Forensic Science Practical	III, IV	j, l, n							
18BTU512A	Bioinformatics Practical	I, IV	a, n	00	00	04	2	40	60	100
18BTU512B	Plant Diversity Practical – II	III, IV	l, n							
18BTU513A	Plant Biotechnology Practical	II, III, IV	g, i, n	00	00	04	2	40	60	100
18BTU513B	Evolutionary Biology Practical	I, III, IV	b, i, n							
18BTU514A	Animal Biotechnology Practical	III, IV	i, n	00	00	04	2	40	60	100
18BTU514B	Animal Diversity Practical - I	I	a, n							
	Semester total			15	00	15	22	320	480	800

SEMESTER - VI

Course code	Name of the course	PEO´s	PO´s	L	T	P	Credit(s)	CIA	ESE	Total
18BTU601A	Molecular Diagnostics	III, IV	k, l, o	03	00	00	3	40	60	100
18BTU601B	Biotechnology and Human Welfare	I, III	d, l							
18BTU602A	Medical Microbiology	I, III	c, k	04	00	00	4	40	60	100
18BTU602B	Environmental Biotechnology	III, IV	d, k, l							
18BTU603A	Biostatistics	III, IV	l, o	04	00	00	4	40	60	100

18BTU603B	Environment Management	III, IV	d, k, l							
18BTU611A	Molecular Diagnostics Practical	III, IV	k, l, o, n	00	00	03	1	40	60	100
18BTU611B	Biotechnology and Human Welfare Practical	III, IV	d, l, n							
18BTU612A	Medical Microbiology Practical	III, IV	c, k, n	00	00	04	2	40	60	100
18BTU612B	Environmental Biotechnology Practical	I, III, IV	d, k, l, n							
18BTU613A	Biostatistics Practical	III	l, o, n	00	00	04	2	40	60	100
18BTU613B	Environment Management Practical	I, III, IV	d, k, l, n							
18BTU691	Project – *Viva Voce*	III	l	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

Blue – Employability   Green – Entrepreneurship Red- Skill Development

Ability Enhancement Courses (AEC)		
Semester	Course Code	Name of the Course
I	18LSU101	Language –I
	18ENU101	English
II	18LSU201	Language –II
	18AEC201	Environmental Studies

Generic Elective Courses (GE) /Allied Courses		
Semester	Course Code	Name of the Course
I	18BTU103	Chemistry - I
	18BTU113	Chemistry Practical - I
II	18BTU202	Chemistry - II
	18BTU212	Chemistry Practical - II

Core Courses (CC)		
Semester	Course Code	Name of the Course
I	18BTU101	Biochemistry and Metabolism
	18BTU102	Cell Biology
	18BTU111	Biochemistry and Metabolism Practical
	18BTU112	Cell Biology Practical
II	18BTU201	Genetics
	18BTU203	General Microbiology
	18BTU211	Genetics Practical
	18BTU213	General Microbiology Practical
III	18BTU301	Plant Physiology
	18BTU302	Molecular Biology
	18BTU303	Immunology
	18BTU311	Plant Physiology Practical
	18BTU312	Molecular Biology Practical
	18BTU313	Immunology Practical
IV	18BTU401	Bioprocess Technology
	18BTU402	Recombinant DNA Technology
	18BTU403	Genomics and Proteomics
	18BTU411	Bioprocess Technology Practical
	18BTU412	Recombinant DNA Technology Practical
	18BTU413	Genomics and Proteomics Practical
VI	18BTU691	Project – *Viva Voce*

Skill Enhancement Courses (SEC)

Semester	Course Code	Name of the Course
III	18BTU304A	I.P.R., Entrepreneurship, Bioethics and Biosafety
	18BTU304B	Bio - Analytical Tool
	18BTU314A	I.P.R., Entrepreneurship, Bioethics and Biosafety Practical
	18BTU314B	Bio - Analytical Tool Practical
IV	18BTU404A	Industrial Fermentation
	18BTU404B	Enzymology
	18BTU414A	Industrial Fermentation Practical
	18BTU414B	Enzymology Practical
V	18BTU501A	Plant Diversity - I
	18BTU501B	Basics of Forensic Science
	18BTU511A	Plant Diversity Practical - I
	18BTU511B	Basics of Forensic Science Practical
VI	18BTU601A	Molecular Diagnostics
	18BTU601B	Biotechnology and Human Welfare
	18BTU611A	Molecular Diagnostics Practical
	18BTU611B	Biotechnology and Human Welfare Practical

Discipline Specific Elective Courses (DSE)

Semester	Course Code	Name of the Course
V	18BTU502A	Bioinformatics
	18BTU502B	Plant Diversity - II
	18BTU503A	Plant Biotechnology
	18BTU503B	Evolutionary Biology
	18BTU504A	Animal Biotechnology
	18BTU504B	Animal Diversity - I
	18BTU512A	Bioinformatics Practical
	18BTU512B	Plant Diversity Practical – II
	18BTU513A	Plant Biotechnology Practical
	18BTU513B	Evolutionary Biology Practical
	18BTU514A	Animal Biotechnology Practical
	18BTU514B	Animal Diversity Practical - I
VI	18BTU602A	Medical Microbiology
	18BTU602B	Environmental Biotechnology
	18BTU603A	Biostatistics
	18BTU603B	Environment Management
	18BTU612A	Medical Microbiology Practical
	18BTU612B	Environmental Biotechnology Practical
	18BTU613A	Biostatistics Practical
	18BTU613B	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 life skills.

b) The students will be able to discuss the metabolic aspects of biomolecules.

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 the students.

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 the students.

g) Develop skills associated with screening of industrially important strains, various aspects of bioprocess technology and rDNA technology by the graduates.

h) The student will be able to understand the production of enzymes from different sources and enzyme characterization and kinetic actions in living organisms.

i) The student will be able to understand the production of transgenic plants and animals for human and environmental welfare.

j) Understand the basic concepts and modern knowledge of bioinformatics by graduates.

k) Apply the knowledge and skills gained from molecular aspects should be useful in developing new innovations in different life forms by the graduates.

l) The student will be able design, solve the application-oriented problem in biotechnological field through project-based learning.

PROGRAMME SPECIFIC OUTCOMEs (PSOs)

To enable the student to emerge as:

m) Proficiency to work on biotechnological concepts and interdisciplinary areas of science and technology towards product and process development for industrial and academic research applications.

n) An expert in Biotechnology and allied fields (medical, microbial, agricultural, environmental, plant and animal) for utilizing the practical skills to address biotechnological challenges.

o) Proficiency to demonstrate entrepreneurial and leadership skills with life-long learning.

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. 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.

MAPPING OF PEOs AND POs

PEOs	Programme Outcome (s)														
	(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**	**(k)**	**(l)**	**(m)**	**(n)**	**(o)**
PEO I	✕	✕	✕	✕											
PEO II					✕	✕	✕	✕							
PEO III									✕	✕	✕	✕			
PSO IV											✕	✕	✕	✕	✕

Course code	Name of the course	Objectives and Outcomes		Instruction hours / Week			Credit (s)	Marks		
		PEO´s	PO´s & PSO´s	L	T	P		CIA	ESE	Total
SEMESTER - I										
18BTP101	Biochemistry and Microbiology	I, II	a, b, c, d	4	0	0	4	40	60	100
18BTP102	Cell Biology and Molecular Genetics	I, II	a, d	4	0	0	4	40	60	100
18BTP103	Ecology, Evolutionary and Developmental Biology	I, II	a, b, c, d	4	0	0	4	40	60	100
18BTP104	Bioinstrumentation and Biostatistics	II, III	d, e, f	3	1	0	4	40	60	100
18BTP105A 18BTP105B 18BTP105C	Biodiversity, Biosafety And IPR Nano-Biotechnology Bio-energy Technology	II, IV	d, g, h	4	0	0	4	40	60	100
18BTP111	Biochemistry and Microbiology - Practical – I	II, III	d, e, f	0	0	4	2	40	60	100
18BTP112	Cell Biology and Molecular Genetics - Practical – II	II, III	d, e, 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 - II										
18BTP201	Recombinant DNA technology	II, III, IV	d, g, h	4	0	0	4	40	60	100
18BTP202	Fermentation and Bioprocess Technology	II, III, IV	d, g, h	4	0	0	4	40	60	100
18BTP203	Enzyme Technology	IV	g	3	1	0	4	40	60	100
18BTP204	Immunotechnology	II, III, IV	d, e, f, g	4	0	0	4	40	60	100
18BTP205A 18BTP205B 18BTP205C	Pharmaceutical Biotechnology Agricultural Biotechnology Industrial Toxicology	IV	g	4	0	0	4	40	60	100
18BTP211	Recombinant DNA, Fermentation and Bioprocess Technology - Practical – III	IV	g	0	0	4	2	40	60	100
18BTP212	Immuno and Enzyme Technology -Practical – IV	IV	g	0	0	4	2	40	60	100
Journal Paper Analysis & Presentation				2	0	0		-	-	-
Semester total				21	1	8	24	280	420	700

Course code	Name of the course	PEO´s	PO´s	L	T	P	Credit (s)	CIA	ESE	Total
		Objectives and Outcomes		**Instruction hours / Week**				**Marks**		

Course code	Name of the course	PEO´s	PO´s	L	T	P	Credit (s)	CIA	ESE	Total
SEMESTER - III										
18BTP301	Plant and Animal Biotechnology	II, III, IV	d, g, h	4	0	0	4	40	60	100
18BTP302	Genomics, Proteomics and Bioinformatics	II, III, IV	d, g, h	4	0	0	4	40	60	100
18BTP303	Food Biotechnology	IV	g	4	0	0	4	40	60	100
18BTP304	Environmental Biotechnology	II, III, IV	d, e, f, g	3	1	0	4	40	60	100
18BTP305A 18BTP305B 18BTP305C	Applied Biotechnology System Biology Tissue Engineering and Regenerative Medicine	IV	g	4	0	0	4	40	60	100
18BTP311	Plant and Animal Biotechnology- Practical – V	II, III, IV	d, g, h, f	0	0	4	2	40	60	100
18BTP312	Genomics, Proteomics and Bioinformatics - Practical – VI	II, III, IV	d, g, h, f	0	0	4	2	40	60	100
Journal Paper Analysis & Presentation					0	0	-	-	-	-
Semester total				21			24	280	420	700
SEMESTER – IV										
18BTP491	Project and *Viva Voce*	III, IV	f, g, h, i	-	-	-	15	80	120	200
Semester total				-	-	-	15	80	120	200
				42	3	45	87	920	1380	2300

Elective courses*

Elective – 1 (18BTP105)		Elective – 2 (18BTP205)		Elective – 3 (18BTP305)	
Course code	Name of the course (Theory)	Course Code	Name of the course (Theory)	Course Code	Name of the course (Theory)
18BTP105A	Biodiversity, Biosafety And IPR	18BTP205A	Pharmaceutical Biotechnology	18BTP305A	Applied Biotechnology
18BTP105B	Nano-Biotechnology	18BTP205B	Agricultural Biotechnology	18BTP305B	System Biology
18BTP105C	Bio-energy Technology	18BTP205C	Industrial Toxicology	18BTP305C	Tissue Engineering

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

Blue – Employability   Green – Entrepreneurship   Red – Skill Development

Master of Science in Biotechnology 2018, Karpagam Academy of Higher Education, Coimbatore-641021, India.

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

PEOs			Programme Outcome (s)						
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
PEO I	✕	✕		`					
PEO II			✕	✕					
PEO III					✕	✕			
PEO IV							✕	✕	✕

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

Curriculum
2018-2019

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
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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.

FACULTY OF ARTS, SCIENCE AND HUMANITIES

UG PROGRAM (CBCS) – B.Sc. Chemistry
(2018–2019 Batch and onwards)

Course code	Name of the course	Objectives & Outcomes		Instruction hours per week			Credits	Maximum Marks		
		PEO's	PO's	L	T	P		CIA	ESE	Total
SEMESTER I										
18LSU101	Language –I	4	7	4	0	0	4	40	60	100
18ENU 101	English	4	7	4	0	0	4	40	60	100
18CHU101	Inorganic Chemistry I: Atomic structure and Chemical Bonding	1	1,3	5	0	0	5	40	60	100
18CHU102	Physical Chemistry I: States of Matter and Ionic Equilibrium	1,2,3	2,3,4,5,7	04	0	0	4	40	60	100
18CHU103	Organic Chemistry I: Basics and Hydrocarbons	1	1,3	5	0	0	5	40	60	100
18CHU111	Atomic structure and Chemical Bonding- Practical	1	1,4,10	0	0	2	1	40	60	100
18CHU112	Physical Chemistry I: States of Matter and Ionic Equilibrium- Practical	1,2	2,3,4,9	0	0	04	2	40	60	100
18CHU113	Basics and Hydrocarbons- Practical	1	1,4,10	0	0	2	1	40	60	100
	Semester total						26	320	480	800
SEMESTER II										
18LSU201	Language –II			4	0	0	4	40	60	100
18CHU201	Physical Chemistry II:Chemical Thermodynamics and its Application	1,2	2,5,10	5	0	0	5	40	60	100
18CHU202	Inorganic Chemistry II:Metallurgy, s-block and p-block Elements	1,2,3	2,3,5,7,8	04	0	0	4	40	60	100
18CHU203	Organic Chemistry II: Oxygen Containing Functional Groups	1,2	2,5	6	0	0	6	40	60	100
18CHU211	Chemical Thermodynamics and its Application- Practical	1,2,3	2,3,4,9	0	0	2	1	40	60	100
18CHU212	InorganicChemistry II:Metallurgy, s-block and p-block Elements - Practical	1,2,3	2,3,4,9	0	0	04	2	40	60	100
18CHU213	Oxygen Containing Functional Groups- Practical	1,2,3	2,3,4,9	0	0	2	1	40	60	100
18AEC201	Environmental Studies	2	-	3	0	0	3	40	60	100
	Semester Total						26	320	480	800
SEMESTER III										
18CHU301	Mathematics I	1,4	1,4,5,10	4	0	0	4	40	60	100
18CHU302	Physical Chemistry III: Phase Equilibria and Chemical Kinetics	1,2,3	2,3,4,10	4	0	0	4	40	60	100

18CHU303	Inorganic Chemistry III: Coordination Chemistry	1	1,3	4	0	0	4	40	60	100
18CHU311	Mathematics I Practical	2,3	2,5,9	0	0	4	2	40	60	100
18CHU312	Phase Equilibria and Chemical Kinetics- Practical	1,2	2,3,4,9	0	0	4	2	40	60	100
18CHU313	Coordination Chemistry- Practical	1,2	2,3,4,9	0	0	4	2	40	60	100
18CHU304A	Pharmaceutical Chemistry	1,2,3	2,3,6,10	03	0	0	3	40	60	100
18CHU304B	IT Skills for Chemists									
18CHU314A	Pharmaceutical Chemistry- Practical	1,2,3	2,3,6,10	0	0	3	1	40	60	100
18CHU314B	IT Skills for Chemists- Practical									
	Semester total						22	320	480	800
SEMESTER IV										
18CHU401	Mathematics II	2,3	2,3,4	04	0	0	4	40	60	100
18CHU402	Physical Chemistry IV: Electrochemistry	1,2,3	1,2,4,5,9	04	0	0	4	40	60	100
18CHU403	Organic Chemistry III : Organic Spectroscopy	1,2,3	2,3,4,6	04	0	0	4	40	60	100
18CHU411	Mathematics II Practical	2,3	2,5,9	0	0	4	2	40	60	100
18CHU412	Physical Chemistry IV: Electrochemistry- Practical	1,2,3	2,3,4,5,6	0	0	4	2	40	60	100
18CHU413	Organic Spectroscopy- Practical	1,2,3	2,4,6,7,8	0	0	4	2	40	60	100
18CHU404A	Green Methods in Chemistry	1,2,3	1,3,6,8,9	03	0	0	3	40	60	100
18CHU404B	Analytical clinical Biochemistry	1,2,3	1,2,3,10							
18CHU414A	Green Methods in Chemistry- Practical	1,2,3	1,3,6,8,9	0	0	3	1	40	60	100
18CHU414B	Analytical clinical Biochemistry- Practical	1,2,3	1,2,3							
	Semester total						22	320	480	800
SEMESTER V										
18CHU501	Physics I	1,2,3	2,3,4,10	04	0	0	4	40	60	100
18CHU502	Organic Chemistry IV:Nitrogen containing functional groups, Heterocyclic Chemistry and Natural products	1,2,3	2,3,4,5,6	04	0	0	4	40	60	100
18CHU503A	Polymer Chemistry	1,2,3	2,3,4,7,8	04	0	0	4	40	60	100
18CHU503B	Novel inorganic Solids	1, 2	3,4,7							
18CHU511	Physics Practical-I	2,5	2,3,4	0	0	4	2	40	60	100
18CHU512	Nitrogen containing functional	1,2,3	2,3,9	0	0	04	2	40	60	100

Code	Title									
	groups, Heterocyclic Chemistry and Natural products Practical									
18CHU513A	Polymer Chemistry- Practical	1,2,3	2,3,4,5,6	0	0	4	2	40	60	100
18CHU513B	Novel inorganic Solids- Practical	2,3	3,4,7,9							
18CHU504A	Cheminformatics	1,2,3	1,2,5,8,10	03	0	0	3	40	60	100
18CHU504B	Chemistry of Cosmetics and perfumes	1,23,	2,3,7							
18CHU514A	Cheminformatics- Practical	2,3	1,2,5,8	0	0	3	1	40	60	100
18CHU514B	Chemistry of Cosmetics and perfumes- Practical	2,3	2,3,7,9							
	Semester Total						22	320	480	800
	SEMESTER VI									
18CHU601	Physics II	1,2,3	2,3,4,10	04	0	0	4	40	60	100
18CHU602	Inorganic Chemistry IV: Organometallic Chemistry	1,2,3	2,3,4,5,6	04	0	0	4	40	60	100
18CHU611	Physics Practical II	2,5	2,3,4	0	0	4	2	40	60	100
18CHU612	Inorganic Chemistry IV: Organometallic Chemistry Practical	1,2	2,3,4,9	0	0	04	2	40	60	100
18CHU603A	Molecular modeling and drug design	1,2,3	1,3,6,8	0	0	8	6	40	60	100
18CHU613A	Molecular modeling and drug design practical	1,2,3	2,3,6							
18CHU691	Project Work	1,2,3,4	1,2,3,5,6,8							
18CHU604A	Basic Analytical Chemistry	1,2,3	2,4,5	03	0	0	3	40	60	100
18CHU604B	Pesticide Chemistry	1,2,3	3,6,7							
18CHU614A	Basic Analytical Chemistry- Practical	1,2,3	2,4,5	0	0	3	1	40	60	100
18CHU614B	Pesticide Chemistry- Practical	1,2,3	3,6,7							
							22	280	420	700
	ECA / NCC / NSS / Sports / General interest /etc									Good
	G. Total						140	1880	2820	4700

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 ofpractical 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.

Mapping

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

Employability- Blue -21

Entrepreneurship-Green-2

Skill development – Red-36

M.Sc. CHEMISTRY
CHOICE BASED CREDIT SYSTEM (CBCS)
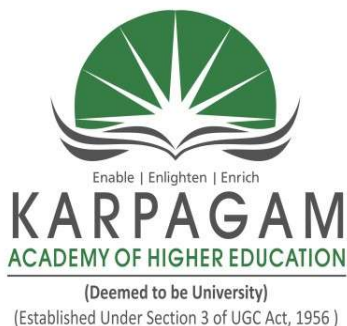
Curriculum

2018-2019

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

Programme Learning Outcomes (PLO)

a. 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

PO	a	b	c	d	e	f	g	h	i	j	k	l	m	n
PEO 1	x	x			x			x	x		x	x	x	
PEO 2		x	x	x	x			x	x		x		x	x
PEO 3			x	x		x	x			x			x	x
PEO 4	x	x	x			x		x		x	x	x		x

DEPARTMENT OF CHEMISTRY

FACULTY OF ARTS, SCIENCE AND HUMANITIES

PG PROGRAM (CBCS) – M.Sc. Chemistry

(2018–2019 Batch and onwards)

Course code	Name of the course	Objectives & Outcomes		Instruction hours per week			Cre dits	Maximum Marks		
		PEO's	PO's	L	T	P		CIA	ESE	Total
SEMESTER I										
18CHP101	Organic Chemistry – I: Reaction Mechanisms	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP102	Inorganic Chemistry –I: Nuclear Chemistry and Metallic Clusters	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP103	Physical Chemistry- I: Quantum Chemistry and Group Theory	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP104	Organic and Inorganic Spectroscopy	1,2,3,4	1,2,3,8,9	4	0	0	4	40	60	100
18CHP105A 18CHP105B 18CHP105C	Elective I	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP111	Organic Chemistry Practical-I: Qualitative Analysis and Single Stage Preparations	3,4	2,8,9	0	0	4	2	40	60	100
18CHP112	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
SEMESTER II										
18CHP201	Organic Chemistry-II: Rearrangements, Reactions, Photochemistry and Pericyclic Reactions	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP202	Inorganic Chemistry-II: Co-ordination Chemistry	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP203	Physical Chemistry II: Chemical Kinetics and Electrochemistry	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP204	Industrial chemicals and environment	3,4	6,8	4	0	0	4	40	60	100
18CHP205A 18CHP205B 18CHP205C	Elective – II	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP211	Inorganic Chemistry Practical-I: Qualitative Analysis and	3,4	2,8,9	0	0	4	2	40	60	100

	Preparations									
18CHP212	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	-	-	-	-	-	-	-
18CHP206	Water Management	3	6	0	0	0	4	-	100	100
	Semester Total						28	280	520	800
SEMESTER III										
18CHP301	Organic Chemistry-III (Natural Products)	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP302	Physical Chemistry–III (Thermodynamics)	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP303	Physical Methods in Chemistry (Instrumentation)	1,2,3	1,3,5, 9,10	4	0	0	4	40	60	100
18CHP304	Nanochemistry	1,2,3	1,3,5, 9	4	0	0	4	40	60	100
18CHP305A 18CHP305B 18CHP305C	Elective –3	1,2,3	1,3,5	4	0	0	4	40	60	100
18CHP311	Physical Chemistry Practical I (Molecular Weight Determination and Conductometric Titrations)	3,4	2.8,9	0	0	4	2	40	60	100
18CHP312	Physical Chemistry Practical II (Chemical Kinetics and Potentiometric 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
SEMESTER – IV										
18CHP491	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**		**Elective-III**	
Code	**Course**	**Code**	**Course**	**Code**	**Course**
18CHP105A	Green Chemistry	18CHP205A	Research methodology for chemistry	18CHP305A	Polymer Chemistry
18CHP105B	Medicinal Chemistry	18CHP205B	Analytical Chemistry	18CHP305B	Textile Chemistry
18CHP105C	Molecular Modelling& Drug Design	18CHP205C	Organometallic Chemistry	18CHP305C	Industrial Chemistry

Employability-Blue-14

Entrepreneurship- 2

Skill development-7

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 2018 – 2021 Batch onwards)

Scheme of Examination

Course Code	Name of the Course	PEOs	Pos	L	T	P	Credits	CIA	ESE	Total
								40	60	100
Semester 1										
18LAU101	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
18CMU101	Financial Accounting	I, IV	a,g,i	6	2	0	6	40	60	100
18CMU102	Business Law	III	c,d,h	8	0	0	6	40	60	100
18AEC101	Business Communication	III	c,d,h	4	0	0	4	40	60	100
				28	2	0	26	200	300	500
Semester II										
18LAU201	Language – II	II	b,e,f,	6	0	0	6	40	60	100
18ENU201	English – II	I, IV	a,g,i	4	0	0	4	40	60	100
18CMU201	Corporate Accounting	III	c,d,h	6	2	0	6	40	60	100
18CMU202	Business Mathematics and Statistics	II	b,e,f,	6	2	0	6	40	60	100
18AEC201	Environmental Studies	III	c,d,h	4	0	0	4	40	60	100
				26	4	0	26	200	300	500
Semester III										
18ENU301	English – III	I, IV	a,g,i	8	0	0	6	40	60	100
18CMU301	Cost Accounting	III	c,d,h	6	2	0	6	40	60	100
18CMU302	Income Tax Law and Practice	II	b,e,f,	6	2	0	6	40	60	100
18CMU303A	Auditing and Corporate Governance	I, IV	a,g,i	4	0	0	3	40	60	100
18CMU303B	Computerised Accounting System	II	b,e,f,	2	0	0	2	40	60	100
18CMU311A	Auditing and Corporate Governance (practical)	I, IV	a,g,i	0	0	2	1	40	60	100
18CMU311B	Computerised Accounting System (practical)	II	b,e,f,	0	0	4	2	40	60	100
				22/24	4	4/2	22	200	300	500
Semester IV										
18ENU401	English IV	I, IV	a,g,i	8	0	0	6	40	60	100
18CMU401	Indirect Taxation	II	b,e,f,	6	2	0	6	40	60	100
18CMU402	Research Methodology	II	b,e,f,	8	0	0	6	40	60	100
18CMU403A	Financial Analysis and Reporting	I, IV	a,g,i	4	0	0	3	40	60	100
18CMU403B	Excel for Business	II	b,e,f,	2	0	0	2	40	60	100
18CMU411A	Financial Analysis and	I, IV	a,g,i	0	0	2	1	40	60	100

	Reporting (Practical)									
18CMU411B	Excel for Business (Practical)	II	b,e,f,	0	0	4	2	40	60	100
				24/22	2	4/2	**22**	**200**	**300**	**500**

Semester V

18CMU501A	Company Law	III	c,d,h	8	0	0	6	40	60	100
18CMU501B	Financial Management	III	c,d,h	6	2	0	6	40	60	100
18CMU502A	Financial Services and Capital Markets	II	b,e,f,	6	0	0	5	40	60	100
18CMU502B	Marketing Management	III	c,d,h	6	0	0	5	40	60	100
18CMU503A	Management Accounting	III	c,d,h	5	1	0	4	40	60	100
18CMU503B	Advanced Accounting	I, IV	a,g,i	5	1	0	4	40	60	100
18CMU504A	Business Economics	II	b,e,f,	5	1	0	5	40	60	100
18CMU504B	Management and Organization Behavior	I, IV	a,g,i	6	0	0	5	40	60	100
18CMU511A	Financial Services and Capital Markets (Practical)	II	b,e,f,	0	0	2	1	40	60	100
18CMU511B	Marketing Management (Practical)	III	c,d,h	0	0	2	1	40	60	100
18CMU512A	Business Economics (Practical)	II	b,e,f,	0	0	2	1	40	60	100
18CMU512B	Management and Organization Behavior (Practical)	I, IV	a,g,i	0	0	2	1	40	60	100
				25/22	1/4	4	**22**	**240**	**360**	**600**

Semester VI

18CMU601A	Banking and Insurance			6	0	0	5	40	60	100
18CMU601B	Investment Management	II	b,e,f,	6	0	0	5	40	60	100
18CMU602A	Human Resource Management	I, IV	a,g,i	5	0	0	5	40	60	100
18CMU602B	International Business	III	c,d,h	5	0	0	5	40	60	100
18CMU603A	Entrepreneurship	III	c,d,h	5	0	0	3	40	60	100
18CMU603B	Personal Selling and Salesmanship	III	c,d,h	5	0	0	3	40	60	100
18CMU611A	Banking and Insurance (Practical)	I, IV	a,g,i	0	0	2	1	40	60	100
18CMU611B	Investment Management (Practical)	II	b,e,f,	0	0	2	1	40	60	100
18CMU612A	Human Resource Management (Practical)	I, IV	a,g,i	0	0	2	1	40	60	100
18CMU612B	International Business (Practical)	III	c,d,h	0	0	2	1	40	60	100
18CMU613A	Entrepreneurship (Practical)	III	c,d,h	0	0	2	1	40	60	100
18CMU613B	Personal Selling and Salesmanship (Practical)	III	c,d,h	0	0	2	1	40	60	100
18CMU691	Project			8	0	0	6	40	60	100
				24	0	6	22	**280**	**420**	**600**
ECA / NCC / NSS / Sports / General interest 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 problems using quantitative; qualitative tools and technologies.

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

i. Graduate will demonstrate legal, ethical code and socially sustainable code of conduct in 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 in higher studies, jobs and entrepreneurial ventures.

III. Graduates will develop a lifelong learning by applying the gained knowledge and skills in research 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	Program Outcomes								
	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.	✓		√	√			✓	√	✓
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 life long learning through IT enabled research and 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 sustainable growth of profession and the community.	✓		√	√			✓	√	✓

BCOM (BPS)
Bachelor of Commerce
(Business Process Services)
CHOICE BASED CREDIT SYSTEM
(CBCS)

Curriculum

2018 – 2019

Enable | Enlighten | Enrich

KARPAGAM
ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

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

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - I										
18LAU101	Language - I	I, II, III	a, e	6	0	0	6	40	60	100
18ENU101	English – I	I, II, III	a, e	4	0	0	4	40	60	100
18BPU101	Financial Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
18BPU102	Business Law	I,II,III,IV	a,c,d,e,h,i	8	0	0	6	40	60	100
18AEC101	Business Communication	I, II, III	a, e, g, f	4	0	0	4	40	60	100
Semester Total				28	2	0	26	200	300	500
SEMESTER – II										
18LAU201	Language – II	I, II, III	a, e	6	0	0	6	40	60	100
18ENU201	English – II	I, II, III	a, e	4	0	0	4	40	60	100
18BPU201	Corporate Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
18BPU202	Business Mathematics and Statistics	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
18AEC201	Environmental Studies	I,III, IV	a, e,h, i	4	0	0	4	40	60	100
Semester Total				26	4	0	26	200	300	500
SEMESTER – III										
18ENU301	English – III	I, II, III	a, e	4	0	4	6	40	60	100
18BPU301	Cost Accounting	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
18BPU302	*Business Process Services in Finance and Accounting*	I, II, III	a, b,c, d,e, h	6	2	0	6	40	60	100
18BPU303A	Auditing and Corporate Governance	I, II, III, IV	a, c, d,e, h,i	4	0	0	3	40	60	100
18BPU303B	*Business Process Services* in *Insurance*	I, II, III	a, b,c, d,e, h	4	0	0	3	40	60	100
18BPU311A	Auditing and Corporate Governance (Practical)	I, II, III, IV	a, c, d,e, h,i	0	0	2	1	40	60	100

Course code	Name of the course	Objectives and outcomes PEOs	Objectives and outcomes POs	Instruction hours / week L	T	P	Credit(s)	Maximum Marks CIA 40	ESE 60	Total 100
18BPU311B	*Business Process Services in Insurance (Practical)*	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100
Semester Total				**20**	**4**	**6**	**22**	**200**	**300**	**500**
SEMESTER – IV										
18ENU401	English – IV	I, II, III	a, e	4	0	4	6	40	60	100
18BPU401	Research Methodology	I, II, III	a, c, d,e,h	6	0	0	5	40	60	100
18BPU402	*Retail, CPG and Market Research*	I, II, III	a, b, c, d,e, h	6	0	0	5	40	60	100
18BPU403A	Financial Analysis and Reporting	I, II, III, IV	a, c, d,e, h,i	4	0	0	3	40	60	100
18BPU403B	*Business Process Services in Banking*	I, II, III	a, b, c, d,e,h	4	0	0	3	40	60	100
18BPU411	Research Methodology (Practical)	I, II, III	a, c, d,e,f, g, h	0	0	2	1	40	60	100
18BPU412	*Retail, CPG and Market Research (Practical)*	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100
18BPU413A	Financial Analysis and Reporting (Practical)	I, II, III, IV	a, c, d,e,h,i	0	0	2	1	40	60	100
18BPU413B	*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				**20**	**0**	**10**	**22**	**280**	**420**	**700**
SEMESTER – V										
18BPU501A	Company Law	I, II, III, IV	a, c, d,e, f,g,h,i	8	0	0	6	40	60	100
18BPU501B	*Business Process Services in Capital Market*	I, II, III	a, b, c, d,e,h	6	0	0	5	40	60	100
18BPU502A	Management Accounting	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
18BPU502B	*Managing Business Processes - I*	I, II, III	a, b, c, d,e,h	6	0	0	5	40	60	100
18BPU503A	Marketing Management	I, II, III	a, e,h	4	0	0	3	40	60	100
18BPU503B	*Campus to Corporate Transition*	I, II, III	a, b, c, d,e,f,g,h	6	0	0	4	100	0	100
18BPU504A	*Business Economics*	I, II, III	a, c,d, e,h	6	0	0	5	40	60	100

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BPU504B	Management and Organization Behaviour	I, II, III	a, c,d, e,h	6	0	0	5	40	60	100
18BPU511B	*Business Process Services in Capital Market (Practical)*	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100
18BPU512B	*Managing Business Processes - I (Practical)*	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100
18BPU513A	Marketing Management (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
18BPU514A	*Business Economics (Practical)*	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
18BPU514B	Management and Organization Behaviour (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
Semester Total				**24**	**2/0**	**4/6**	**22**	**240/340**	**360**	**600/700**
Semester – VI										
18BPU601A	Taxation	I, II, III, IV	a, c, d,e, f,g,h,i	6	2	0	6	40	60	100
18BPU601B	*Managing Business Processes – II*	I, II, III	a, b, c, d,e,h	6	0	0	5	40	60	100
18BPU602A	Entrepreneurship	I,II, III	a,e,h	4	0	0	3	40	60	100
18BPU602B	*Excel for Business*	I, II, III	a, b, c, d,e,h	2	0	0	2	40	60	100
18BPU603A	Management Information system	I, II, III, IV	a,c,d,e,h,i	6	0	0	5	40	60	100
18BPU603B	*Strategic Management*	I, II, III	a,c,d,e,h	6	0	0	5	40	60	100
18BPU611B	*Managing Business Processes – II (Practical)*	I, II, III	a, b, c, d,e, f,g,h	0	0	2	1	40	60	100
18BPU612A	Entrepreneurship (Practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100
18BPU612B	*Excel for Business (Practical)*	I, II, III	a, b, c, d,e,h	0	0	4	2	40	60	100
18BPU613A	Management Information system (Practical)	I, II, III, IV	a, c, d,e,f,g,h,i	0	0	2	1	40	60	100
18BPU613B	*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	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BPU691	*Project*	I, II, III	a, b, c, d,e,f,g,h	8	0	0	6	40	60	100
ECA/NCC/NSS/Sports/General Interest etc										Good
Semester Total				24/22	2/0	4/8	22	240/ 280	360/ 420	600/ 700
Programme Total							140	1360/ 1500	2040/ 2100	3400/ 3600

ABILITY ENHANCEMENT COURSES		
Semester	Course code	Name of the course
I	18ENU101	English – I
II	18ENU201	English – II
III	18ENU301	English – III
IV	18ENU401	English – IV
I	18LAU101	Language - I
II	18LAU201	Language – II
I	18AEC101	Business Communication
II	18AEC201	Environmental Studies

CORE COURSES		
Semester	**Course code**	**Name of the course**
I	18BPU101	Financial Accounting
I	18BPU102	Business Law
II	18BPU201	Corporate Accounting
II	18BPU202	Business Mathematics and Statistics
III	18BPU301	Cost Accounting
III	18BPU302	*Business Process Services in Finance and Accounting*
IV	18BPU401	Research Methodology
	18BPU411	Research Methodology (Practical)
IV	18BPU402	*Retail, CPG and Market Research*
	18BPU412	*Retail, CPG and Market Research (Practical)*

SKILL ENHANCEMENT COURSES		
Semester	**Course code**	**Name of the course**
III	18BPU303A	Auditing and Corporate Governance
	18BPU311A	Auditing and Corporate Governance (Practical)
III	18BPU303B	*Business Process Services in Insurance*
	18BPU311B	*Business Process Services in Insurance (Practical)*
IV	18BPU403A	Financial Analysis and Reporting
	18BPU413A	Financial Analysis and Reporting (Practical)
IV	18BPU403B	*Business Process Services in Banking*
	18BPU413B	*Business Process Services in Banking (Practical)*
V	18BPU503A	Marketing Management
	18BPU513A	Marketing Management (Practical)
V	18BPU503B	*Campus to Corporate Transition*
VI	18BPU602A	Entrepreneurship
	18BPU612A	Entrepreneurship (Practical)
VI	18BPU602B	*Excel for Business*
	18BPU612B	*Excel for Business (Practical)*

DISCIPLINE SPECIFIC ELECTIVES		
Semester	Course code	Name of the course
V	18BPU501A	Company Law
	18BPU501B	*Business Process Services in Capital Market*
	18BPU511B	*Business Process Services in Capital Market (Practical)*
	18BPU502A	Management Accounting
	18BPU502B	*Managing Business Processes - I*
	18BPU512B	*Managing Business Processes - I (Practical)*
VI	18BPU601A	Taxation
	18BPU601B	*Managing Business Processes – II*
	18BPU611B	*Managing Business Processes – II (Practical)*
	18BPU691	*Project*

GENERIC ELECTIVE		
Semester	Course code	Name of the course
V	18BPU504A	*Business Economics*
	18BPU514A	*Business Economics (Practical)*
	18BPU504B	Management and Organization Behaviour
	18BPU514B	Management and Organization Behaviour (Practical)
VI	18BPU603A	Management Information systems
	18BPU613A	Management Information systems (Practical)
	18BPU603B	*Strategic Management*
	18BPU613B	*Strategic Management (Practical)*

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 ITeS domain skills 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 in-depth domain knowledge by using quantitative; qualitative tools and techniques.

d. Graduates will exhibit critical 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	Program Outcomes								
	a	b	c	d	e	f	g	h	i
Graduates will acquire knowledge in accounting, taxation, finance, business 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 higher studies, jobs in the various domain of ITeS sector, entrepreneurial ventures.	√	√	√	√	√	√	√		√
Graduates will continuously develop a lifelong learning to excel in career obtained through domain specific research and practice.	√	√	√	√	√	√	√	√	√
Graduates will demonstrate high standard of ethical conduct and become socially responsible citizens contributing to the sustainable growth of profession and the community.		√	√	√	√	√	√	√	√

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – I										
18LAU101	Language - I	C,d,h	I,III	6	0	0	6	40	60	100
18ENU101	English – I	A,f,i	IV	4	0	0	4	40	60	100
18CCU101	Financial Accounting	A,f,i	IV	6	2	0	6	40	60	100
18CCU102	Introduction to Information Technology	C,d,h	I,III	4	0	0	4	40	60	100
18AEC101	Business Communication	C,d,h	I,III	4	0	0	4	40	60	100
18CCU111	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**
SEMESTER – II										
18LAU201	Language – II	C,d,h	I,III	6	0	0	6	40	60	100
18ENU201	English – II	A,f,i	IV	4	0	0	4	40	60	100
18CCU201	Business Law	C,d,h	I,III	8	0	0	6	40	60	100
18CCU202	Business Mathematics and Statistics	A,f,i	IV	6	2	0	6	40	60	100
18AEC201	Environmental Studies	b,e,g	II	4	0	0	4	40	60	100
Semester Total				**28**	**2**	**0**	**26**	**200**	**300**	**500**
SEMESTER – III										
18ENU301	English – III	A,f,i	IV	8	0	0	6	40	60	100
18CCU301	Corporate Accounting	A,f,i	IV	6	2	0	6	40	60	100
18CCU302	Database Management System	b,e,g	II	4	0	0	4	40	60	100
18CCU303A	Auditing and Corporate Governance	b,e,g	II	4	0	0	3	40	60	100
18CCU303B	Computerised Accounting System	A,f,i	IV	2	0	0	2	40	60	100

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18CCU311A	Auditing and Corporate Governance (practical)	A,f,i	IV	0	0	2	1	40	60	100
18CCU311B	Computerised Accounting System (practical)	C,d,h	I,III	0	0	4	2	40	60	100
18CCU312	Database Management System (Practical)	b,e,g	II	0	0	4	2	40	60	100
Semester Total				22/20	2	6/8	22	240	360	600
SEMESTER – IV										
18ENU401	English – IV	A,f,i	IV	8	0	0	6	40	60	100
18CCU401	Cost Accounting	A,f,i	IV	6	2	0	6	40	60	100
18CCU402	Research Methodology	b,e,g	II	8	0	0	6	40	60	100
18CCU403A	Financial Analysis and Reporting	C,d,h	I,III	4	0	0	3	40	60	100
18CCU403B	HTML Programming	C,d,h	I,III	2	0	0	2	40	60	100
18CCU411A	Financial Analysis and Reporting (Practical)	b,e,g	II	0	0	2	1	40	60	100
18CCU411B	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
SEMESTER – V										
18CCU501A	Company Law	C,d,h	I,III	8	0	0	6	40	60	100
18CCU501B	Financial Management	A,f,i	IV	6	2	0	6	40	60	100
18CCU502A	Object Oriented Programming with C++	C,d,h	I,III	4	0	0	4	40	60	100
18CCU502B	Desktop Publishing	b,e,g	II	4	0	0	4	40	60	100
18CCU503A	Management Accounting	A,f,i	IV	5	1	0	4	40	60	100
18CCU503B	Advanced Accounting	C,d,h	I,III	5	1	0	4	40	60	100
18CCU504A	Business Economics	C,d,h	I,III	5	1	0	5	40	60	100

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18CCU504B	Management and Organization Behaviour	b,e,g	II	6	0	0	5	40	60	100
18CCU511A	Object Oriented Programming with C++ (Practical)	A,f,i	IV	0	0	4	2	40	60	100
18CCU511B	Desktop Publishing (Practical)	b,e,g	II	0	0	4	2	40	60	100
18CCU512A	Business Economics (Practical)	b,e,g	II	0	0	2	1	40	60	100
18CCU512B	Management and Organization Behaviour (Practical)	A,f,i	IV	0	0	2	1	40	60	100
Semester Total				23/20	¼	6	22	240	360	600
SEMESTER – VI										
18CCU601A	Taxation	b,e,g	II	6	2	0	6	40	60	100
18CCU601B	Investment Management	b,e,g	II	6	0	0	5	40	60	100
18CCU602A	Internet and Web designing	C,d,h	I,III	4	0	0	4	40	60	100
18CCU602B	Animation Techniques	C,d,h	I,III	4	0	0	4	40	60	100
18CCU603A	Cyber Laws	A,f,i	IV	4	0	0	3	40	60	100
18CCU603B	Management Information System	A,f,i	IV	4	0	0	3	40	60	100
18CCU611B	Investment Management (Practical)	b,e,g	II	0	0	2	1	40	60	100
18CCU612A	Internet and Web Design (Practical)	C,d,h	I,III	0	0	4	2	40	60	100
18CCU612B	Animation Techniques (Practical)	C,d,h	I,III	0	0	4	2	40	60	100
18CCU613A	Cyber Laws (Practical)	A,f,i	IV	0	0	2	1	40	60	100
18CCU613B	Management Information system (Practical)	A,f,i	IV	0	0	2	1	40	60	100
18CCU691	Project	b,e,g	II	8	0	0	6	40	60	100
ECA/NCC/NSS/Sports/General Interest etc										Good

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
Semester Total				22	2/0	6/8	22	240/ 280	360/ 420	600/ 700
Programme Total							140	1360/ 1400	2040/ 2100	3400/ 3500

Elective Courses

Skill Enhancement Elective Courses			
Elective	**Semester**	**Course code**	**Name of the course**
SEC – 1	III	18CCU303A	Auditing and Corporate Governance
		18CCU311A	Auditing and Corporate Governance (practical)
	III	18CCU303B	Computerised Accounting System
		18CCU311B	Computerised Accounting System (practical)
SEC – 2	IV	18CCU403A	Financial Analysis and Reporting
		18CCU411A	Financial Analysis and Reporting (Practical)
	IV	18CCU403B	HTML Programming
		18CCU411B	HTML Programming (Practical)
SEC – 3	V	18CCU503A	Management Accounting
	V	18CCU503B	Advanced Accounting
SEC – 4	VI	18CCU603A	Cyber Laws
		18CCU603B	Management Information System
	VI	18CCU613A	Cyber Laws (Practical)
		18CCU613B	Management Information System (Practical)

Discipline Specific Courses

Electives	**Semester**	**Course code**	**Name of the course**
DSE – 1	V	18CCU501A	Company Law
	V	18CCU501B	Financial Management
DSE – 2	V	18CCU502A	Object Oriented Programming with C++
		18CCU512A	Object Oriented Programming with C++ (Practical)
	V	18CCU502B	Desktop Publishing
		18CCU512B	Desktop Publishing (Practical)
DSE – 3	VI	18CCU601A	Taxation
	VI	18CCU601B	Investment Management
		18CCU611B	Investment Management (Practical)
DSE – 4	VI	18CCU602A	Internet and Web Designing
		18CCU612A	Internet and Web Designing (Practical)
	VI	18CCU602B	Animation Techniques
		18CCU612B	Animation Techniques (Practical)

Generic Elective Courses

Electives	Semester	Course code	Name of the course
GE – 1	V	18CCU504A	Business Economics
		18CCU512A	Business Economics (Practical)
		18CCU504B	Management and Organization Behaviour
		18CCU512B	Management and Organization Behaviour (Practical)
GE – 2	VI	18CCU691	Project

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	Program Outcomes								
	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.			√	√				√	
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 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 sustainable growth of profession and the community.			√		√		√		

BCOM (PA)
Bachelor of Commerce
(Professional Accounting)
CHOICE BASED CREDIT SYSTEM
(CBCS)

Curriculum

2018 – 2019

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

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FACULTY OF ARTS, SCIENCE AND HUMANITIES
UNDERGRADUATE (UG) PROGRAMMES
BCOM (BPS)DEGREE PROGRAMME
REGULAR PROGRAMME
REGULATIONS - 2018
CHOICE BASED CREDIT SYSTEM (CBCS)

The following regulations are effective from the academic year 2018-2019 and are applicable to candidate admitted to Undergraduate Degree (UG) programmes in the Faculty of Arts, Science, and Humanities, Karpagam Academy of Higher Education (KAHE) from the academic year 2018-2019 onwards.

1. **PROGRAMMES OFFERED, MODE OF STUDY AND ADMISSION REQUIREMENTS**

   1.1. **UGProgrammes Offered**

   A candidate may undergo a programme in any one of the undergraduate programme approved by the KAHE as given below.

S. No.	DEGREE	DISCIPLINE
1	B. Sc.	Biochemistry
2	B. Sc.	Biotechnology
3	B. Sc.	Computer Science
4	B.Sc.	Mathematics
5	B.Sc.	Physics
6	B. Sc.	Chemistry
7	B. Sc.	Microbiology
8	B. Sc.	Information Technology
9	B. Sc.	Computer Technology
10	BCA	Computer Application
11	B. Com.	Commerce
12	B.Com (CA)	Commerce with Computer Applications
13	B. Com. (PA)	Commerce with Professional Accounting
14	B. Com. (BPS)	Commerce with Business Process Services
15	B.B.A.	Business Administration

1.2 Mode of Study

Full-Time

Candidates admitted under '**Full-Time'** should be present in the KAHE during the complete working hours for curricular, co-curricular and extra-curricular activities assigned to them.

1.3 Eligibility for Admission

A candidate for admission to the first year of the UG Degree programme shall be required to have passed the Higher Secondary Examination (10 + 2) [Academic or Vocational] prescribed by the Government of Tamil Nadu Board or any similar examination of any other Board accepted by the KAHE as equivalent thereto.

2. DURATION OF THE PROGRAMMES

2.1. The minimum and maximum period for the completion of the UGProgrammes are given below:

	Min. No. of Semesters	Max. No. of Semesters
B.A, B.Sc., B.Com, B.Com (PA), B.Com (CA), B.Com (BPS), BCA, BBA	6	12

2.2. Each semester normally consists of 90 working days or 450 Instructional hours of study. Examination shall be conducted at the end of every semester for the respective courses

3. CREDITS

Credit means the weightage given to each course of study by the experts of the concerned Board of Studies. Total credits 140 as per UGC Guidelines for the UG programme (Three Years).

4. STRUCTURE OF THE PROGRAMME

4.1 Tamil or any one of the Indian / Foreign Languages *viz,* Malayalam, Hindi, French, Sanskrit as an additional course for Science Programme. Four credits are awarded for each course and the examinations will be conducted at the end of each semester.

For Arts programme, there are two additional courses (English III and IV) offered during the Second year - third and fourth semester. Six credits are awarded for each course, and the examinations will be conducted at the end of each semester.

4.2. Core Course, Discipline-Specific Elective, Generic Elective, SkillEnhancement Course, Project, Ability Enhancement Compulsory Course, self-study course.

a. **Core Course**

Core consists of theory and practical for Department domains for which examinations shall be conducted at the end of each semester. The students have to study 12 Core Courses compulsorily.

b.**Discipline Specific Electives**

There are six Discipline Specific Elective Courses (DSE) for Science Programme. DSE is offered in the fifth and sixth semesters of third year. The examination shall be conducted at

the end of each semester. Final year students (V and VI Semesters) will have to choose three elective courses in V semester and two elective courses in the VI Semester from the list of elective courses given in the curriculum, in addition to the project work.

There are four Discipline Specific Elective Courses for Arts Programme. DSE is offered in the fifth and sixth semesters of third year programme. The examination shall be conducted at the end of each semester. Final year students (V and VI Semesters) will have to choose two elective courses in V semester and two elective courses in the VI Semester from the list of elective courses given in the curriculum.

c. **Generic Elective**

An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

The students in the Final year Arts programme have to choose two Generic Electives- one each in the Fifth and Sixth Semester from the list of elective courses given in the curriculum.

Note: A particular elective course will be offered if at least one third of the class opt that course. If less, the elective selected may be studied as a self-study course.

d. **Skill Enhancement Courses**

Skill Enhancement Courses are offered in the third and fourth semesters of second year programme and in the fifth and sixth semesters of the third year programme. Second year students (III and IV Semesters) will have to choose one elective course each in both III and IV Semesters from the list of elective courses given in the curriculum. Similarly, final year students (V and VI Semesters) will have to choose one elective course each in both V and VI Semesters from the list of elective courses given in the curriculum. The examination shall be conducted at the end of each semester.

Note: A particular elective course will be offered if at least one third of the class opt that course. If less, the elective selected may be studied as a self-study course.

e. **Project Work**

The Project work shall during the fifth semester vacation for a duration of 60-90 days and Project Report shall be submitted at the end of the sixth semester. The project shall be an individual or group task**.** HoD of the department concerned shall assign a project supervisor who in turn shall monitor the project work of the student(s). A project/ dissertation work may be given *in lieu* of a discipline-specific, elective paper.

f. **Ability Enhancement Compulsory Course**
   Ability Enhancement Compulsory Course-1

The course (English for Science Programme / Business Communication for Arts Programme) shall be offered during the first semester for which examinations shall be conducted at the end of the semester.

Ability Enhancement Compulsory Course-2

Students shall study the course Environmental Studies in the second Semester for which examinations shall be conducted at the end of the semester.

g. **Online Course**

Student shall study at least one online course from SWAYAM / NPTEL / MOOC in any one of the first five semesters for which examination shall be conducted at the end of the course by the respective organizations. The student can register to the courses which are approved by the Department. The student shall produce a pass certificate from the respective organizations before the end of the fifth semester. The credit(s) earned by the students will be considered as additional credit(s) over and above the required credits earned from programme concerned.

h. **Extension Activities**

Every student is encouraged to participate in at least any one of the following activities:

- NSS
- NCC
- Sports / Mass drill
- YRC
- Club activities
- Other Co-curricular and Extracurricular activities

The student's performance shall be examined by the staff in-charge of Extension Activities along with the faculty tutor and the Head of the respective department on the following parameters.

- 75 % weightage for active participation in Extension Activities in / out of the KAHE.
- 25 % weightage for Exemplary Awards / Prizes.

Marks for Co-curricular and Extra-curricular shall be sent to the CoE before the commencement of the sixth End Semester Examinations. The mark sheet will carry the following **remarks** as per the following range of marks.

Marks Range	Description
80 – 100	Excellent
70 – 79	Very Good
60 – 69	Good
50 – 59	Satisfactory
<50	Poor

The above activities shall be conducted outside the regular working hours of the KAHE.

5. MEDIUM OF INSTRUCTION

The medium of instruction and examinations for the courses under Language I – Tamil / Hindi / Malayalam / French / Sanskrit shall be in the language concerned. For all other courses, the medium of instruction and examination shall be in English.

6. MAXIMUM MARKS

Each of the theory and practical courses shall carry a maximum of 100 marks. Out of which 40 marks is awarded for Continuous Internal Assessment (CIA) and 60 marks for End Semester Examinations (ESE).

Evaluation: Evaluation in the courses comprises two parts, one is the Continuous Internal Assessment (CIA) and the other one is the End Semester Examination (ESE).

7. REQUIREMENTS TO APPEAR FOR THE END SEMESTER EXAMINATION

a. Ideally, every student is expected to attend all classes and secure 100% attendance. However, in order to allow for certain unavoidable circumstances, the student is expected to attend at least 75% of the classes and the conduct of the candidate has been satisfactory during the course.

b. A candidate who has secured attendance between 65% and 74% (both included), due to medical reasons (Hospitalization / Accident / Specific Illness) or due to participation in University / District / State / National / International level sports or due to participation in Seminar / Conference / Workshop / Training Programme / Voluntary Service / Extension activities or similar programmes with prior permission from the Registrar shall be given exemption from prescribed attendance requirements and shall be permitted to appear for the examination on the recommendation of the Head of the Department concerned and Dean to condone the lack of attendance. The Head of the Department has to verify and certify the genuineness of the case before recommending to the Dean concerned. However, the candidate has to pay the prescribed condonation fee to the KAHE.

c. However, a candidate who has secured attendance less than 64% in the current semester due to any reason shall not be permitted to appear for the current semester examinations. But he/she will be permitted to appear for his/her supplementary examinations, if any and he/she has to re-do the same semester with the approval of the "Students' Affairs Committee" and Registrar.

8. a. FACULTY TUTOR

To help students in planning their courses of study and for general advice on the academic programme, the HoD shall allot a certain number of students to a faculty to whom they shall function as faculty tutor throughout their period of study. Faculty tutors shall advise the students and monitor their conduct of behavior and academics. Problems if any, they should be counseled periodically. The Faculty tutor is also responsible to inform the parents of their wards' progress. Faculty tutor shall display the cumulative attendance particulars of his / her ward students' periodically (once in 2 weeks) on the Notice Board to enable the students know their attendance status and satisfy the **clause 7** of this regulation.

b. **ONLINE COURSE COORDINATOR**

To help students in planning their online courses and for general advice on online courses, the HOD shall nominate a coordinator for the online courses. The Online course coordinator shall identify the courses which students can select for their programme from the available online courses offered by the different agencies periodically and inform the same to the students. Further, the coordinator shall advice the students regarding the online courses and monitors their course.

9. **CLASS COMMITTEE**

Every class shall have a class committee consisting of the faculty members of the various courses of the class concerned, student representatives (Minimum 2 boys and 2 girls of various capabilities and Maximum of 6 members) and the concerned HoD / senior faculty as Chairperson. The objective of the Class Committee Meeting is all about the teaching – learning process. Class Committee may be convened at least once in a month. The functions of the class committee include

- Analysing and solving problems experienced by students in the class room and in the laboratories.
- Analyzing the performance of the students of the class after each test and finding the ways and means to improve the performance.
- The class committee of a particular class of any department is normally constituted by the HoD / Chairperson of the class Committee. However, if the students of different departments are mixed in a class, the class committee is to be constituted by the respective Dean of the Faculty.
- The class committee shall be constituted within the first week of each semester.
- The HoD / Chairperson of the Class committee may convene the meeting of the class committee.
- The respective Dean of the Faculty may participate in any Class committee meeting.
- The Chairperson is required to prepare the minutes of every meeting, and submit the same to Dean concerned within two days after having convened the meeting. Serious issues if any shall be brought to the notice of the Registrar by the HoD / Chairperson.

10. **COURSE COMMITTEE FOR COMMON COURSES**

Each common theory course offered to more than one discipline or department shall have a "Course committee" comprising all the teachers handling the common course with one of them nominated as Course Coordinator. The nomination of the course coordinator shall be made by the respective Dean depending upon whether all the teachers handling the common course belong to a single

department or to various other departments. The 'course committee' shall meet in order to arrive at a common scheme of evaluation for the tests and shall ensure a uniform evaluation of the tests. If feasible, the course committee shall prepare a common question paper for the Internal Assessment test(s).

11. PROCEDURE FOR AWARDING MARKS FOR INTERNAL ASSESSMENT

11.1 **Attendance and assessment:** Every Faculty is required to maintain an **Attendance and Assessment Record (Log book)** which consists of attendance marked in each lecture / practical / project work class, the test marks and the record of class work (topic covered), separately for each course. This should be submitted to the HoD once in a fortnight for checking the syllabus coverage and the records of test marks and attendance. The HoD shall sign with date after due verification. The same should be submitted to respective Dean once in a month. After the completion of the semester the HoD should keep this record in safe custody for five years. Because records of attendance and assessment shall be submitted for Inspection as and when required by the KAHE / any other approved body.

11.2 **Continuous Internal Assessment (CIA)**: The performance of students in each course will be continuously assessed by the respective faculty as per the guidelines given below:

Theory Courses

S. No.	Category	Maximum Marks
1.	Assignment*	5
2.	Attendance	5
3	Seminar	5
4.	Test – I (1 ½ units- UNIT I and II)	8
5	Test – II (1 ½ units UNIT II and III)	8
6	Test III (2 units UNIT IV and V)	9
Continuous Internal Assessment : Total		40

* Two Assignments (Assignment I before Internal Test – I and assignment II before Internal Test – II).

Practical Courses

S. No.	Category	Maximum Marks
1.	Attendance	5
2.	Observation work	5
3.	Record work	5
4.	Model Examination	20
5.	*Viva – voce* [Comprehensive]*	5
Continuous Internal Assessment: Total		**40**

* Includes *Viva- voce* conducted during the model Exam practical.

Every practical Exercise / Experiment shall be evaluated based on the conduct of Exercise/ Experiment and records maintained.

11.3 Pattern of Test Question Paper

Portions for Internal Test – I   : First 1 ½ Units(UNIT I and II)

Portions for Internal Test – II   : Second 1 ½ Units (UNIT II and III)

Portions for Internal Test – III : Two units (UNIT IV and V)

Instruction	Remarks
Maximum Marks	50 marks
Duration	2 Hours
Part – A	Objective type (20x1=20)
Part – B	Short Answer Type (3 x 2 = 6)
Part - C	3 Eight mark questions 'either – or' choice (3 x 8 = 24 Marks)

11.4 Attendance

Marks Distribution for Attendance

S. No.	Attendance (%)	Maximum Marks
1	91 and above	5.0
2	81 - 90	4.0
3	76 - 80	3.0
4	Less than 75	0

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S. No.	Attendance (%)	Maximum Marks
1	91 and above	5.0
2	86 - 90	4.0
3	81 - 85	3.0
4	75 - 80	2.0
5	Less than 75	0

12. KAHE EXAMINATIONS

12.1 End Semester Examination (ESE): End Semester Examination will be held at the end of each semester for each course. The question paper is for maximum 60 marks.

Pattern of ESE Question Paper:

Instruction	Remarks
Maximum Marks	60 marks for ESE.
Duration	3 hours (½ Hr for Part – A Online & 2 ½ Hours for Part – B and C
Part - A	20 Questions (20 x 1 = 20 Marks) Question No. 1 to 20 Online Multiple Choice Questions
Part- B	5 Questions (5 x 2 = 10 Marks) Covering all the five units of the syllabus Question No. 21 to 25
Part- C	5 six mark Questions (5 x 6 = 30 Marks.) Question No. 26 to 30 will be 'either-or' type, covering all five units of the syllabus; i.e., Question No. 26: UNIT- I, either 26 (a) or 26 (b), Question No. 27: UNIT - II, either 27 (a) or 27 (b), Question No. 28: UNIT - III, either 28 (a) or 28 (b), Question No. 29: UNIT - IV, either 29 (a) or 29 (b), Question No. 30: UNIT - V, either 30 (a) or 30 (b)

12.2 **Practical:** There shall be combined valuation. The pattern of distribution of marks shall be as given below.

S. No.	Category	Maximum Marks
1	Experiments	40 Marks
2	Record	10 Marks
3	*Viva-voce*	10 Marks
4	**Total**	**60 Marks**

Record Notebooks for Practical Examination

Candidate taking the practical examination should submit Bonafide record notebook prescribed for the practical examination; Failing which the candidate will not be permitted to take the practical examination.

In case of failures in Practical Examination, the marks awarded for the record at the time of first appearance of the Practical Examination should remain the same at the subsequent appearance by the candidate.

12.3. **Evaluation of Project Work**

    12.3.1   The project work shall carry a maximum of 100 marks.   (CIA - 40 and ESE – 60*)

*Combined valuation of Internal and External Examiners.

12.3.2 The project report prepared according to approved guidelines and duly signed by the supervisor(s) shall be submitted to HoD.

12.3.3 The evaluation of the project will be based on the project report submitted and a *viva-voce* Examination by a team consisting of the supervisor, who will be the Internal Examiner and an External Examiner who shall be appointed by the KAHE. In case the guide is not available, the HoD shall act as an Internal Examiner for the same.

12.3.4 If a candidate fails to submit the project report on or before the specified date given by controller of examinations office, candidate is deemed to have failed in the Project Work and shall re-enroll for the same in a subsequent semester.
If a candidate fails in the respective viva-voce examinations he/she has to resubmit the Project Report within 30 days from the date of declaration of the results. For this purpose, the same Internal and External examiner shall evaluate the resubmitted report.

12.3.5 Copy of the approved project report after the successful completion of *viva-voce* examinations shall be kept in the KAHE library.

13. PASSING REQUIREMENTS

13.1 Passing minimum: There is a passing minimum for CIA and it is 20 marks out of 40 marks. The passing minimum in ESE is 30 marks out of 60 marks. The overall passing in each course is 50 out of 100 marks (Sum of the marks in CIA and ESE examination).

13.2 If a candidate fails to secure a pass in a particular course (either CIA or ESE or Both) as per clause 13.1, it is mandatory that the candidate has to register and reappear for the examination in that course during the subsequent semester when examination is conducted for the same till a pass is secured both in CIA and ESE(vide Clause 2.1).

13.3 Candidate failed in CIA will be permitted to improve CIA marks in the subsequent semesters by writing tests and by submitting Assignments.

13.4 CIA marks (if it is pass) obtained by the candidate in the first appearance shall be retained by the Office of the Controller of Examinations and considered valid for all subsequent attempts till the candidate secures a pass in ESE

13.5 Candidate who is absent in ESE in a Course / Practical / Project Work after having enrolled for the same shall be considered to have **failed** in that examination.

14. IMPROVEMENT OF MARKS IN THE COURSES ALREADY PASSED

Candidates desirous of improving the marks secured in a passed course in their first attempt shall reappear once (**only in ESE**) in the subsequent semester. **The improved marks shall be considered for classification but not for ranking.** If there is no improvement there shall be no change in the marks awarded earlier.

15. AWARD OF LETTER GRADES

All assessments of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, letter grades, each carrying certain number of points, will be awarded as per the range of total marks (out of 100) obtained by the candidate in each course as detailed below:

Letter grade	Marks Range	Grade Point	Description
O	91 - 100	10	OUTSTANDING
A+	81- 90	9	EXCELLENT
A	71-80	8	VERY GOOD
B+	66- 70	7	GOOD
B	61 – 65	6	ABOVE AVERAGE
C	55 - 60	5	AVERAGE
D	50 - 54	4	PASS
RA	<50	-	REAPEARANCE
AAA	-	-	ABSENT

16. GRADE SHEET

After the declaration of the results, Grade Sheets will be issued to each student which will contain the following details:

i. The list of courses enrolled during the semester and the grade scored.
ii. The Grade Point Average (**GPA**) for the semester and
iii. The Cumulative Grade Point Average (**CGPA**) of all courses enrolled from first semester onwards.
iv. Remark on Extension Activities (only in the 6th Semester Grade Sheet)

GPA of a Semester and CGPA of a programme will be calculated as follows.

$$GPA\ of\ a\ Semester = \frac{sum\ of\ the\ product\ of\ the\ GP\ by\ the\ corresponding\ credits\ of\ the\ courses\ off\ red\ in\ that\ semester}{sum\ of\ the\ credits\ of\ the\ courses\ of\ that\ semester}$$

i.e. **GPA** of a Semester = $\dfrac{\sum_i C_i GP_i}{\sum_i C_i}$

$$CGPA\ of\ the\ entire\ programme = \frac{sum\ of\ the\ product\ of\ the\ GPs\ by\ the\ corresponding\ credits\ of\ the\ courses\ offered\ for\ the\ entire\ programe}{sum\ of\ the\ credits\ of\ the\ courses\ of\ the\ entire\ programme}$$

i.e. **CGPA** of the entire programme = $\dfrac{\sum_n \sum_i C_{ni} GP_{ni}}{\sum_n \sum_i C_{ni}}$

where,
Ci is the credit fixed for the course 'i' in any semester
GPi is the grade point obtained for the course 'i' in any semester
'n' refers to the Semester in which such courses are credited.
Note: RA grade will be excluded for calculating **GPA** and **CGPA**.

17. REVALUATION

A candidate can apply for revaluation and retotalling of his / her semester examination answer script (**theory courses only**), within 2 weeks from the declaration of results, on payment of a prescribed fee. For the same, the prescribed application has to be sent to the Controller of Examinations through the HoD. **A candidate can apply for revaluation of answer scripts not exceeding 5 courses at a time.** The Controller of Examination will arrange for the revaluation and the results will be intimated to the candidate through the concerned HoD**.** Revaluation is not permitted for supplementary theory courses.

18. TRANSPARENCY AND GRIEVANCE COMMITTEE

Revaluation and Retotalling is allowed on representation (clause 17). Student may get the Xerox copy of the answer script on payment of prescribed fee, if he / she wishes. The student may represent the grievance, if any, to the Grievance Committee, which consists of Dean of the Faculty, (if Dean is HoD, the Dean of another Faculty nominated by the KAHE), HoD of the Department concerned, the faculty of the course and Dean from other discipline nominated by the KAHE and the CoE. If the Committee feels that the grievance is genuine, the script may be sent for external valuation; the marks awarded by the External examiner will be final. The student has to pay the prescribed fee for the same.

19. ELIGIBILITY FOR THE AWARD OF THE DEGREE

A student shall be declared to be eligible for the conferment of the Degree if he / she has

- Successfully completed all the components prescribed under Parts I to Part IV in the CBCS pattern to earn the minimum required credits as specified in the curriculum corresponding to his/ her programme within the stipulated period vide class 2.1.
- No disciplinary action is pending against him / her.
- The award of the degree must be approved by the Board of Management.

20. CLASSIFICATION OF THE DEGREE AWARDED

20.1 Candidate who qualifies for the award of the Degree (vide clause 19) having passed the examination in all the courses in his / her first appearance, within the specified minimum number of semesters and securing a **CGPA not less than 8** shall be declared to have passed the examination in **First Class with Distinction.**

20.2 Candidate who qualifies for the award of the Degree (vide   clause 19) having passed the examination in all the courses within the specified maximum number of semesters (vide clause 2.1), securing a **CGPA not less than 6.5** shall be declared to have passed the examination in **First Class**.

20.3 All other candidates (not covered in clauses 20.1 and 20.2) who qualify for the award of the degree (vide Clause 19) shall be declared to have passed the examination in **Second Class**.

21. PROVISION FOR WITHDRAWAL FROM END-SEMESTER EXAMINATION

21.1 Candidate, may for valid reasons and on prior application, be granted permission to withdraw from appearing for the examination of any one course or consecutive examinations of more than one course in a semester examination.

21.2 Such withdrawal shall be permitted only once during the entire period of study of the degree programme.

21.3 Withdrawal of application is valid only if it is made within 10 days prior to the commencement of the examination in that course or courses and recommended by the HoD / Dean concerned and approved by the Registrar.

21.3.1 Notwithstanding the requirement of mandatory TEN days' notice, applications for withdrawal for special cases under extraordinary conditions will be considered on the merit of the case.

21.4 Withdrawal shall not be construed as an appearance for the eligibility of a candidate for First Class with Distinction. This provision is not applicable to those who seek withdrawal during IV semester.

21.5 Withdrawal from the End semester examination is **NOT** applicable to arrears courses of previous semesters.

21.6 The candidate shall reappear for the withdrawn courses during the examination conducted in the subsequent semester.

22. PROVISION FOR AUTHORISED BREAK OF STUDY

22.1 **Break of Study shall be granted only once for valid reasons for a maximum of one year during the entire period of study of the degree programme.** However, in extraordinary situation the candidate may apply for additional break of study not exceeding another one year by paying prescribed fee for break of study. If a candidate intends to temporarily discontinue the programme in the middle of the semester for valid reasons, and to rejoin the programme in a subsequent year, permission may be granted based on the merits of the case provided he / she applies to the Registrar, but not later than the last date for registering for the end semester examination of the semester in question, through the Head of the Department stating the reasons therefore and the probable date of rejoining the programme.

22.2 The candidate thus permitted to rejoin the Programme after the break shall be governed by the Curriculum and Regulations in force at the time of rejoining. Such candidates may have to do additional courses as per the Regulations in force at that period of time.

22.3 The authorized break of study (for a maximum of one year) will not be counted for the duration specified for passing all the courses for the purpose of classification. (Vide Clause 20). However, additional break of study granted will be counted for the purpose of classification.

22.4 The total period for completion of the Programme reckoned from, the commencement of the first semester to which the candidate was admitted shall not exceed the maximum period specified in clause 2.1 irrespective of the period of break of study (vide clause 23.3) in order that he/she may be eligible for the award of the degree.

22.5 If any student is detained for want of requisite attendance, progress and good conduct, the period spent in that semester shall not be considered as permitted 'Break of Study' or 'Withdrawal' (Clause 22 and 23) is not applicable for this case.

23. RANKING

A candidate who qualifies for the UG Degree programme passing all the Examinations in the first attempt, within the minimum period prescribed for the programme of study from Semester I through Semester VI to the programme shall be eligible for ranking. Such ranking will be confined to 10% of the total number of candidates qualified in that particular programme of study subject to a maximum of 10 ranks.

24. SUPPLEMENTARY EXAMINATION

Supplementary Examination will be conducted only for the final semester students within ten days from the date of publication of results for students who have failed in one theory course only. Such students shall apply with prescribed fee to the Controller of Examinations within the stipulated time.

25. DISCIPLINE

25.1. Every student is required to observe disciplined and decorous behavior both inside and outside the campus and not to indulge in any activity which will tend to bring down the prestige of the KAHE. The erring students will be referred to the disciplinary committee constituted by the KAHE, to enquire into acts of indiscipline and recommend the KAHE about the disciplinary action to be taken.

25.2. If a student indulges in malpractice in any of the KAHE / Internal Examination, he / she shall be liable for punitive action as prescribed by the KAHE from time to time.

26. REVISION OF REGULATION AND CURRICULUM

The KAHE may from time to time revise, amend or change the Regulations, Scheme of Examinations and syllabi if found necessary.

DEPARTMENT OF COMMERCE
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.COM.(PA)
(2018–2019 Batch and onwards)

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER - I										
18LAU101	Language - I	I, II, III	a, e	6	0	0	6	40	60	100
18ENU101	English – I	I, II, III	a, e	4	0	0	4	40	60	100
18PAU101	Financial Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
18PAU102	Business Law	I,III,IV	a,c,d,e,h,i	8	0	0	6	40	60	100
18AEC101	Business Communication	I, II, III	a, e, g, f	4	0	0	4	40	60	100
	Semester Total			28	2	0	26	200	300	500
SEMESTER – II										
18LAU201	Language – II	I, II, III	a, e	6	0	0	6	40	60	100
18ENU201	English – II	I, II, III	a, e	4	0	0	4	40	60	100
18PAU201	Corporate Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
18PAU202	Business Mathematics and Statistics	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
18AEC201	Environmental Studies	I,III, IV	a, e,h, i	4	0	0	4	40	60	100
	Semester Total			26	4	0	26	200	300	500
SEMESTER – III										
18ENU301	English – III	I, II, III	a, e	4	0	4	6	40	60	100
18PAU301	Cost Accounting	I, II, III	a, c, e, d, h	6	2	0	6	40	60	100
18PAU302	Income Tax Law and Practice	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
18PAU303A	Auditing and Corporate Governance	I, II, III, IV	a, c, d,e, h,i	4	0	0	3	40	60	100
18PAU303B	Computerised Accounting System	I, II, III, IV	a, e, h,i	2	0	0	2	40	60	100
18PAU311A	Auditing and Corporate Governance (Practical)	I, II, III, IV	a, c, d,e, f, g, h,i	0	0	2	1	40	60	100
18PAU311B	Computerised Accounting System (practical)	I, II, III, IV	a, b, c, d,e, h,i	0	0	4	2	40	60	100

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
Semester Total				20/18	4	6/8	22	200	300	500
SEMESTER – IV										
18ENU401	English – IV	I, II, III	a, e	4	0	4	6	40	60	100
18PAU401	Research Methodology	I, II, III, IV	a, c, d,e,h	6	0	0	5	40	60	100
18PAU402	Indirect Taxation	I, II, III, IV	a, c, d,e, h,i	6	0	0	5	40	60	100
18PAU403A	Financial Analysis and Reporting	I, II, III, IV	a, c, d,e, h,i	4	0	0	3	40	60	100
18PAU403B	Excel for Business	I, II, III	a, c, d,e,h	2	0	0	2	40	60	100
18PAU411	Research Methodology (Practical)	I, II, III, IV	a, c, d,e,f, g,h,i	0	0	2	1	40	60	100
18PAU412	Indirect Taxation (Practical)	I, II, III, IV	a, c, d,e, h,i	0	0	2	1	40	60	100
18PAU413A	Financial Analysis and Reporting (Practical)	I, II, III, IV	a, c, d,e, h,i	0	0	2	1	40	60	100
18PAU413B	Excel for Business (practical)	I, II, III	a, b, c, d,e,h	0	0	4	2	40	60	100
Semester Total				20/18	0	10/12	22	280	420	700
SEMESTER V										
18PAU501A	Company Law	I, II, III, IV	a, c, d,e,f,g, h,i	8	0	0	6	40	60	100
18PAU501B	Financial Management	I, II, III	a, c, d, e, f,g,h	6	2	0	6	40	60	100
18PAU502A	Management Accounting	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
18PAU502B	Advanced Accounting	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
18PAU503A	Marketing Management	I, II, III	a, e,h	4	0	0	3	40	60	100
18PAU503B	Investment Management	I, II, III	a, e, h	4	0	0	3	40	60	100
18PAU504A	Business Economics	I, II, III	a, c,d, e,h	6	0	0	5	40	60	100
18PAU504B	Management and Organization Behaviour	I, II, III	a, c,d, e,h	6	0	0	5	40	60	100
18PAU511A	Marketing Management (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
18PAU511B	Investment Management (Practical)	I, II, III	a, c, d,e, h	0	0	2	1	40	60	100
18PAU512A	Business Economics (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
18PAU512B	Management and Organization Behaviour (Practical)	I, II, III	a, c, d,e,f,g, h	0	0	2	1	40	60	100
Semester Total				24/22	2/4	4	22	240	360	600
SEMESTER – VI										
18PAU601A	Banking Law and Practice	I, II, III, IV	a,e,h,i	6	0	0	5	40	60	100
18PAU601B	Insurance Law and Practice	I, II, III, IV	a,e,h,i	6	0	0	5	40	60	100
18PAU602A	Entrepreneurship	I, II, III	a,e,h	4	0	0	3	40	60	100
18PAU602B	Personal Selling and Salesmanship	I, II, III	a,e,h	4	0	0	3	40	60	100
18PAU603A	Information Systems Control and Audit	I, II, III, IV	a,e,h,i	6	0	0	5	40	60	100
18PAU603B	Strategic Management	I, II, III	a,c,d e,h	6	0	0	5	40	60	100
18PAU611A	Banking Law and Practice (Practical)	I, II, III, IV	a,c,d,e,h,i	0	0	2	1	40	60	100
18PAU611B	Insurance Law and Practice (Practical)	I, II, III, IV	a,c,d,e,,h,i	0	0	2	1	40	60	100
18PAU612A	Entrepreneurship (practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100
18PAU612B	Personal Selling and Salesmanship (practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100
18PAU613A	Information Systems Control and Audit (Practical)	I, II, III, IV	a,c,d,e,h,i	0	0	2	1	40	60	100
18PAU613B	Strategic Management (Practical)	I, II, III	a, c, d,e,f,g,h	0	0	2	1	40	60	100
18PAU691	Project	I, II, III	a, b, c, d,e,f,g,h	8	0	0	6	40	60	100
ECA/NCC/NSS/Sports/General Interest etc										Good
Semester Total				24	0	6	22	280	420	700
Programme Total							140	1400	2100	3500

ABILITY ENHANCEMENT COURSES		
Semester	Course code	Name of the course
I	18ENU101	English – I
I	18LAU101	Language - I
I	18AEC101	Business Communication
II	18ENU201	English – II
II	18LAU201	Language – II
II	18AEC201	Environmental Studies
III	18ENU301	English – III
IV	18ENU401	English – IV

CORE COURSES		
Semester	Course code	Name of the course
I	18PAU101	Financial Accounting
I	18PAU102	Business Law
II	18PAU201	Corporate Accounting
II	18PAU202	Business Mathematics and Statistics
III	18PAU301	Cost Accounting
III	18PAU302	Income Tax Law and Practice
IV	18PAU401	Research Methodology
	18PAU411	Research Methodology (Practical)
IV	18PAU402	Indirect Taxation
	18PAU412	Indirect Taxation (Practical)

SKILL ENHANCEMENT COURSES		
Semester	**Course code**	**Name of the course**
III	18PAU303A	Auditing and Corporate Governance
	18PAU311A	Auditing and Corporate Governance (practical)
III	18PAU303B	Computerised Accounting System
	18PAU311B	Computerised Accounting System (practical)
IV	18PAU403A	Financial Analysis and Reporting
	18PAU413A	Financial Analysis and Reporting (Practical)
IV	18PAU403B	Excel for Business
	18PAU413B	Excel for Business (Practical)
V	18PAU503A	Marketing Management
	18PAU511A	Marketing Management (Practical)
V	18PAU503B	Investment Management
	18PAU511B	Investment Management (Practical)
VI	18PAU602A	Entrepreneurship
	18PAU612A	Entrepreneurship (practical)
VI	18PAU602B	Personal Selling and Salesmanship
	18PAU612B	Personal Selling and Salesmanship (practical)

DISCIPLINE SPECIFIC ELECTIVES		
Semester	**Course code**	**Name of the course**
V	18PAU501A	Company Law
	18PAU501B	Financial Management
	18PAU502A	Management Accounting
	18PAU502B	Advanced Accounting
VI	18PAU601A	Banking Law and Practice
	18PAU611A	Banking Law and Practice (Practical)
	18PAU601B	Insurance Law and Practice
	18PAU611B	Insurance Law and Practice (Practical)
	18PAU691	Project

GENERIC ELECTIVE		
Semester	**Course code**	**Name of the course**
V	18PAU504A	Business Economics
	18PAU512A	Business Economics (Practical)
	18PAU504B	Management and Organization Behaviour
	18PAU512B	Management and Organization Behaviour (Practical)
VI	18PAU603A	Information Systems Control and Audit
	18PAU613A	Information Systems Control and Audit (Practical)
	18PAU603B	Strategic Management
	18PAU613B	Strategic Management (Practical)

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 courses to 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 citizens contributing to the sustainable growth of profession and the community.

V.

Program Educational Objectives	Program Outcomes								
	a	b	c	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.	√	√	√	√					
Graduates will obtain and demonstrate skills pertaining to professional courses to perform effectively in studies, jobs and entrepreneurial ventures.		√	√	√	√	√	√	√	√
Graduates will develop a lifelong learning by applying the gained knowledge and skills in Professional practice and research.	√	√	√	√	√	√		√	
Graduates will demonstrate high standard of ethical conduct and become socially responsible citizens contributing to the sustainable growth of profession and the community.				√	√	√	√	√	√

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 2018 – 2019 Batch onwards)

Scheme of Examination

Course Code	Name of the Course	Objectives and Outcomes PEOs	Pos	Instruction Hours / Week L	T	P	Credits	Maximum Marks CIA	ESE	Total
								40	60	100
Semester 1										
18CMP101	Corporate Finance	I,II	a,e,	4	-	-	4	40	60	100
18CMP102	Managerial Economics	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP103	Operations Research	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP104	Advanced Corporate Accounting	I,II, IV	a,e,b,g,h ,i	4	-	-	4	40	60	100
18CMP105A	Financial Markets and Institutions	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP105B	Marketing Management	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP105C	Human Resource Development	I,II	a,e,	4	-	-	4	40	60	100
18CMP106	Organizational Behavior	I,II	a,e,	-	-	4	2	40	60	100
18CMP111	Computer Application in Business (Practical)	I, II, III	a,e,c,d,f	-	-	4	2	40	60	100
	Journal Paper Analysis & Presentation	III	c,d,f	2	-	-	-	-	-	-
				22	-	8	24	280	420	700
Semester II										
18CMP201	Applied Cost Accounting	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP202	Retail Management	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP203	Direct Taxation	III	c,d,f	4	-	-	4	40	60	100
18CMP204	Insurance and Risk Management	I,II	a,e,	4	-	-	4	40	60	100
18CMP205A	Advertisement and Sales Promotion	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP205B	Security Analysis & Portfolio Management	III	c,d,f	4	-	-	4	40	60	100
18CMP205C	Strategic Human Resource Management	I,II	a,e,	4	-	-	4	40	60	100
18CMP206	Human Resource Management	I,II	a,e,	-	-	4	2	40	60	100
18CMP211	Tally (Practical)	I, II, III	a,e, c,d,f	-	-	4	2	40	60	100
	Journal Paper Analysis &	III	c,d,f	2	-	-	-			

	Presentation									
				22	**0**	**8**	**24**	**280**	**420**	**700**

	Semester III									
18CMP301	Management Accounting	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP302	Business Research Methods and Techniques	III	c,d,f	4	-	-	4	40	60	100
18CMP303	Indirect Taxation	III	c,d,f	4	-	-	4	40	60	100
18CMP304	Business Environment	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP305A	International Financial Management	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP305B	Consumer Behavior	IV	b,g,h,i	4	-	-	4	40	60	100
18CMP305C	Labour Legislation	I, II, III	a,e,c,d,f	4	-	-	4	40	60	100
18CMP306	Financial Services	I, II, III	a,e,c,d,f	-	-	4	2	40	60	100
18CMP311	SPSS (Practical)	I, II, III	a,e,c,d,f	-	-	4	2	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f	2			-	-	-	-
				22	**0**	**8**	**24**	**280**	**420**	**700**
	Semester IV									
18CMP401	Corporate Administration and Secretarial Practice	IV	b,g,h,i	4	0	0	4	40	60	100
18CMP402	Entrepreneurship and Small Business Management	IV	b,g,h,i	3	0	0	3	40	60	100
18CMP491	Project and Viva Voce	III	c,d,f	0	0	23	8	80	120	200
				7	**0**	**23**	**15**	**160**	**240**	**400**
							87	**1000**	**1500**	**2500**

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 at large.

i) Postgraduates will acquire managerial positions or take up entrepreneurial ventures by applying the skills and knowledge gained.

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	Program Outcomes								
	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.		✓					✓	✓	✓

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 2018 – 2020 Batch onwards)
Scheme of Examination

Course Code	Name of the Course	Objectives and Outcomes PEOs	Objectives and Outcomes Pos	Instruction Hours / Week L	Instruction Hours / Week T	Instruction Hours / Week P	Credits	Maximum Marks CIA	Maximum Marks ESE	Maximum Marks Total
								40	60	100
Semester 1										
18CCP101	Managerial Economics	IV	b,g,h	3	1	0	4	40	60	100
18CCP102	Advanced Corporate Accounting	I,II, IV	a,e, b,g, h	3	1	0	4	40	60	100
18CCP103	Operations Research	IV	b,g,h	3	1	0	4	40	60	100
18CCP104	Relational Database Management System	I, II, III	a,e c,d,f,i,j	4	0	0	4	40	60	100
18CCP105A	Financial Markets and Institutions	IV	b,g,h	4	0	0	4	40	60	100
18CCP105B	Organizational Behavior	I,II	a,e	4	0	0	4	40	60	100
18CCP105C	Retail Management	IV	b,g,h	4	0	0	4	40	60	100
18CCP111	Relational Database Management System (Practical)	I, II, III	a,e c,d,f,i,j	0	0	4	2	40	60	100
18CCP112	Tally (Practical)	I, II, III	a,e c,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
Semester II										
18CCP201	Corporate Finance	I,II	a,e	3	1	0	4	40	60	100
18CCP202	Data Mining and Data Warehousing	I, II, III	a,e c,d,f,i,j	4	0	0	4	40	60	100
18CCP203	Direct Taxation	III	c,d,f,i,j	3	1	0	4	40	60	100
18CCP204	JAVA Programming	I, II, III	a,e c,d,f,i,j	4	0	0	4	40	60	100
18CCP205A	Security Analysis and Portfolio Management	III	c,d,f,i,j	4	0	0	4	40	60	100
18CCP205B	Investment Banking and Financial Services	I,II, IV	a,e, b,g, h	4	0	0	4	40	60	100
18CCP205C	Consumer Behavior	IV	b,g,h	4	0	0	4	40	60	100
18CCP211	JAVA Programming (Practical)	I, II, III	a,e c,d,f,i,j	0	0	4	2	40	60	100
18CCP212	Advanced Excel for Business (Practical)	I, II, III	a,e c,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
				20	**2**	**8**	**24**	**280**	**420**	**700**

Semester III

18CCP301	Software Models and Engineering	I,II	a,e	4	0	0	4	40	60	100
18CCP302	Business Research Methods and Techniques	III	c,d,f,i,j	3	1	0	4	40	60	100
18CCP303	Indirect Taxation	III	c,d,f,i,j	3	1	0	4	40	60	100
18CCP304	VB. Net	I, II, III	a,e c,d,f,i,j	4	0	0	4	40	60	100
18CCP305A	Mergers, Acquisitions and Corporate Restructuring	I,II, IV	a,e, b,g, h	4	0	0	4	40	60	100
18CCP305B	Business Valuation	I,II, IV	a,e, b,g, h	4	0	0	4	40	60	100
18CCP305C	Accounting for Decision Making	IV	b,g,h	3	1	0	4	40	60	100
18CCP311	VB.Net (Practical)	I, II, III	a,e c,d,f,i,j	0	0	4	2	40	60	100
18CCP312	SPSS (Practical)	I, II, III	a,e c,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**

Semester IV

18CCP401	Digital Marketing	IV	b,g,h	4	0	0	4	40	60	100
18CCP402	Entrepreneurial Development	IV	b,g,h	4	0	0	4	40	60	100
18CCP411	Digital Marketing (Practical)	IV	b,g,h	0	0	4	2	40	60	100
18CCP491	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 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	Program Outcomes									
	a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**
Postgraduates will gain advanced knowledge in the domain of commerce, management and finance	✓				✓					
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.	✓				✓					
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.		✓					✓	✓		

BACHELOR OF COMPUTER APPLICATIONS (BCA)

CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum
(2018 – 2021)

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.

l) 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

MAPPING of PEOs and POs

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

DEPARTMENT OF COMPUTER APPLICATIONS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – Bachelor of Computer Applications (BCA)
(2018–2019 Batch and onwards)

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER - I										
18LSU101	Language – I	V	d,e,f	04	-	-	4	40	60	100
18CAU101	Programming Fundamentals using C / C++	I	a,b,c,h	04	-	-	4	40	60	100
18CAU102	Computer System Architecture	I	a,b,g,k	04	-	-	4	40	60	100
18CAU103	Computer Fundamentals	III	a,b,c,h	04	-	-	4	40	60	100
18CAU111	Programming Fundamentals using C / C++ -Practical	I	a,b,c,,i,j	-	-	04	2	40	60	100
18CAU112	Computer System Architecture - Practical	I	a,b,g,k,i,j	-	-	03	2	40	60	100
18CAU113	Computer Fundamentals - Practical	III	a,b,c,h,i,j	-	-	03	2	40	60	100
18AEC101	Environmental Studies	IV	d,e	04	-	-	4	40	60	100
	Semester Total			**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER – II										
18LSU201	Language – II	V	d,e,f	04	-	-	4	40	60	100
18ENU201	English	II	d,e,f	04	-	-	4	40	60	100
18CAU201	Programming in JAVA	I	a,b,c,d	04	-	-	4	40	60	100
18CAU202	Discrete Structures	I,III	a,b	04	-	-	4	40	60	100
18CAU203	Computer Networks and Internet Technologies	IV,V	e,i,g,k	04	-	-	4	40	60	100
18CAU211	Programming in JAVA - Practical	I	a,c,h,i,j	-	-	04	2	40	60	100
18CAU212	Discrete Structures - Practical	I,III	a,b,i,j	-	-	03	2	40	60	100
18CAU213	Computer Networks and Internet Technologies Practical	IV	c,i,g,k,j	-	-	03	2	40	60	100
	Semester Total			**20**	**-**	**10**	**26**	**320**	**480**	**800**

SEMESTER – III

18CAU301	Data Structures	I	a,b,c	04	-	-	4	40	60	100
18CAU302	Operating Systems	I	a,b,c	04	-	-	4	40	60	100
18CAU303	Advanced Networking	I, V	a,b,c	04	-	-	4	40	60	100
18CAU304A / 18CAU304B	Android Programming / Struts Framework	I	g,k,i	03	-	-	3	40	60	100
18CAU311	Data Structures - Practical	I	a,b,c,i,j	-	-	04	2	40	60	100
18CAU312	Operating Systems - Practical	I	a,b,c,i,j	-	-	04	2	40	60	100
18CAU313	Advanced Networking - Practical	I, V	a,b,c,i,j	-	-	04	2	40	60	100
18CAU314A / 18CAU314B	Android Programming - Practical / Struts Framework- Practical	I	g,i,j,k	-	-	03	1	40	60	100
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**

SEMESTER – IV

18CAU401	Relational Database Management Systems	I	f,g,k	04	-	-	4	40	60	100
18CAU402	Software Engineering	I,II	a,b,l,n	04	-	-	4	40	60	100
18CAU403	Web Programming	I	c.d,l,n	04	-	-	4	40	60	100
18CAU404A / 18CAU404B	R Programming / Open Source Technologies	I	a,b,g.i	03	-	-	3	40	60	100
18CAU411	Relational Database Management Systems- Practical	I	b,c,g,,k,i,j	-	-	04	2	40	60	100
18CAU412	Software Engineering - Practical	I,II	b,l,n,i,j	-	-	04	2	40	60	100
18CAU413	Web Programming - Practical	I,II	b,l,n,i,j	-	-	04	2	40	60	100
18CAU414A / 18CAU414B	R Programming - Practical / Open Source Technologies - Practical	I,II	a,b,g,i,j	-	-	03	1	40	60	100
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**

SEMESTER – V

18CAU501A / 18CAU501B	Artificial Intelligence/ Software Testing	I	a,b,e,g.i,m	04	-	-	4	40	60	100
18CAU502A / 18CAU502B	Computer Graphics / Information Security and Cyber Laws	I, V	a,b,h,g,k	04	-	-	4	40	60	100
18CAU503A / 18CAU503B	Data Mining / Programming in Python	I,II	a,b,h,g,k	04	-	-	4	40	60	100
18CAU504A / 18CAU504B	Digital Image Processing / Mongo DB	I	a,b,h	03	-	-	3	40	60	100

Course Code	Name of the Course			L	T	P	C	CIA	ESE	Total
18CAU511A / 18CAU511B	Artificial Intelligence- Practical / Software Testing - Practical	I	a,b,e, g.i,m	-	-	04	2	40	60	100
18CAU512A / 18CAU512B	Computer Graphics- Practical / Information Security and Cyber Laws- Practical	I, V	g,k,i,j	-	-	04	2	40	60	100
18CAU513A / 18CAU513B	Data Mining - Practical / Programming in Python - Practical	I,II	g,k,i,j	-	-	04	2	40	60	100
18CAU514A / 18CAU514B	Digital Image Processing - Practical / Mongo DB - Practical	I	a,b,h, i,j	-	-	03	1	40	60	100
	Semester Total			15	-	15	22	320	480	800
	SEMESTER – VI									
18CAU601A / 18CAU601B	PHP Programming / Unix / Linux Programming	I	b,g,k	04	-	-	4	40	60	100
18CAU602A / 18CAU602B	Database Administration / Cloud Computing	I,II	b,g,k, i	04	-	-	4	40	60	100
18CAU603A / 18CAU603B	Big Data Analytics / System Programming	I	a,b,g, i	03	-	-	3	40	60	100
18CAU611A / 18CAU611B	PHP Programming - Practical / Unix / Linux Programming - Practical	I	b,g,k, i,j	-	-	04	2	40	60	100
18CAU612A / 18CAU612B	Database Administration - Practical / Cloud Computing- Practical	I	b,g,k, i,j	-	-	04	2	40	60	100
18CAU613A / 18CAU613B	Big Data Analytics - Practical / System Programming - Practical	I	a,b,g, i,j	-	-	03	1	40	60	100
18CAU691	Project and Viva Voce	III	a,b,i,j	08	-	-	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc		Good							
	Semester Total			19	-	11	22	280	420	700
	Program Total			104	-	76	140	1880	2820	4700

** The color indicates:

    *Entrepreneur oriented courses – Green

    *Employability oriented courses – Blue

    *Skill development oriented courses - Red

Ability Enhancement Courses (AEC)		
Semester	**Course Code**	**Name of the Course**
I	18LSU101	Language –I
	18AEC101	Environmental Studies
II	18LSU201	Language –II
	18ENU201	English

Generic Elective Courses (GE) / Allied Courses		
Semester	**Course Code**	**Name of the Course**
I	18CAU102	Computer System Architecture

	18CAU112	Computer System Architecture - Practical
II	18CAU202	Discrete Structures
	18CAU212	Discrete Structures - Practical

Core Courses (CC)		
Semester	Course Code	Name of the Course
I	18CAU101	Programming Fundamentals using C / C++
	18CAU103	Computer Fundamentals
	18CAU111	Programming Fundamentals using C / C++ -Practical
	18CAU113	Computer Fundamentals - Practical
II	18CAU201	Programming in JAVA
	18CAU203	Computer Networks and Internet Technologies
	18CAU211	Programming in JAVA - Practical
	18CAU213	Computer Networks and Internet Technologies-Practical
III	18CAU301	Data Structures
	18CAU302	Operating Systems
	18CAU303	Advanced Networking
	18CAU311	Data Structures-Practical
	18CAU312	Operating Systems-Practical
	18CAU313	Advanced Networking-Practical
IV	18CAU401	Relational Database Management Systems
	18CAU402	Software Engineering
	18CAU403	Web Programming
	18CAU411	Relational Database Management Systems-Practical
	18CAU412	Software Engineering-Practical
	18CAU413	Web Programming-Practical
V	18CAU501A	Artificial Intelligence
	18CAU501B	Software Testing
	18CAU511A	Artificial Intelligence-Practical
	18CAU511B	Software Testing -Practical
VI	18CAU601A	PHP Programming
	18CAU601B	Unix / Linux Programming
	18CAU611A	PHP Programming -Practical
	18CAU611B	Unix / Linux Programming -Practical
	18CAU691	Project and Viva Voce

Skill Enhancement Courses(SEC)		
Semester	Course Code	Name of the Course
III	18CAU304A	Android Programming
	18CAU304B	Struts Framework
	18CAU314A	Android Programming-Practical
	18CAU314B	Struts Framework-Practical
IV	18CAU404A	R Programming
	18CAU404B	Open Source Technologies
	18CAU414A	R Programming-Practical
	18CAU414B	Open Source Technologies -Practical

V	18CAU502A	Computer Graphics
	18CAU502B	Information Security and Cyber Laws
	18CAU512A	Computer Graphics -Practical
	18CAU512B	Information Security and Cyber Laws - Practical
VI	18CAU603A	Big Data Analytics
	18CAU603B	System Programming
	18CAU613A	Big Data Analytics -Practical
	18CAU613B	System Programming-Practical

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
V	18CAU503A	Data Mining
	18CAU503B	Programming in Python
	18CAU513A	Data Mining -Practical
	18CAU513B	Programming in Python -Practical
	18CAU504A	Digital Image Processing
	18CAU504B	Mongo DB
	18CAU514A	Digital Image Processing-Practical
	18CAU514B	Mongo DB -Practical
VI	18CAU602A	Database Administration
	18CAU602B	Cloud Computing
	18CAU612A	Database Administration -Practical
	18CAU612B	Cloud Computing -Practical

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

Curriculum
(2018 – 2021)

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)
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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 advanced software engineering 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.

l. 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.

MAPPING of PEOs and POs

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

Course Code	Name of the Course	Objectives and out comes		Instruction Hours / Week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - I										
18CAP101	Information Technology	I,III	c,d,e	4	-	-	4	40	60	100
18CAP102	C Programming and Data Structures	I,IV	a,b,c	4	-	-	4	40	60	100
18CAP103	Computer Organization and Architecture	I ,II, IV	a,c,e, f	4	-	-	4	40	60	100
18CAP104	Mathematical Foundations	II	a,b,k	4	-	-	4	40	60	100
18CAP105	Introduction to Management Functions	I,II, III	h,i,j,k	4	-	-	4	40	60	100
18CAP111	Information Technology - Practical	I,II, V	c,d,e	-	-	4	2	40	60	100
18CAP112	Programming in C - Practical	I,III	a,b,c	-	-	5	2	40	60	100
18CAP113	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
SEMESTER - II										
18CAP201	Object Oriented Programming with C++	I-III	b,c,d, e	4	-	-	4	40	60	100
18CAP202	Operating System	I-III	a,b,c, f	4	-	-	4	40	60	100
18CAP203	Information Systems Analysis , Design and Implementation	I-III	a,b,c d	4	-	-	4	40	60	100
18CAP204	Accounting and Management Control	I,IV	a,b,d, e	4	-	-	4	40	60	100
18CAP205	Probability and Combinations	I,II	a,b	4	-	-	4	40	60	100

18CAP211	Object Oriented Programming with C++ - Practical	I,II, III	b,c,d, e,i,k	-	-	5	2	40	60	100
18CAP212	Operating System - Practical	I-IV	a,b,c	-	-	4	2	40	60	100
18CAP213	CASE Tools - Practical	I,IV	a,b,c, d,e	-	-	4	2	40	60	100
	Journal Paper Analysis & Presentation			2	-	-	-	-	-	-
Semester Total				**22**	**-**	**13**	**26**	**320**	**480**	**800**
SEMESTER - III										
18CAP301	Database Management Systems	I-III	a,b,c d,e	4	-	-	4	40	60	100
18CAP302	Computer Networks	I-III	a,b,c, e,f,l	4	-	-	4	40	60	100
18CAP303	Advanced Java and Springs	I-III	b,c,e	4	-	-	4	40	60	100
18CAP304	Statistical Computing	II,III	a,b,c, d,e	4	-	-	4	40	60	100
18CAP305	Management Support Systems	I-IV	h,i,j,k ,l	4	-	-	4	40	60	100
18CAP311	Database Management Systems - Practical	I-III	a,b,c d,e	-	-	5	2	40	60	100
18CAP312	Computer Network - Practical	I-III	a,b,c, e,f,j,l	-	-	4	2	40	60	100
18CAP313	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**
SEMESTER - IV										
18CAP401	J2EE	I-III	a,b,c, d,e,i	4	-	-	4	40	60	100
18CAP402	Mobile Computing	I-III	a,b,c, d,e,f, g	4	-	-	4	40	60	100
18CAP403	Organizational Behavior	I-IV	a,f,g, h,i,j,k ,l	4	-	-	4	40	60	100
18CAP404D/	Database Administration	I-III	a,b,c, e							
18CAP404N/	Cryptography And Network Security	I-III	a,b,c, f,g							
18CAP404S/	Software Testing	I-III	a,b,c, d,e	4	-	-	4	40	60	100
18CAP404W/	XML	I-III	a,b,c, d,e							
18CAP404B	Managerial Economics	I-IV	f,g,h, i,j,k,l							

Code	Course			L	T	P	C	CIA	ESE	Total
18CAP405D	Distributed Database Management System	I-III	a,b,c, e,g,k							
18CAP405N	TCP/IP	I-III	a,b,d c.d.e. f,j							
18CAP405S	Object Oriented Analysis and Design with UML	I-III	a,b,c, d,e	4	-	-	4	40	60	100
18CAP405W	Web Services	I-III	a,b,c, e,j							
18CAP405B	Corporate Planning	I-IV	f,g,h, i,j,k,l							
18CAP411	J2EE - Practical	I-III	a,b,c, d,e,i, k,l	-	-	5	2	40	60	100
18CAP412	Mobile Computing - Practical	I-III	a,b,c, d,e,f, g,h	-	-	4	2	40	60	100
18CAP413D	DBA – Practical	I-III	a,b,c, e							
18CAP413N	Network security - Practical	I-III	a,b,c, f,g,h							
18CAP413S	Software Testing– Practical	I-IV	a,b,c, d,e	-	-	4	2	40	60	100
18CAP413W	XML – Practical	I-III	a,b,c, d,e							
18CAP413B	WAP - Practical	I-III	a,b,c, d,e							
	Journal Paper Analysis & Presentation	-	-	2	-	-	-	-	-	-
Semester Total		**-**	**-**	**22**	**-**	**13**	**26**	**320**	**480**	**800**
SEMESTER - V										
18CAP501	PHP5/ MySQL	I-III	a,b,c, e,f	4	-	-	4	40	60	100
18CAP502	.Net Programming	I-III	a,c,d, e	4	-	-	4	40	60	100
18CAP503	Optimization Techniques	II	a,b,d	4	-	-	4	40	60	100
18CAP504N	Network Architecture and Management	I-IV	b,c,e, l							
18CAP504S	Software Project Management	I-IV	a,c,d, e,i,k	4	-	-	4	40	60	100
18CAP504W	Angular JS	II	a,b							

Code	Course			L	T	P	C	CIA	ESE	Total
18CAP504B	MIS Framework	I-III	a,c,d							
18CAP504D	Data Mining and Data Warehousing	I-III	a,c,d, f,k							
18CAP505N	Distributed Computing	I-III	a,c,d, e,f							
18CAP505S	Software Metrics	I-III	a,b,c, d,e,f, g	4	-	-	4	40	60	100
18CAP505W	Semantic Web	II	a,b							
18CAP505B	Taxation Practices	I-III	a,c,d							
18CAP505D	Big Data Analytics	I-III	a,b,c, e							
18CAP511	PHP5/ MySQL -Practical	I-III	a,b,c, e	-	-	5	2	40	60	100
18CAP512	.Net Programming -Practical	I-III	a,b,c, d,e	-	-	4	2	40	60	100
18CAP513N	Network Simulator -Practical	I-III	a,b,c, d,e							
18CAP513S	Software Development -Practical Using Moodle	I-IV	a,c,d, e,i,k							
18CAP513W	Angular JS -Practical	I-III	a,b,c, d,e	-	-	4	2	40	60	100
18CAP513B	MIS -Practical	I-IV	a,b,c, d,h.i.j .k							
18CAP513D	Data Mining -Practical	I-III	a,c,e, f							
	Journal Paper Analysis & Presentation	-	-	2	-	-	-	-	-	-
	Semester Total	-	-	**22**	**-**	**13**	**26**	**320**	**480**	**800**

SEMESTER – VI										
18CAP691	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*

Elective – 1 (18CAP404)		Elective – 2 (18CAP405)	
Course Code	**Name of the Course (Theory & Practical)**	**Course Code**	**Name of the Course (Theory)**
18CAP404D	Database Administration	18CAP405D	Distributed Database Management System
18CAP404N	Cryptography And Network Security	18CAP405N	TCP/IP
18CAP404S	Software Testing	18CAP405S	Object Oriented Analysis and Design with UML
18CAP404W	XML	18CAP405W	Web Services
18CAP404B	Managerial Economics	18CAP405B	Corporate Planning
18CAP413D	DBA - Practical	**NIL**	
18CAP413N	Network security - Practical		
18CAP413S	Software Testing - Practical		
18CAP413W	XML - Practical		
18CAP413B	WAP - Practical		

Elective Courses*

Elective – 3 (18CAP504)		Elective – 4 (18CAP505)	
Course Code	**Name of the Course (Theory & Practical)**	**Course Code**	**Name of the Course (Theory)**
18CAP504N	Network Architecture and Management	18CAP505N	Distributed Computing
18CAP504S	Software Project Management	18CAP505S	Software Metrics
18CAP504W	Angular JS	18CAP505W	Semantic Web
18CAP504B	MIS Framework	18CAP505B	Taxation Practices
18CAP504D	Data Mining and Data Warehousing	18CAP505D	Big Data Analytics
18CAP513N	Network Simulator -Practical	**NIL**	
18CAP513S	Software Development -Practical Using Moodle		
18CAP513W	Angular JS - Practical		
18CAP513B	MIS - Practical		
18CAP513D	Data Mining - Practical		

Specialization:

D - Database
N - Network
S - Software Engineering
W- Web Designing
B - Business Management

** The color indicates:

* **Entrepreneurship oriented course-Green**
* **Employability Oriented Course-Blue**
* **Skill Development oriented course-Red**

DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Computer Science
(2018–2019 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.

l) Apply standard software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality for business success.

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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

MAPPING of PEOs and POs

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

DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Computer Science
(2018–2019 Batch and onwards)

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER - I										
18LSU101	Language-I	IV	d,e	04	-	-	4	40	60	100
18CSU101	Programming Fundamentals using C / C++	I	a,b,c	04	-	-	4	40	60	100
18CSU102	Computer System Architecture	I	b,c,g	04	-	-	4	40	60	100
18CSU103	Computer Fundamentals	III	h,j	04	-	-	4	40	60	100
18CSU111	Programming Fundamentals using C / C++ - Practical	I	a,b,c,g	-	-	04	2	40	60	100
18CSU112	Computer System Architecture – Practical	I	a,c,g	-	-	03	2	40	60	100
18CSU113	Computer Fundamentals – Practical	III	b,h,j	-	-	03	2	40	60	100
18AEC101	Environmental Studies	IV	d,e	04	-	-	4	40	60	100
Semester Total				20	-	10	26	320	480	800
SEMESTER – II										
18LSU201	Language – II			04	-	-	4	40	60	100
18ENU201	English – I	II	d,f	04	-	-	4	40	60	100
18CSU201	Programming in JAVA	I	c,h,i	04	-	-	4	40	60	100
18CSU202	Discrete Structures	III	a,b	04	-	-	4	40	60	100
18CSU203	Computer Networks and Internet Technologies	IV	e,i	04	-	-	4	40	60	100
18CSU211	Programming in JAVA – Practical	I	a,c,h,i	-	-	04	2	40	60	100
18CSU212	Discrete Structures – Practical	III	a,b,j	-	-	03	2	40	60	100
18CSU213	Computer Networks and Internet Technologies - Practical	IV	c,e	-	-	03	2	40	60	100
Semester Total				20	-	10	26	320	480	800
SEMESTER - III										
18CSU301	Data Structures	I	a,b,g, h	04	-	-	4	40	60	100
18CSU302	Operating Systems	III	a,b,h, k	04	-	-	4	40	60	100
18CSU303	Computer Networks	III	a,b,j,k	04	-	-	4	40	60	100
18CSU304A	Android Programming	I	a,b,c, m	03	-	-	3	40	60	100
18CSU304B	Programming in Visual Basic /	IV	c,d,e,i					40	60	100

Code	Title			L	T	P	C	CIA	ESE	Total
	Gambas									
18CSU311	Data Structures – Practical	I	a,b,g,h	-	-	04	2	40	60	100
18CSU312	Operating Systems – Practical	III	a,b,h,k	-	-	04	2	40	60	100
18CSU313	Computer Networks – Practical	III	a,b,j,k	-	-	04	2	40	60	100
18CSU314A	Android Programming – Practical	I	a,b,c,m	-	-	03	1	40	60	100
18CSU314B	Programming in Visual Basic / Gambas - Practical	IV	c,d,e,i	-	-	03		40	60	100
Semester Total				15	-	15	22	320	480	800
SEMESTER – IV										
18CSU401	Design and Analysis of Algorithms	I	a,b,c,m	04	-	-	4	40	60	100
18CSU402	Software Engineering	IV	c,d,e,l	04	-	-	4	40	60	100
18CSU403	Database Management Systems	I	a,b,g,h	04	-	-	4	40	60	100
18CSU404A	HTML Programming	III	a,b,h,j,k	03	-	-	3	40	60	100
18CSU404B	XML Programming	III	a,b,h,j,k							
18CSU411	Design and Analysis of Algorithms - Practical	I	a,b,c,m	-	-	04	2	40	60	100
18CSU412	Software Engineering – Practical	IV	c,d,e,l	-	-	04	2	40	60	100
18CSU413	Database Management Systems – Practical	I	a,b,g,h	-	-	04	2	40	60	100
18CSU414A	HTML Programming – Practical	III	a,b,h,j,k			03	1	40	60	100
18CSU414B	XML Programming – Practical	III	a,b,h,j,k							
Semester Total				15	-	15	22	320	480	800
SEMESTER –V										
18CSU501A	Cloud Computing	I	b,e,m	04	-	-	4	40	60	100
18CSU501B	Software Testing	I	c,g		-	-				
18CSU502A	Internet Technologies	III	a,b,h,j	04	-	-	4	40	60	100
18CSU502B	Information Security and Cyber Law	I	a,b,h							
18CSU503A	Data Mining	III	a,b,h,k	04	-	-	4	40	60	100
18CSU503B	R Programming	II	d,e,f		-	-				
18CSU504A	Oracle (SQL/PL-SQL)	IV	c,e,i,l	03	-	-	3	40	60	100
18CSU504B	Programming in Python	III	b,h,j,k							
18CSU511A	Cloud Computing – Practical	I	b,e,m	-	-	04	2	40	60	100
18CSU511B	Software Testing - Practical	I	c,g	-	-					
18CSU512A	Internet Technologies - Practical	III	a,b,h,j							
18CSU512B	Information Security and Cyber Law - Practical	I	a,b,h	-	-	04	2	40	60	100

18CSU513A	Data Mining – Practical	III	a,b,h,k	-	-	04	2	40	60	100
18CSU513B	R Programming – Practical	II	d,e,f	-	-					
18CSU514A	Oracle (SQL/PL-SQL) – Practical	IV	c,e,i,l	-	-	03	1	40	60	100
18CSU514B	Programming in Python – Practical	III	b,h,j,k							
	Semester Total			**15**	**-**	**15**	**22**	**320**	**480**	**800**
	SEMESTER –VI									
18CSU601A	PHP Programming	V	e,j,l	04	-	-	4	40	60	100
18CSU601B	Unix / Linux Programming	I	a,b,h,i							
18CSU602A	Web and E-Commerce Technologies	I	a,d,g,m	04	-	-	4	40	60	100
18CSU602B	Computer Graphics	I	a,c,g,m							
18CSU603A	Artificial Intelligence	III	a,b,h,j,k	03	-	-	3	40	60	100
18CSU603B	System Programming	IV	c,d,e							
18CSU611A	PHP Programming –Practical	V	e,j,l							
18CSU611B	Unix / Linux Programming – Practical	I	a,b,h,i	-	-	04	2	40	60	100
18CSU612A	Web and E-Commerce Technologies - Practical	I	a,d,g,m	-	-	04	2	40	60	100
18CSU612B	Computer Graphics – Practical	I	a,c,g,m	-	-					
18CSU613A	Artificial Intelligence – Practical	III	a,b,h,j,k	-	-	03	1	40	60	100
18CSU613B	System Programming – Practical	IV	c,d,e							
18CSU691	Project	II	d,e,f,n	08	-	-	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc			Good						
	Semester Total			**15**	**-**	**15**	**22**	**280**	**420**	**700**
	Grand Total			**100**	**-**	**80**	**140**	**1880**	**2820**	**4700**

* Instruction Hours / Week
Entrepreneur Oriented Courses -Green
Employability Oriented Courses -Blue
Skill Development Oriented Courses -Red

Ability Enhancement Courses (AEC)		
Semester	Course Code	Name of the Course
I	18LSU101	Language –I
	18AEC101	Environmental Studies
II	18LSU201	Language –II
	18ENU201	English

Generic Elective Courses (GE) /Allied Courses		
Semester	Course Code	Name of the Course
I	18CSU102	Computer System Architecture
	18CSU112	Computer System Architecture - Practical
II	18CSU202	Discrete Structures
	18CSU212	Discrete Structures - Practical

Core Courses (CC)		
Semester	Course Code	Name of the Course
I	18CSU101	Programming Fundamentals using C / C++
	18CSU103	Computer Fundamentals
	18CSU111	Programming Fundamentals using C / C++ -Practical
	18CSU113	Computer Fundamentals - Practical
II	18CSU201	Programming in JAVA
	18CSU203	Computer Networks and Internet Technologies
	18CSU211	Programming in JAVA - Practical
	18CSU213	Computer Networks and Internet Technologies - Practical
III	18CSU301	Data Structures
	18CSU302	Operating Systems
	18CSU303	Computer Networks
	18CSU311	Data Structures – Practical
	18CSU312	Operating Systems – Practical
	18CSU313	Computer Networks– Practical
IV	18CSU401	Design and Analysis of Algorithms
	18CSU402	Software Engineering
	18CSU403	Database Management Systems
	18CSU411	Design and Analysis of Algorithms - Practical
	18CSU412	Software Engineering – Practical
	18CSU413	Database Management Systems – Practical
V	18CSU502A	Internet Technologies
	18CSU502B	Information Security and Cyber Laws
	18CSU512A	Internet Technologies– Practical
	18CSU512B	Information Security and Cyber Laws – Practical
VI	18CSU603A	Artificial Intelligence
	18CSU603B	System Programming
	18CSU613A	Artificial Intelligence – Practical
	18CSU613B	System Programming – Practical
	18CSU691	Project

Skill Enhancement Courses(SEC)		
Semester	Course Code	Name of the Course
III	18CSU304A	Android Programming
	18CSU304B	Programming in Visual Basic/Gambas
	18CSU314A	Android Programming – Practical
	18CSU314B	Programming in Visual Basic/Gambas– Practical
IV	18CSU404A	HTML Programming
	18CSU404B	XML Programming
	18CSU414A	HTML Programming – Practical
	18CSU414B	XML Programming – Practical
V	18CSU501A	Cloud Computing
	18CSU501B	Software Testing
	18CSU511A	Cloud Computing - Practical
	18CSU511B	Software Testing – Practical
VI	18CSU601A	PHP Programming
	18CSU601B	Unix / Linux Programming
	18CSU611A	PHP Programming –Practical
	18CSU611B	Unix / Linux Programming – Practical

Discipline Specific Elective Courses (DSE)		
Semester	Course Code	Name of the Course
V	18CSU503A	Data Mining
	18CSU503B	R Programming
	18CSU504A	Oracle (SQL/PL-SQL)
	18CSU504B	Programming in Python
V	18CSU513A	Data Mining – Practical
	18CSU513B	R Programming –Practical
	18CSU514A	Oracle (SQL/PL-SQL) – Practical
	18CSU514B	Programming in Python – Practical
VI	18CSU602A	Web and E-Commerce Technologies
	18CSU602B	Computer Graphics
	18CSU612A	Web and E-Commerce Technologies – Practical
	18CSU612B	Computer Graphics – Practical

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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.

l. 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.

MAPPING of PEOs and POs

POs	a	b	c	d	e	f	g	h	i	j	k	l	m
PEO1	X		X	X	X	X			X	X		X	X
PEO2	X	X	X	X	X	X	X	X			X	X	
PEO3	X		X	X	X	X			X	X	X		X

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Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
		Objectives and out comes		Instruction hours / week				Maximum Marks		
								40	60	100
SEMESTER - I										
18CSP101	Python Programming	I	c, d	4	-	-	4	40	60	100
18CSP102	Big Data Analytics	I	a, g	4	-	-	4	40	60	100
18CSP103	Cryptography and Network Security	I	b, c	4	-	-	4	40	60	100
18CSP104	Cloud Computing	III	b, g	4	-	-	4	40	60	100
18CSP105A/ 18CSP105B/ 18CSP105C	Wireless and Mobile Computing / Geographical Information Systems / Soft Computing	I III II	b g c	4	-	-	4	40	60	100
18CSP111	Python Programming - Practical	I	c, d	-	-	4	2	40	60	100
18CSP112	Hadoop – Practical	I	b, c	-	-	4	2	40	60	100
Journal Paper Analysis & Presentation		III	h	2	-	-	-	-	-	-
Semester Total				22	-	8	24	280	420	700
SEMESTER – II										
18CSP201	Internetworking with TCP/IP	I	c	4	-	-	4	40	60	100
18CSP202	Cyber Security	I	b, g	4	-	-	4	40	60	100
18CSP203	MongoDB	II	d	4	-	-	4	40	60	100
18CSP204	Internet of Things	I	b	4	-	-	4	40	60	100
18CSP205A/ 18CSP205B/ 18CSP205C	Artificial Intelligence / Machine Learning/ Neural Networks & Fuzzy logic	III	b, g	4	-	-	4	40	60	100
18CSP211	Router Configuration – Practical	I	c	-	-	4	2	40	60	100
18CSP212	MongoDB – Practical	II	d	-	-	4	2	40	60	100
Journal Paper Analysis & Presentation		III	h	2	-	-	-	-	-	-
Semester Total				22	-	8	24	280	420	700
Program Total				44	-	16	48	560	840	1400

SEMESTER – III										
18CSP301	J2EE	I	c, d	4	-	-	4	40	60	100
18CSP302	Open Source Technologies	I, II	d g	4	-	-	4	40	60	100
18CSP303	Digital Image Processing	I	c	4	-	-	4	40	60	100
18CSP304	Green Computing	I, III	d	4	-	-	4	40	60	100
18CSP305A/ 18CSP305B/ 18CSP305C	Web Engineering / Wireless Application Protocol / Software Project Management	I,II III II	b d f	4	-	-	4	40	60	100
18CSP311	J2EE – Practical	I	c, d	-	-	4	2	40	60	100
18CSP312	Linux – Practical	I	d g	-	-	4	2	40	60	100
Journal Paper Analysis & Presentation		III	h	2	-	-	-	-	-	-
Semester Total				22	-	8	24	280	420	700
SEMESTER – IV										
18CSP491	Project and Viva Voce	III	i j	-	-	-	15	80	120	200
Semester Total				-	-	-	15	80	120	200
Program Total				66	-	24	87	920	1380	2300

* Instruction Hours / Week

Entrepreneur Oriented Courses -Green

Employability Oriented Courses -Blue

Skill Development Oriented Courses -Red

Elective courses*

Elective - 1		Elective - 2		Elective - 3	
Course code	Name of the course (Theory)	Course Code	Name of the course (Theory)	Course Code	Name of the course (Theory)
18CSP105A	Wireless and Mobile Computing	18CSP205A	Artificial Intelligence	18CSP305A	Web Engineering
18CSP105B	Geographical Information Systems	18CSP205B	Machine Learning	18CSP305B	Wireless Application Protocol
18CSP105C	Soft Computing	18CSP205C	Neural Networks & Fuzzy logic	18CSP305C	Software Project Management

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Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER - I										
18LSU101	Language – I	IV	d,e	04	-	-	4	40	60	100
18CTU101	Programming Fundamentals using C / C++	I	a,b,c	04	-	-	4	40	60	100
18CTU102	Computer System Architecture	I	b,c,g	04	-	-	4	40	60	100
18CTU103	Computer Fundamentals	III	h,j	04	-	-	4	40	60	100
18CTU111	Programming Fundamentals using C / C++ -Practical	I	a,b,c,g	-	-	04	2	40	60	100
18CTU112	Computer System Architecture - Practical	I	a,c,g	-	-	03	2	40	60	100
18CTU113	Computer Fundamentals - Practical	III	b,h,j	-	-	03	2	40	60	100
18AEC101	Environmental Studies	IV	d,e	04	-	-	4	40	60	100
Semester Total				20	-	10	26	320	480	800
SEMESTER – II										
18LSU201	Language – II			04	-	-	4	40	60	100
18ENU201	English	II	d,f	04	-	-	4	40	60	100
18CTU201	Programming in JAVA	I	c,h,i	04	-	-	4	40	60	100
18CTU202	Discrete Structures	III	a,b	04	-	-	4	40	60	100
18CTU203	Computer Networks and Internet Technologies	IV	e,i	04	-	-	4	40	60	100
18CTU211	Programming in JAVA - Practical	I	a,c,h,i	-	-	04	2	40	60	100
18CTU212	Discrete Structures - Practical	III	a,b,j	-	-	03	2	40	60	100
18CTU213	Computer Networks and Internet Technologies Practical	IV	c,e	-	-	03	2	40	60	100
SEMESTER – III										
18CTU301	Data Structures	I	a,b,c	04	-	-	4	40	60	100
18CTU302	Data Communication and Networks	V	b,c,g	04	-	-	4	40	60	100
18CTU303	Relational Database Management Systems	I	a,b,c	04	-	-	4	40	60	100
18CTU304A	Android Programming	I	a,b,c	03	-	-	3	40	60	100
18CTU304B	Programming in Python	I	a,b,c							
18CTU311	Data Structures – Practical	I	a,b,c,g	-	-	04	2	40	60	100
18CTU312	Data Communication and Networks – Practical	V	a,b,c,g	-	-	04	2	40	60	100

Code	Title									
18CTU313	RDBMS – Practical	I	a,b,c,g	-	-	04	2	40	60	100
18CTU314A	Android Programming – Practical	I	a,b,c,g	-	-					
18CTU314B	Programming in Python – Practical	I	a,b,c,g	-	-	03	1	40	60	100
						30	22	320	480	800
SEMESTER – IV										
18CTU401	Operating Systems	II	a,b,c,g	04	-	-	4	40	60	100
18CTU402	Software Engineering	II	a,b,c,g	04	-	-	4	40	60	100
18CTU403	Artificial Intelligence	I	a,b,c,g	04	-	-	4	40	60	100
18CTU404A	Scripting Language	I	a,b,c,g	03	-	-	3	40	60	100
18CTU404B	XML Programming	I	a,b,c,g							
18CTU411	Operating Systems - Practical	II	b,h,j	-	-	04	2	40	60	100
18CTU412	Software Engineering - Practical	II	b,h,j	-	-	04	2	40	60	100
18CTU413	Artificial Intelligence - Practical	I	b,h,j	-	-	04	2	40	60	100
18CTU414A	Scripting Language - Practical	I	a,c,h,i	-	-	03	1	40	60	100
18CTU414B	XML Programming - Practical	I	a,c,h,i	-	-					
						30	22	320	480	800
SEMESTER – V										
18CTU501A	Cryptography and Network Security	V	a,b,c	04	-	-	4	40	60	100
18CTU501B	Software Testing	V	a,b,c							
18CTU502A	.NET Programming	I	a,b,c	04	-	-	4	40	60	100
18CTU502B	Network Programming	I	a,b,c							
18CTU503A	Data Mining	III	a,b,c	04	-	-	4	40	60	100
18CTU503B	R - Programming	III	a,b,c							
18CTU504A	Digital Image Processing	I	a,b,c	03	-	-	3	40	60	100
18CTU504B	Multimedia and its Applications	I	a,b,c							
18CTU511A	Cryptography and Network Security - Practical	V	a,b,c,g	-	-	04	2	40	60	100
18CTU511B	Software Testing - Practical	V	a,b,c,g							
18CTU512A	.NET Programming - Practical	I	a,b,c,g			04	2	40	60	100
18CTU512B	Network Programming - Practical	I	a,b,c,g	-	-					
18CTU513A	Data Mining - Practical	III	a,b,c,g			04	2	40	60	100
18CTU513B	R – Programming - Practical	III	a,b,c,g	-	-					
18CTU514A	Digital Image Processing - Practical	I	a,b,c,g			03	1	40	60	100
18CTU514B	Multimedia and its Applications - Practical	I	a,b,c,g	-	-					
						30	22	320	480	800
SEMESTER – VI										
18CTU601A	PHP Programming	I	b,c,g	04	-	-	4	40	60	100
18CTU601B	Unix / Linux Programming	I	a,b,c							
18CTU602A	E-Commerce Technologies	II	b,c,h,i	04	-	-	4	40	60	100
18CTU602B	Cloud Computing	II	b,c,g							
18CTU603A	Big Data Analytics	III	b,c,g	03	-		3	40	60	100
18CTU603B	System Programming	III	b,c,h,i							
18CTU611A	PHP Programming - Practical	I	a,b,c,g	-	-	04	2	40	60	100
18CTU611B	Unix / Linux Programming - Practical	I	a,b,c,g							
18CTU612A	E-Commerce Technologies - Practical	II	a,b,c,g	-	-	04	2	40	60	100
18CTU612B	Cloud Computing - Practical	II	a,b,c,g							
18CTU613A	Big Data Analytics - Practical	III	a,b,c,g	-	-	03	1	40	60	100
18CTU613B	System Programming - Practical	III	a,b,c,g							
18CTU691	Project	IV	i,j	-	-	08	6	40	60	100
	Semester Total				-	30	22	280	420	700
	Program Total				-	180	140	1880	2820	4700

** The colour indicates

    * Entrepreneur Oriented courses - green

    *Employability Oriented courses- blue

    * Skill DevelopmentOriented courses- Red

Ability Enhancement Courses (AEC)		
Semester	Course Code	Name of the Course
I	18LSU101	Language –I
	18AEC101	Environmental Studies
II	18LSU201	Language –II
	18ENU201	English

Generic Elective Courses (GE) /Allied Courses		
Semester	Course Code	Name of the Course
I	18CTU102	Computer System Architecture
	18CTU112	Computer System Architecture - Practical
II	18CTU202	Discrete Structures
	18CTU212	Discrete Structures – Practical

Core Courses (CC)		
Semester	Course Code	Name of the Course
I	18CTU101	Programming Fundamentals using C / C++
	18CTU103	Computer Fundamentals
	18CTU111	Programming Fundamentals using C / C++ -Practical
	18CTU113	Computer Fundamentals - Practical
II	18CTU201	Programming in JAVA
	18CTU203	Computer Networks and Internet Technologies
	18CTU211	Programming in JAVA - Practical
	18CTU213	Computer Networks and Internet Technologies - Practical
III	18CTU301	Data Structures
	18CTU302	Data Communication and Networks
	18CTU303	Relational Database Management Systems
	18CTU311	Data Structures – Practical
	18CTU312	Data Communication and Networks – Practical
	18CTU313	RDBMS – Practical
IV	18CTU401	Operating Systems
	18CTU402	Software Engineering
	18CTU403	Artificial Intelligence
	18CTU411	Operating Systems - Practical
	18CTU412	Software Engineering - Practical

	18CTU413	Artificial Intelligence - Practical
V	18CTU502A	.NET Programming
	18CTU502B	Network Programming
	18CTU512A	.NET Programming -Practical
	18CTU512B	Network Programming -Practical
VI	18CTU601A	PHP Programming
	18CTU601B	Unix / Linux Programming
	18CTU611A	PHP Programming - Practical
	18CTU611B	Unix / Linux Programming - Practical
	18CTU691	Project

Skill Enhancement Courses(SEC)		
Semester	Course Code	Name of the Course
III	18CTU304A	Android Programming
	18CTU304B	Programming in Python
	18CTU314A	Android Programming – Practical
	18CTU314B	Programming in Python – Practical
IV	18CTU404A	Scripting Language
	18CTU404B	XML Programming
	18CTU414A	Scripting Language - Practical
	18CTU414B	XML Programming - Practical
V	18CTU501A	Cryptography and Network Security
	18CTU501B	Software Testing
	18CTU511A	Cryptography and Network Security - Practical
	18CTU511B	Software Testing - Practical
VI	18CTU603A	Big Data Analytics
	18CTU603B	System Programming
	18CTU613A	Big Data Analytics- Practical
	18CTU613B	System Programming - Practical

Discipline Specific Elective Courses (DSE)		
Semester	Course Code	Name of the Course
V	18CTU503A	Data Mining
	18CTU503B	R-Programming
	18CTU504A	Digital Image Processing
	18CTU504B	Multimedia and its Applications
	18CTU513A	Data Mining - Practical
	18CTU513B	R-Programming - Practical
	18CTU514A	Digital Image Processing - Practical
	18CTU514B	Multimedia and Applications - Practical
VI	18CTU602A	E-Commerce Technologies
	18CTU602B	Cloud Computing
	18CTU612A	E-Commerce Technologies -Practical
	18CTU612B	Cloud Computing – Practical

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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.

l) 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

MAPPING of PEOs and POs

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

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Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	**60**	**100**
SEMESTER - I										
18LSU101	Language – I	IV	d,e	04	-	-	4	40	60	100
18ITU101	Programming Fundamentals using C / C++	I	a,b,c	04	-	-	4	40	60	100
18ITU102	Computer System Architecture	I	b,c,g	04	-	-	4	40	60	100
18ITU103	Computer Fundamentals	III	h,j	04	-	-	4	40	60	100
18ITU111	Programming Fundamentals using C / C++ -Practical	I	a,b,c,g	-	-	04	2	40	60	100
18ITU112	Computer System Architecture - Practical	I	a,c,g	-	-	03	2	40	60	100
18ITU113	Computer Fundamentals - Practical	III	b,h,j	-	-	03	2	40	60	100
18AEC101	Environmental Studies	IV	d,e	04	-	-	4	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER – II										
18LSU201	Language – II			04	-	-	4	40	60	100
18ENU201	English	II	d,f	04	-	-	4	40	60	100
18ITU201	Programming in JAVA	I	c,h,i	04	-	-	4	40	60	100
18ITU202	Discrete Structures	III	a,b	04	-	-	4	40	60	100
18ITU203	Computer Networks and Internet	IV	e,i	04	-	-	4	40	60	100

	Technologies									
18ITU211	Programming in JAVA - Practical	I	a,c,h,i	-	-	04	2	40	60	100
18ITU212	Discrete Structures - Practical	III	a,b,j	-	-	03	2	40	60	100
18ITU213	Computer Networks and Internet Technologies Practical	IV	c,e	-	-	03	2	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**

SEMESTER – III

18ITU301	Data Structures	I	a,b,c	04	-	-	4	40	60	100
18ITU302	Operating Systems	II	a,b,c,g	04	-	-	4	40	60	100
18ITU303	Relational Database Management Systems	I	a,b,c	04	-	-	4	40	60	100
18ITU304A	Android Programming	I	a,b,c	03	-	-	3	40	60	100
18ITU304B	Programming in Python	I	a,b,c							
18ITU311	Data Structures – Practical	I	a,b,c,g	-	-	04	2	40	60	100
18ITU312	Operating Systems – Practical	II	b,h,j	-	-	04	2	40	60	100
18ITU313	RDBMS – Practical	I	a,b,c,g	-	-	04	2	40	60	100
18ITU314A	Android Programming – Practical	I	a,b,c,g	-	-	03	1	40	60	100
18ITU314B	Programming in Python – Practical	I	a,b,c,g							
Semester Total				**15**		**15**	**22**	**320**	**480**	**800**

SEMESTER – IV

18ITU401	Data Communication and Networks	V	b,c,g	04	-	-	4	40	60	100
18ITU402	Software Engineering	II	a,b,c,g	04	-	-	4	40	60	100
18ITU403	Programming in PERL	I	a,b,c,g	04	-	-	4	40	60	100
18ITU404A	Scripting Language	I	a,b,c,g	03	-	-	3	40	60	100
18ITU404B	XML Programming	I	a,b,c,g							
18ITU411	Data Communication and Networks - Practical	V	a,b,c,g	-	-	04	2	40	60	100

Code	Course			L	T	P	C	CIA	ESE	Total
18ITU412	Software Engineering - Practical	II	b,h,j	-	-	04	2	40	60	100
18ITU413	Programming in PERL - Practical	I	b,h,j	-	-	04	2	40	60	100
18ITU414A	Scripting Language - Practical	I	a,c,h,i	-	-	03	1	40	60	100
18ITU414B	XML Programming - Practical	I	a,c,h,i							
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – V										
18ITU501A	Artificial Intelligence	V	a,b,c	04	-	-	4	40	60	100
18ITU501B	Software Testing	V	a,b,c							
18ITU502A	.NET Programming	I	a,b,c	04	-	-	4	40	60	100
18ITU502B	Network Programming	I	a,b,c							
18ITU503A	Data Mining	III	a,b,c	04	-	-	4	40	60	100
18ITU503B	Machine Learning	III	a,b,c							
18ITU504A	Digital Image Processing	I	a,b,c	03	-	-	3	40	60	100
18ITU504B	Multimedia and its Applications	I	a,b,c							
18ITU511A	Artificial Intelligence - Practical	V	a,b,c,g	-	-	04	2	40	60	100
18ITU511B	Software Testing - Practical	V	a,b,c,g							
18ITU512A	.NET Programming -Practical	I	a,b,c,g	-	-	04	2	40	60	100
18ITU512B	Network Programming -Practical	I	a,b,c,g							
18ITU513A	Data Mining - Practical	III	a,b,c,g	-	-	04	2	40	60	100
18ITU513B	Machine Learning - Practical	III	a,b,c,g							
18ITU514A	Digital Image Processing - Practical	I	a,b,c,g	-	-	03	1	40	60	100
18ITU514B	Multimedia and Applications - Practical	I	a,b,c,g							
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – VI										
18ITU601A	PHP Programming	I	b,c,g	04	-	-	4	40	60	100
18ITU601B	Unix / Linux Programming	I	a,b,c							

18ITU602A	E-Commerce Technologies	II	b,c,h,i	04	-	-	4	40	60	100
18ITU602B	Cloud Computing	II	b,c,g							
18ITU603A	Big Data Analytics	III	b,c,g	03	-	-	3	40	60	100
18ITU603B	System Programming	III	b,c,h,i							
18ITU611A	PHP Programming - Practical	I	a,b,c,g	-	-	04	2	40	60	100
18ITU611B	Unix / Linux Programming - Practical	I	a,b,c,g							
18ITU612A	E-Commerce Technologies -Practical	II	a,b,c,g	-	-	04	2	40	60	100
18ITU612B	Cloud Computing – Practical	II	a,b,c,g							
18ITU613A	Big Data Analytics - Practical	III	a,b,c,g	-	-	03	1	40	60	100
18ITU613B	System Programming - Practical	III	a,b,c,g							
18ITU691	Project	IV	i,j	-	-	08	6	40	60	100
Semester Total					-	30	22	280	420	700
Program Total					-	180	140	1880	2820	4700

** The colour indicates

* Entrepreneur Oriented courses - green

*Employability Oriented courses- blue

* Skill DevelopmentOriented courses- Red

Ability Enhancement Courses (AEC)		
Semester	Course Code	Name of the Course
I	18LSU101	Language –I
	18AEC101	Environmental Studies
II	18LSU201	Language –II
	18ENU201	English

Generic Elective Courses (GE) /Allied Courses		
Semester	Course Code	Name of the Course
I	18ITU102	Computer System Architecture
	18ITU112	Computer System Architecture - Practical
II	18ITU202	Discrete Structures
	18ITU212	Discrete Structures – Practical

Core Courses (CC)		
Semester	Course Code	Name of the Course
I	18ITU101	Programming Fundamentals using C / C++
	18ITU103	Computer Fundamentals
	18ITU111	Programming Fundamentals using C / C++ -Practical
	18ITU113	Computer Fundamentals - Practical
II	18ITU201	Programming in JAVA
	18ITU203	Computer Networks and Internet Technologies
	18ITU211	Programming in JAVA - Practical
	18ITU213	Computer Networks and Internet Technologies - Practical

III	18ITU301	Data Structures
	18ITU302	Operating Systems
	18ITU303	Relational Database Management Systems
	18ITU311	Data Structures – Practical
	18ITU312	Operating Systems – Practical
	18ITU313	RDBMS – Practical
IV	18ITU401	Data Communication and Networks
	18ITU402	Software Engineering
	18ITU403	Programming in PERL
	18ITU411	Data Communication and Networks - Practical
	18ITU412	Software Engineering - Practical
	18ITU413	Programming in PERL - Practical
V	18ITU502A	.NET Programming
	18ITU502B	Network Programming
	18ITU512A	.NET Programming -Practical
	18ITU512B	Network Programming -Practical
VI	18ITU601A	PHP Programming
	18ITU601B	Unix / Linux Programming
	18ITU611A	PHP Programming - Practical
	18ITU611B	Unix / Linux Programming - Practical
	18ITU691	Project

Skill Enhancement Courses(SEC)		
Semester	Course Code	Name of the Course
III	18ITU304A	Android Programming

	18ITU304B	Programming in Python	
	18ITU314A	Android Programming – Practical	
	18ITU314B	Programming in Python – Practical	
IV	18ITU404A	Scripting Language	
	18ITU404B	XML Programming	
	18ITU414A	Scripting Language - Practical	
	18ITU414B	XML Programming - Practical	
V	18ITU501A	Artificial Intelligence	
	18ITU501B	Software Testing	
	18ITU511A	Computer Graphics - Practical	
	18ITU511B	Software Testing - Practical	
VI	18ITU603B	System Programming	
	18ITU613B	System Programming - Practical	

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
V	18ITU503A	Machine Learning
	18ITU503B	Data Mining
	18ITU504A	Digital Image Processing
	18ITU504B	Multimedia and its Applications
	18ITU513A	Machine Learning - Practical
	18ITU513B	Data Mining - Practical
	18ITU514A	Digital Image Processing - Practical
	18ITU514B	Multimedia and Applications - Practical
VI	18ITU602A	E-Commerce Technologies
	18ITU602B	Cloud Computing
	18ITU603A	Big Data Analytics
	18ITU603A	Big Data Analytics - Practical
	18ITU612A	E-Commerce Technologies -Practical
	18ITU612B	Cloud Computing – Practical

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

Syllabus

2018 – 2019

DEPARTMENT OF MANAGEMENT

FACULTY OF ARTS, SCIENCE AND HUMANITIES

KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University)

DEPARTMENT OF MANAGEMENT
FACULTY OF ARTS, SCIENCE AND HUMANITIES

UG PROGRAM (CBCS) – B.B.A.
(2018–2019 Batch and onwards)

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
		Objectives and outcomes		Instruction hours / week				Maximum Marks		
								40	60	100
SEMESTER – I										
18LAU101	Language - I	I, II, III	a, e	6	0	0	6	40	60	100
18ENU101	English – I	I, II, III	a, e	4	0	0	4	40	60	100
18BAU101	Fundamentals of Management and Organizational Behaviour	I, II, III	a, b, c,d,e, f, g,j	4	0	0	4	40	60	100
18BAU102	Managerial Economics	I, II, III,IV	a, b, c,e, d,i,j	6	2	0	6	40	60	100
18AEC101	Business Communication	I, II, III	a, b, e	4	0	0	4	40	60	100
18BAU111	MS Office (Practical)	I,II, III	a, b, c, e	0	0	4	2	40	60	100
Semester Total				**24**	**2**	**4**	**26**	**240**	**360**	**600**
SEMESTER – II										
18LAU201	Language – II	I, II, III	a, e	6	0	0	6	40	60	100
18ENU201	English – II	I, II, III	a, e	4	0	0	4	40	60	100
18BAU201	Financial Accounting	I, II, III,IV	a, b, c, e, i,j,k	3	1	0	4	40	60	100
18BAU202	Business Mathematics and Statistics	I, II, III	a, b, c, d,e,j,k	6	2	0	6	40	60	100
18AEC201	Environmental Studies	I,III, IV	a, h, e, i	4	0	0	4	40	60	100
18BAU211	Tally (Practical)	I,II, III	a, b, c,d,e, j	0	0	4	2	40	60	100
Semester Total				**23**	**3**	**4**	**26**	**240**	**360**	**600**

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – III										
18ENU301	English – III	I, II, III	a,e	4	0	4	6	40	60	100
18BAU301	Principles of Marketing	I, III	a,e	6	0	0	5	40	60	100
18BAU302	Management Accounting	I, II, III	a, b, c, d,e	5	1	0	5	40	60	100
18BAU303A	Human Resource Management	I, III	a,e	4	0	0	3	40	60	100
18BAU303B	Management Information System	I, III, IV	a,e, i	4	0	0	3	40	60	100
18BAU311	Principles of Marketing (Practical)	I, II, III	a, b.c,d,e,f, g,j,k	0	0	2	1	40	60	100
18BAU312	Management Accounting (Practical)	I, II, III	a, b.c,d,e,f, g,j,k	0	0	2	1	40	60	100
18BAU313A	Human Resource Management (Practical)	I, II,III	a, b.c,d,e,f, g,j,k	0	0	2	1	40	60	100
18BAU313B	Management Information System (Practical)	I,II, III, IV	a, b.c,d,e,f, g,i,j,k	0	0	2	1	40	60	100
Semester Total				19	1	10	22	280	420	700
SEMESTER – IV										
18ENU401	English – IV	II, III	a, b, e	4	0	4	6	40	60	100
18BAU401	Business Research Methods	I, II, III	a,c,d,e,j, k	6	0	0	5	40	60	100
18BAU402	Financial Management	I, II, III	a, b, c.d,	6	2	0	6	40	60	100

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA 40	ESE 60	Total 100
			e, j							
18BAU403A	Financial Analysis and Reporting	I, III, IV	a,c,d,e, i,j	4	0	0	3	40	60	100
18BAU403B	Decision making using SPSS	I, III	a,c,d, j,k	2	0	0	2	40	60	100
18BAU411	Business Research Methods (Practical)	I, II, III	a, b.c,d,e,f, g,j,k	0	0	2	1	40	60	100
18BAU412A	Financial Analysis and Reporting (Practical)	I, II, III	a, b.c,d,e,f, g,j,k	0	0	2	1	40	60	100
18BAU412B	Decision making using SPSS (Practical)	I, II, III	a, b.c,d,e, j,k	0	0	4	2	40	60	100
Semester Total				20/ 18	2	8/10	22	240	360	600
SEMESTER V										
18BAU501A	Investment Analysis and Portfolio Management	I,III	a, e, j	6	0	0	5	40	60	100
18BAU501B	Banking and Insurance	I,III	a, e, j	6	0	0	5	40	60	100
18BAU502A	Advertising and Brand Management	I,III	a, e, j	6	0	0	5	40	60	100
18BAU502B	Retail Management	I,III	a, e, j	6	0	0	5	40	60	100
18BAU503A	Business Law	I, II, III, IV	a, b,e,,i, j	4	0	0	3	40	60	100
18BAU503B	Leadership and Team Building	I,II,III	a, b, c,d,e,f,g,j	6	0	0	4	100	0	100
18BAU504A	Taxation	I, II, III, IV	a,b,c,d,e,i ,j,k	5	1	0	5	40	60	100
18BAU504B	Production and Operations Management	I, II, III,IV	a,,c,d,e,h, i,j,k	6	0	0	5	40	60	100

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BAU511A	Investment Analysis and Portfolio Management (practical)	I, II, III	a, b.c,d,e,j, k	0	0	2	1	40	60	100
18BAU511B	Banking and Insurance (Practical)	I, II, III	a, b.c,d,e,j, k	0	0	2	1	40	60	100
18BAU512A	Advertising and Brand Management (practical)	I, II, III	a, b.c,d,e,f, g,j,k	0	0	2	1	40	60	100
18BAU512B	Retail Management (practical)	I, II, III	a, b, c, d,e, f,g,j,k	0	0	2	1	40	60	100
18BAU513A	Business Law (Practical)	I, II, III, IV	a, b.d,e,,i, j,k	0	0	2	1	40	60	100
18BAU514A	Taxation (Practical)	I, II, III, IV	a, b.c,d,e,i,j ,k	0	0	2	1	40	60	100
18BAU514B	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
Semester Total				21/24	1/0	8/6	22	320/340	480/360	800/700
SEMESTER – VI										
18BAU601A	Management of Industrial Relations	I, III, IV	a, e,i,j	6	0	0	5	40	60	100
18BAU601B	Training and Development	I, III	a,e,j	6	0	0	5	40	60	100
18BAU602A	Excel for Business	I, III	a,e,j,k	2	0	0	2	40	60	100
18BAU602B	Personality Development and Communication Skills	I,II,III	a, b, d,e,f,g,j	6	0	0	4	100	0	100
18BAU603A	Ethics & Corporate Social Responsibility	I, III, IV	a, e,i,j	6	0	0	5	40	60	100
18BAU603B	Entrepreneurship Development	I, III	a,e,j	6	0	0	5	40	60	100

Course code	Name of the course	Objectives and outcomes PEOs	Objectives and outcomes POs	Instruction hours / week L	Instruction hours / week T	Instruction hours / week P	Credit(s)	Maximum Marks CIA 40	Maximum Marks ESE 60	Maximum Marks Total 100
18BAU611A	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
18BAU611B	Training and Development (practical)	I, II, III	a, b, c, e, f, g,j,k	0	0	2	1	40	60	100
18BAU612A	Excel for Business (Practical)	I,II,III	a, b, c, d, e,j,k	0	0	4	2	40	60	100
18BAU613A	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
18BAU613B	Entrepreneurship Development (Practical)	I, II, III	a,b,c,d,e ,f, g,h,j,k	0	0	2	1	40	60	100
18BAU691	Project	I, II, III	a,b,c,d, e,h,j,k	8	0	0	6	40	60	100
ECA/NCC/NSS/Sports/General Interest etc										Good
Semester Total				22/ 26	0	8/4	22	280/ 300	420/ 300	700/ 600
Programme Total							140	1600/1 640	2400/ 2160	4000/ 3800

ABILITY ENHANCEMENT COURSES		
Semester	Course code	Name of the course
I	18ENU101	English – I
II	18ENU201	English – II
III	18ENU301	English – III
IV	18ENU401	English – IV

I	18LAU101	Language - I	
II	18LAU201	Language – II	
I	18AEC101	Business Communication	
II	18AEC201	Environmental Studies	

CORE COURSES		
Semester	**Course code**	**Name of the course**
I	18BAU101	Fundamentals of Management and Organizational Behaviour
	18BAU111	MS Office (Practical)
I	18BAU102	Managerial Economics
II	18BAU201	Financial Accounting
	18BAU211	Tally (Practical)
II	18BAU202	Business Mathematics and Statistics
III	18BAU301	Principles of Marketing
	18BAU311	Principles of Marketing (Practical)
III	18BAU302	Management Accounting
	18BAU312	Management Accounting (Practical)
IV	18BAU401	Business Research Methods
	18BAU411	Business Research Methods (Practical)
IV	18BAU402	Financial Management

SKILL ENHANCEMENT COURSES		
Semester	**Course code**	**Name of the course**
III	18BAU303A	Human Resource Management
	18BAU313A	Human Resource Management (Practical)
	18BAU303B	Management Information System
	18BAU313B	Management Information System (Practical)
IV	18BAU403A	Financial Analysis and Reporting

	18BAU412A	Financial Analysis and Reporting (Practical)
	18BAU403B	Decision making using SPSS
	18BAU412B	Decision making using SPSS (Practical)
V	18BAU503A	Business Law
	18BAU513A	Business Law (Practical)
	18BAU503B	Leadership and Team Building
VI	18BAU602A	Excel for Business
	18BAU612A	Excel for Business (Practical)
	18BAU602B	Personality Development and Communication Skills

DISCIPLINE SPECIFIC ELECTIVES

Semester	Course code	Name of the course
V	18BAU501A	Investment Analysis and Portfolio Management
	18BAU511A	Investment Analysis and Portfolio Management (practical)
	18BAU501B	Banking and Insurance
	18BAU511B	Banking and Insurance (Practical)
	18BAU502A	Advertising and Brand Management
	18BAU512A	Advertising and Brand Management (practical)
	18BAU502B	Retail Management
	18BAU512B	Retail Management (practical)
VI	18BAU601A	Management of Industrial Relations
	18BAU611A	Management of Industrial Relations (Practical)
	18BAU601B	Training and Development
	18BAU611B	Training and Development (practical)
	18BAU691	Project

GENERIC ELECTIVE		
Semester	Course code	Name of the course
V	18BAU504A	Taxation
	18BAU514A	Taxation (Practical)
	18BAU504B	Production and Operations Management
	18BAU514B	Production and Operations Management (Practical)
VI	18BAU603A	Ethics & Corporate Social Responsibility
	18BAU613A	Ethics & Corporate Social Responsibility (Practical)
	18BAU603B	Entrepreneurship Development
	18BAU613B	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 factorsand 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 OUTCOME (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.	√	√									√	
Graduates will be equipped with quantitative and qualitative skills to identify, analyze, create opportunities in higher studies, managerial jobs and entrepreneurial ventures.	√	√	√	√							√	√
Graduates evince the importance of life-long learning by acquiring necessary managerial skills to think strategically and to lead, motivate and manage teams.			√	√	√	√	√					√
Graduates will become socially responsible and value driven citizens contributing to the sustainable growth of management profession and the community.			√	√	√	√	√	√	√			

MBA
Master of Business Administration
CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum
2018 – 2019

Enable | Enlighten | Enrich

KARPAGAM
ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

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)
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DEPARTMENT OF MANAGEMENT
FACULTY OF ARTS, SCIENCE AND HUMANITIES
PG PROGRAM (CBCS) – M.B.A.
CURRICULUM
(2018–2019 Batch and onwards)

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - I										
18MBAP101	Management Principles	I,II	a,b,c,d,e,f,i,j	4	0	0	3	40	60	100
18MBAP102	Organizational Behaviour	I,II,IV	a,b,c,d,e,f,g,i,j	4	0	0	3	40	60	100
18MBAP103	Managerial Economics	I,II,III,IV	a,b,d,e,f,g,i,j	3	1	0	3	40	60	100
18MBAP104	Legal Aspects of Business	I,II,IV	a,c,d,f,g,h,i,j	4	0	0	3	40	60	100
18MBAP105	Accounting for Managers	I,II,IV	a,b,c,d,e,f,h,i,j	4	1	0	4	40	60	100
18MBAP106	Statistics for Decision Making	I,III	a,b,c,d,e,f,i,j	5	1	0	4	40	60	100
18MBAP111	MS Office and Tally (Practical)	I,II,III	a,b,c,d,f,i,j	0	0	4	2	40	60	100
18MBAP112	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
Semester Total				26	3	6	23	330	420	750
SEMESTER – II										
18MBAP201	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
18MBAP202	Marketing Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j	4	0	0	3	40	60	100
18MBAP203	Human Resource Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j	4	0	0	3	40	60	100
18MBAP204	Quantitative Techniques	I,II,III	a,b,c,d,e,f,i,j	4	1	0	4	40	60	100
18MBAP205	Financial Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j	4	1	0	4	40	60	100

Course code	Name of the course	Objectives and outcomes PEOs	Objectives and outcomes POs	L	T	P	Credit(s)	CIA 40	ESE 60	Total 100
18MBAP206	Research Methodology for Management	I,II,III,IV	a,b,c,d,e,f, g,hi,j	4	0	0	4	40	60	100
18MBAP211	SPSS (Practical)	I,II,III	a,b,c,d,f,i,j	0	0	4	2	40	60	100
18MBAP212	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
Semester Total				26	3	6	25	330	420	750
SEMESTER – III										
18MBAP301	Corporate Strategy	I,II,III,IV	a,b,c,d,f,g, h,i,j	3	0	0	3	40	60	100
18MBAP302	International Business	I,II,III,IV	a,c,d,f,g,h, i,j	3	0	0	3	40	60	100
	+Specialization I Elective 1			4	0	0	4	40	60	100
	+Specialization I Elective 2			4	0	0	4	40	60	100
	+Specialization II Elective 1			4	0	0	4	40	60	100
	+Specialization II Elective 2			4	0	0	4	40	60	100
18MBAP321	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
Semester Total				24	0	11	28	320	480	800
SEMESTER – IV										
18MBAP401	Indian Ethos and Business Ethics	I,II,IV	a,f,g,h,i,j	2	0	0	1	50	0	50
	+Specialization I Elective 3	-	-	4	0	0	4	40	60	100
	+Specialization I Elective 4	-	-	4	0	0	4	40	60	100
	+Specialization I Elective 5	-	-	4	0	0	4	40	60	100
	+Specialization II Elective 3	-	-	4	0	0	4	40	60	100

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
	+Specialization II Elective 4	-	-	4	0	0	4	40	60	100
	+Specialization II Elective5	-	-	4	0	0	4	40	60	100
18MBAP411	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,j	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

Category	SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	TOTAL
Programme Core	23	25	6	2	56
Programme Electives					
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

ELECTIVE LIST - SEMESTER III

Semester	List of Specializations	Course Code	Name of the Elective Course	PEO	PO
IV	Finance	18MBAPF303A	Investment Analysis and Portfolio Management	I,II,III,IV	a,b,c,d,e,f,g,j
		18MBAPF303B	Financial Markets and Services	I,II,IV	a,b,c,d,e,f,g,j
		18MBAPF303C	Project Appraisal and Finance	I,II,III,IV	a,b,c,d,e,f,g,i
	Marketing Management	18MBAPM303A	Services Marketing	I,II,IV	a,b,c,d,e,f,g
		18MBAPM303B	Integrated Marketing Communication	I,II,IV	a,b,c,d,e,f,g,i
		18MBAPM303C	Retail Management	I,II,III,IV	a,b,c,d,e,f,g,i
	Human Resources Management	18MBAPH303A	Industrial Relations and Labour Welfare	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPH303B	Compensation and Benefits Management	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPH303C	Strategic HRM	I,II,IV	a,b,c,d,e,f,g,i
	Management Information System	18MBAPS303A	Enterprise Resource Planning	I,II,III	a,b,c,d,e,f,g,i
		18MBAPS303B	Managing Software Projects	I,II,III,IV	a,b,c,d,e,f,g,i
		18MBAPS303C	E-Commerce	I,II,III,IV	a,b,c,d,e,f,g,i
	Entrepreneurship	18MBAPE303A	Technology Management and Intellectual Property Right	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPE303B	Social Entrepreneurship	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPE303C	Venture Capital and Private Equity	I,II,III,IV	a,b,c,d,e,f,g,h,i
	Micro and Small Business Management	18MBAPB303A	Planning, Structuring, and Financing Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPB303B	Finance and Accounting for Small Business:	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPB303C	Marketing for Small Business	I,II,IV	a,b,c,d,e,f,g,h,i
	Business Analytics	18MBAPA303A	Data Mining and Data warehousing	I,II,III,IV	a,b,c,d,e,f,g,i
		18MBAPA303B	Data Visualization for Managers – Using R and Tableau	I,II,III,IV	a,b,c,d,e,f,g,i
		18MBAPA303C	Machine Language	I,II,III,IV	a,b,c,d,e,f,g,i
	International Business	18MBAPI303A	International Economics	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPI303B	International Trade procedures and Documentation	I,II,IV	a,b,c,d,e,f,g,h,i
		18MBAPI303C	International Logistics Management	I,II,IV	a,b,c,d,e,f,g,h,i
	Operations Management	18MBAPO303A	Supply Chain Management	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPO303B	Operations Strategy	I,II,III,IV	a,b,c,d,e,f,g,h,i
		18MBAPO303C	Total Quality Management	I,II,III,IV	a,b,c,d,e,f,g,h,i
	Tourism Management	18MBAPT303A	Tourism Principles, Policies and Practices	I,II,IV	a,b,c,d,e,f,g,h,i
		18MBAPT303B	Tourism Products of India	I,II,IV	a,b,c,d,e,f,g,h,i
		18MBAPT303C	Recreation Management	I,II,,IV	a,b,c,d,e,f,g,h,i

Semester	List of Specializations	Course Code	Name of the Elective Course	PEO	PO
IV	Finance	18MBAPF402A	Banking and Insurance	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPF402B	Mergers, Acquisitions and Corporate Restructuring	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPF402C	Financial Derivatives	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPF402D	Financial Econometrics	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Marketing Management	18MBAPM402A	New Product Development	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPM402B	Consumer Behaviour	I,II,III,IV	a,b,c,d,e,f,g,i,j
		18MBAPM402C	Brand Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPM402D	Sales and Distribution Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Human Resources Management	18MBAPH402A	Organizational Change and Development	I,II,III,IV	a,b,c,d,e,f,g,i,j
		18MBAPH402B	Performance Management Systems	I,II,III,IV	a,b,c,d,e,f,g,i,j
		18MBAPH402C	Competency Mapping	I,II,III,IV	a,b,c,d,e,f,g,i,j
		18MBAPH402D	Talent Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Management Information Systems	18MBAPS402A	Information Systems Audit and Control	I,II,III,IV	a,b,c,d,e,f,h,i
		18MBAPS402B	Knowledge Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
		18MBAPS402C	Digital and Social Media Marketing	I,II,III,IV	a,b,c,d,e,f,g,i,j
		18MBAPS402D	System Analysis and Design	I,II,III,IV	a,b,c,d,e,f,g,i,j
	Entrepreneurship	18MBAPE402A	Innovation Management	I,II,III,IV	a,b,c,d,e,f,g,i,j
		18MBAPE402B	Family Business Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPE402C	Entrepreneurial Leadership	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPE402D	Rural Entrepreneurship	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Micro and Small Business Management	18MBAPB402A	Indian Models of Economy, Business and Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPB402B	Institutional support to Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPB402C	Policy Framework for Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPB402D	Contemporary Environment in Small Business	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Business Analytics	18MBAPA402A	Human Resource Metrics and Analytics	I,II,III	a,b,c,d,e,f,i,j
		18MBAPA402B	Marketing Analytics	I,II,III	a,b,c,d,e,f,i,j
		18MBAPA402C	Big Data Analytics	I,II,III	a,b,c,d,e,f,i,j
		18MBAPA402D	Financial Analytics	I,II,III	a,b,c,d,e,f,i,j
	International Business	18MBAPI402A	International Finance	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPI402B	International Marketing Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPI402C	International HRM	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPI402D	Cross cultural Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Operations Management	18MBAPO402A	Sourcing Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPO402B	Pricing and Revenue Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPO402C	Supply Chain Analytics	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPO402D	Services Operations Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
	Tourism Management	18MBAPT402A	Travel Agency and Tour Operations	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPT402B	Ecotourism	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPT402C	Event Management	I,II,III,IV	a,b,c,d,e,f,g,h,i,j
		18MBAPT402D	Healthcare Tourism	I,II,III,IV	a,b,c,d,e,f,g,h,i,j

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.	√					√			√	√
Postgraduates will attain professional skills to develop and communicate strategic, creative and innovative ideas to excel in diverse career path.		√	√	√	√	√			√	√
Postgraduates will be able to apply the management tools and techniques to implement systematic decision making process.		√	√	√					√	√
Postgraduates will be able to adapt to a rapidly changing global environment and become socially responsible and value driven citizens committed to sustainable growth.							√	√	√	√

DEPARTMENT OF MATHEMATICS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Mathematics
(2018–2019 Batch and onwards)

Course Code	Name of the Course	Objectives and Out Comes		Instruction Hours / Week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – I										
18LSU101	Language –I	III	n,o	4	0	0	4	40	60	100
18ENU101	English	II	n, p	4	0	0	4	40	60	100
18MMU101	Calculus	I	e, l	4	0	0	4	40	60	100
18MMU102	Algebra	II	m	6	1	0	6	40	60	100
18MMU103	Logic and Sets	III	j	6	2	0	6	40	60	100
18MMU111	Calculus(Practical)	I	e	0	0	3	2	40	60	100
	Semester Total			24	3	3	26	240	360	600
SEMESTER – II										
18LSU201	Language – II	III	n,o	4	0	0	4	40	60	100
18MMU201	Differential Equations	I	a, d, l	4	0	0	4	40	60	100
18MMU202	Theory of Equations	II	j	6	1	0	6	40	60	100
18MMU203	Real Analysis	III	d, f	6	2	0	6	40	60	100
18MMU211	Differential Equations (Practical)	I	k	0	0	3	2	40	60	100
18AEC201	Environmental Studies	I	n, o	4	0	0	4	40	60	100
	Semester Total			24	3	3	26	240	360	600
SEMESTER – III										
18MMU301	PDE and Systems of ODE	I,II	a,l	4	0	0	4	40	60	100
18MMU302	Group Theory I	II	f	6	2	0	6	40	60	100
18MMU303A	Analytical Geometry	II	d,m	4	2	0	4	40	60	100
18MMU303B	Computer Graphics	I	b,k							
18MMU304	Physics-I	I	a,c	4	0	0	4	40	60	100
18MMU311	PDE and Systems of ODE (Practical)	II	l	0	0	4	2	40	60	100
18MMU312	Physics-I-Practical	I	a,c	0	0	4	2	40	60	100
	Semester Total			18	4	8	22	240	360	600
SEMESTER – IV										
18MMU401	Numerical Methods	I	h	4	0	0	4	40	60	100

Code	Subject									
18MMU402	Group Theory II	II	f	6	2	0	6	40	60	100
18MMU403A	Graph Theory	II	d,m	4	2	0	4	40	60	100
18MMU403B	Operating System :Linux	II	K							
18MMU404	Physics-II	I	a,c	4	0	0	4	40	60	100
18MMU411	Numerical Methods (Practical)	I	h,j	0	0	4	2	40	60	100
18MMU412	Physics-II-Practical	I	a,c	0	0	4	2	40	60	100
	Semester Total			**18**	**4**	**8**	**22**	**240**	**360**	**600**
	SEMESTER – V									
18MMU501A	Multivariate Calculus	II	e,g	6	2	0	6	40	60	100
18MMU501B	Theory of Real Functions	I	e							
18MMU502A	Ring Theory and Linear algebra I	II	m	6	2	0	6	40	60	100
18MMU502B	Number Theory	II	j							
18MMU503A	Probability and Statistics			6	2	0	6	40	60	100
18MMU503B	Boolean Algebra and Automata Theory									
18MMU504	Introduction to Accounting	III	i	4	2	0	4	40	60	100
	Semester Total			**22**	**8**	**0**	**22**	**160**	**240**	**400**
	SEMESTER – VI									
18MMU601A	Metric Spaces and Complex Analysis	II	d,m	6	2	0	6	40	60	100
18MMU601B	Riemann Integration and Series of Functions	I	c							
18MMU602A	Ring Theory and Linear algebra II	II	m	6	2	0	6	40	60	100
18MMU602B	Linear Programming	I,II	a,i							
18MMU603	Cost and Management Accounting	III	i	4	2	0	4	40	60	100
18MMU691	Project			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**	**1280**	**1920**	**3200**

Ability Enhancement Courses (AEC)		
Semester	**Course Code**	**Name of the Course**
I	18LSU101	Language –I
	18ENU101	English
II	18LSU201	Language – II
	18AEC201	Environmental Studies

Generic Elective Courses (GE) /Allied Courses		
Semester	**Course Code**	**Name of the Course**
III	18MMU304	Physics-I
	18MMU312	Physics-I-Practical
IV	18MMU404	Physics-II
	18MMU412	Physics-II-Practical
V	18MMU504	Introduction to Accounting
VI	18MMU603	Cost and Management Accounting

Core Courses (CC)		
Semester	**Course Code**	**Name of the Course**
I	18MMU101	Calculus
	18MMU102	Algebra
	18MMU103	Logic and Sets
	18MMU111	Calculus(Practical)
II	18MMU201	Differential Equations
	18MMU202	Theory of Equations
	18MMU203	Real Analysis
	18MMU211	Differential Equations (Practical)
III	18MMU301	PDE and Systems of ODE
	18MMU302	Group Theory I
	18MMU311	PDE and Systems of ODE (Practical)
IV	18MMU401	Numerical Methods

	18MMU402	Group Theory II
	18MMU411	Numerical Methods (Practical)
V	18MMU501A	Multivariate Calculus
	18MMU501B	Theory of Real Functions
VI	18MMU601A	Metric Spaces and Complex Analysis
	18MMU601B	Riemann Integration and Series of Functions
	18MMU691	Project

Skill Enhancement Courses(SEC)		
Semester	**Course Code**	**Name of the Course**
III	18MMU303A	Analytical Geometry
	18MMU303B	Computer Graphics
IV	18MMU403A	Graph Theory
	18MMU403B	Operating System :Linux

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
V	18MMU502A	Ring Theory and Linear algebra I
	18MMU502B	Number Theory
	18MMU503A	Probability and Statistics
	18MMU503B	Boolean Algebra and Automata Theory
VI	18MMU602A	Ring Theory and Linear algebra II
	18MMU602B	Linear Programming

Employability → Blue

Skill development → Red

Entrepreneurship → Green

DEPARTMENT OF MATHEMATICS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Mathematics
(2018–2019 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.
l. 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	l	m	n	o	p	q	r	s
PEO I	X	X	X				X	X	X					X	X	X	X		X
PEO II				X	X	X				X		X	X		X		X		
PEO III	X								X	X	X					X		X	X

DEPARTMENT OF MATHEMATICS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
PG PROGRAM (CBCS) – M.Sc. Mathematics

Course code	Name of the course	Objectives and Out Comes		Instruction Hours / Week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – I										
18MMP101	Algebra	III	a, c, e	4	0	0	4	40	60	100
18MMP102	Real Analysis	I	a, g, e	4	0	0	4	40	60	100
18MMP103	Numerical Analysis	I	b, d, g	4	0	0	4	40	60	100
18MMP104	Ordinary Differential Equations	II	b, d, e	4	0	0	4	40	60	100
18MMP105A	Advanced Discrete Mathematics	III	e							
18MMP105B	Neural networks and fuzzy logic	I	a, g	4	0	0	4	40	60	100
18MMP105C	Combinatorics	II	e							
18MMP106	Mechanics	II	g	4	0	0	4	40	60	100
18MMP111	Numerical Analysis - Practical	I	a	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2	-	-	-	-	-	-
Semester Total				26	0	4	26	280	420	700
SEMESTER – II										
18MMP201	Complex Analysis	III	c, e	4	0	0	4	40	60	100
18MMP202	Topology	I	a, c	4	0	0	4	40	60	100
18MMP203	Optimization Techniques	III	f	4	0	0	4	40	60	100
18MMP204	Partial Differential Equations	II	d, e	4	0	0	4	40	60	100
18MMP205A	Graph theory and its applications	I	a							
18MMP205B	Theory of Elasticity	I	a, g	4	0	0	4	40	60	100
18MMP205C	Fundamentals of Actuarial Mathematics	III	b, g							
18MMP206	Fluid dynamics	II	c, f	4	0	0	4	40	60	100
18MMP211	Optimization Techniques - Practical	II	g	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2	-	-	-	-	-	-
Semester Total				26	0	4	26	280	420	700
SEMESTER – III										
18MMP301	Functional Analysis	III	c,e	4	0	0	4	40	60	100

18MMP302	Number Theory	I	a,g	4	0	0	4	40	60	100
18MMP303	Mathematical Modeling	II	d,e	4	0	0	4	40	60	100
18MMP304	Mathematical Statistics	I	i,j	4	0	0	4	40	60	100
18MMP305A	Formal Languages & Automata Theory	I	e,i	4	0	0	4	40	60	100
18MMP305B	Magnetohydrodynamics	II	e,j							
18MMP305C	Fuzzy Topology	III	c,e							
18MMP306	Mathematical Methods	II	j,g	4	0	0	4	40	60	100
18MMP311	Mathematical Statistics-Practical	I	a	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2	-	-	-	-	-	-
Semester Total				**26**	**0**	**4**	**26**	**280**	**420**	**700**
SEMESTER – IV										
18MMP401	Measure theory	III	f,g	4	0	0	4	40	60	100
18MMP402	Stochastic Processes	I	g,e,j	3	0	0	3	40	60	100
18MMP491	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**

Elective Courses*

Elective I		Elective II		Elective III	
Course Code	**Name of the Course**	**Course Code**	**Name of the Course**	**Course Code**	**Name of the Course**
18MMP105A	Advanced Discrete Mathematics	18MMP205A	Graph theory and its applications	18MMP305A	Formal Languages & Automata Theory
18MMP105B	Neural networks and fuzzy logic	18MMP205B	Theory of Elasticity	18MMP305B	Magnetohydrodynamics
18MMP105C	Combinatorics	18MMP205C	Fundamentals of Actuarial Mathematics	18MMP305C	Fuzzy Topology

Employability → Blue

Skill development → Red

Entrepreneurship → Green

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 andapplied 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	X		X		X			X		X
PEO II	X			X			X			X
PEO III		X				X			X	

DEPARTMENT OF MICROBIOLOGY
FACULTY OF ARTS, SCIENCES AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Microbiology
(2018–2021 Batch)

Course code	Name of the course	Objective and outcomes PEOs	Objective and outcomes POs	L	T	P	Credit(s)	CIA 40	ESE 60	Total 100
SEMESTER-I										
18LSU101	Language – I	VI, I	e	4	0	0	4	40	60	100
18ENU101	English	VII	e	4	0	0	4	40	60	100
18MBU101	Introduction to Microbiology and Microbial Diversity	I	a	3	1	0	4	40	60	100
18MBU102	Bacteriology	I	g	4	0	0	4	40	60	100
18MBU103	Biochemistry	I	g	4	0	0	4	40	60	100
18MBU111	Basic Microbiology - Practical	VI	b	0	0	3	2	40	60	100
18MBU112	Bacteriology - Practical	VI	b	0	0	3	2	40	60	100
18MBU113	Basic Biochemistry - Practical	VI	b	0	0	4	2	40	60	100
	Semester total			**19**	**1**	**10**	**26**	**320**	**480**	**800**
SEMESTER-II										
18LSU201	Language –II	VII	e	4	0	0	4	40	60	100
18MBU201	Virology	I	g	4	0	0	4	40	60	100
18MBU202	Microbial Physiology and Metabolism	II	g	4	0	0	4	40	60	100
18MBU203	Microbial genetics	IV	g	3	1	0	4	40	60	100
18MBU211	Virology – Practical	VI	b	0	0	3	2	40	60	100
18MBU212	Microbial Physiology and Metabolism – Practical	VI	b	0	0	3	2	40	60	100
18MBU213	Microbial Genetics - Practical	VI	b	0	0	4	2	40	60	100
18AEC201	Environmental Studies	IV	f	4	0	0	4	40	60	100
	Semester total			**19**	**1**	**10**	**26**	**320**	**480**	**800**
SEMESTER – III										
18MBU301	Food and Dairy Microbiology	IV	h	4	0	0	4	40	60	100
18MBU302	Industrial Microbiology	IV	g	4	0	0	4	40	60	100
18MBU303	Advanced Biochemistry	IV	g	4	0	0	4	40	60	100
18MBU304A	Microbial Quality Control in Food and Pharmaceutical Industries	IV	h	3	0	0	3	40	60	100
18MBU304B	Microbial Diagnosis in Health Clinic									
18MBU311	Food and Dairy Microbiology - Practical	VI	b	0	0	4	2	40	60	100
18MBU312	Industrial Microbiology - Practical	IV	g	0	0	4	2	40	60	100
18MBU313	Advanced Biochemistry - Practical	IV	g	0	0	4	2	40	60	100
18MBU314A	Microbial Quality Control in Food and	III	b,h	0	0	3	1	40	60	100

Code	Course			L	T	P	C	Int	Ext	Total
	Pharmaceutical Industries - Practical									
18MBU314B	Microbial Diagnosis in Health Clinic – Practical									
	Semester total			15	0	15	22	320	480	800
	SEMESTER – IV									
18MBU401	Immunology	I	h	4	0	0	4	40	60	100
18MBU402	Medical Microbiology	IV	j	4	0	0	4	40	60	100
18MBU403	Environmental Microbiology	I	g	4	0	0	4	40	60	100
18MBU404A	Biofertilizers and Biopesticides	IV	h,g,i	3	0	0	3	40	60	100
18MBU404B	Recombinant DNA Technology									
18MBU411	Immunology - Practical	I	h	0	0	4	2	40	60	100
18MBU412	Medical Microbiology - Practical	IV	j	0	0	4	2	40	60	100
18MBU413	Environmental Microbiology - Practical	I	b,g	0	0	4	2	40	60	100
18MBU414A	Biofertilizers and Biopesticides - Practical	IV	h,g,i	0	0	3	1	40	60	100
18MBU414B	Recombinant DNA Technology – Practical									
	Semester total			15	0	15	22	320	480	800
	SEMESTER – V									
18MBU501A	Management of Human Microbial Diseases	I IV	j	4	0	0	4	40	60	100
18MBU501B	Microbiological Analysis of air and water									
18MBU502A	Biomathematics and Biostatistics	V VII	c,d	4	0	0	4	40	60	100
18MBU502B	Bioinformatics									
18MBU503A	Instrumentation and Biotechniques	IV	a,j	4	0	0	4	40	60	100
18MBU503B	Plant Pathology									
18MBU504A	Microbial Biotechnology	IV	g	3	0	0	3	40	60	100
18MBU504B	Inheritance Biology	VI								
18MBU511A	Management of Human Microbial Diseases – Practical	I IV	j	0	0	4	2	40	60	100
18MBU511B	Microbiological Analysis of air and water – Practical									
18MBU512A	Biomathematics and Biostatistics - Practical	V VII	d	0	0	4	2	40	60	100
18MBU512B	Bioinformatics - Practical									
18MBU513A	Instrumentation and Biotechniques - Practical	IV	a,j	0	0	4	2	40	60	100
18MBU513B	Plant Pathology - Practical									
18MBU514A	Microbial Biotechnology - Practical	IV	g	0	0	3	1	40	60	100
18MBU514B	Inheritance Biology - Practical	VI								
	Semester total			15	0	15	22	320	480	800
	SEMESTER – VI									
18MBU601A	Mushroom Cultivation	III	h	4	0	0	4	40	60	100
18MBU601B	Food Fermentation Techniques									
18MBU602A	Biosafety and Intellectual Property Rights	V IV	a	4	0	0	4	40	60	100
18MBU602B	Microbes in Sustainable Agriculture and Development									
18MBU603A	Cell Biology	VI	b	3	0	0	3	40	60	100
18MBU603B	Molecular Biology									

Course Code	Name of the Course									
18MBU611A	Mushroom Cultivation - Practical	III	h	0	0	4	2	40	60	100
18MBU611B	Food Fermentation Techniques - Practical									
18MBU612A	Biosafety and Intellectual Property Rights - Practical	V	a,i	0	0	4	2	40	60	100
18MBU612B	Microbes in Sustainable Agriculture and Development -Practical	IV								
18MBU613A	Cell Biology - Practical	VI	b	0	0	3	1	40	60	100
18MBU613B	Molecular Biology - Practical									
18MBU691	Project	IV	b,g	0	0	8	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc							Good		
	Semester total			**11**	**0**	**19**	**22**	**280**	**420**	**700**
	COURSE TOTAL			**94**	**2**	**84**	**140**	**1880**	**2820**	**4700**

*Colour fonts highlights

Red colour   : Entrepreneurship course

Green colour   : Employability courses

Blue colour   : Skill development courses

Ability Enhancement Courses (AEC)		
Semester	**Course Code**	**Name of the Course**
I	18LSU101	Language – I
	18ENU101	English
II	18LSU201	Language –II
	18AEC201	Environmental Studies

Generic Elective Courses (GE) / Allied Courses		
Semester	**Course Code**	**Name of the Course**
I	18MBU103	Biochemistry
	18MBU113	Basic Biochemistry - Practical
III	18MBU303	Advanced Biochemistry
	18MBU313	Advanced Biochemistry - Practical

Core Courses (CC)		
Semester	**Course Code**	**Name of the Course**
I	18MBU101	Introduction to Microbiology and Microbial Diversity
	18MBU102	Bacteriology
	18MBU111	Basic Microbiology - Practical
	18MBU112	Bacteriology - Practical
II	18MBU201	Virology
	18MBU202	Microbial Physiology and Metabolism
	18MBU203	Microbial genetics
	18MBU211	Virology - Practical
	18MBU212	Microbial Physiology and Metabolism - Practical
	18MBU213	Microbial Genetics - Practical
III	18MBU301	Food and Dairy Microbiology
	18MBU302	Industrial Microbiology
	18MBU311	Food and Dairy Microbiology - Practical
	18MBU312	Industrial Microbiology - Practical
IV	18MBU401	Immunology

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	18MBU402	Medical Microbiology
	18MBU403	Environmental Microbiology
	18MBU411	Immunology - Practical
	18MBU412	Medical Microbiology - Practical
	18MBU413	Environmental Microbiology - Practical
VI	18MBU691	Project

Skill Enhancement Courses(SEC)		
Semester	**Course Code**	**Name of the Course**
III	18MBU304A	Microbial Quality Control in Food and Pharmaceutical Industries
	18MBU304B	Microbial Diagnosis in Health Clinic
III	18MBU314A	Microbial Quality Control in Food and Pharmaceutical Industries - Practical
	18MBU314B	Microbial Diagnosis in Health Clinic -Practical
IV	18MBU404A	Biofertilizers and Biopesticides
	18MBU404B	Recombinant DNA Technology
IV	18MBU414A	Biofertilizers and Biopesticides - Practical
	18MBU414B	Recombinant DNA Technology – Practical
V	18MBU501A	Management of Human Microbial Diseases
	18MBU501B	Microbiological Analysis of air and water
	18MBU502A	Biomathematics and Biostatistics
	18MBU502B	Bioinformatics
V	18MBU511A	Management of Human Microbial Diseases - Practical
	18MBU511B	Microbiological Analysis of air and water - Practical
	18MBU512A	Biomathematics and Biostatistics - Practical
	18MBU512B	Bioinformatics - Practical
VI	18MBU601A	Mushroom Cultivation
	18MBU601B	Food Fermentation Techniques
VI	18MBU611A	Mushroom Cultivation - Practical
	18MBU611B	Food Fermentation Techniques - Practical

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
V	18MBU503A	Instrumentation and Biotechniques
	18MBU503B	Plant Pathology
	18MBU504A	Microbial Biotechnology
	18MBU504B	Inheritance Biology
V	18MBU513A	Instrumentation and Biotechniques - Practical
	18MBU513B	Plant Pathology - Practical
	18MBU514A	Microbial Biotechnology - Practical
	18MBU514B	Inheritance Biology - Practical
	18MBU602A	Biosafety and Intellectual Property Rights
VI	18MBU602B	Microbes in Sustainable Agriculture and Development
	18MBU603A	Cell Biology
	18MBU603B	Molecular Biology
	18MBU612A	Biosafety and Intellectual Property Rights - Practical
	18MBU612B	Microbes in Sustainable Agriculture and Development -Practical

18MBU613A	Cell Biology - Practical
18MBU613B	Molecular Biology - Practical

Undergraduate Programme – B.Sc Microbiology Programme Outcomes

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

a. Scientific Knowledge: 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. Laboratory Skills: 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 emergencyprocedures.

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

d. Problem-Solving Skills: 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. Communication Skills: Microbiology majors will demonstrate competence in written and oral communication.

f. Cooperation/Social Responsibility: 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 biopesticides etc,

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

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

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PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Programme Educational Objectives of UG Microbiology: The major 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	X	X						X		X
PEO II	X	X						X	X	
PEO III		X		X			X	X		
PEO IV	X			X			X		X	
PEO V	X					X				X
PEO VI		X	X	X				X	X	X
PEO VII	X		X	X	X	X	X			X

DEPARTMENT OF MICROBIOLOGY
FACULTY OF ARTS, SCIENCES AND HUMANITIES
PG PROGRAM – M. Sc. Microbiology
(2018 – 2019 Batch & onwards)

Course code	Name of the course	PEOs	POs	L	T	P	Credit (s)	CIA	ESE	Total
		Objectives and out comes		**Instruction hours / week**				**Marks**		
SEMESTER-I										
18MBP101	Fundamentals of Microbiology and Classification	I	a	4	0	0	4	40	60	100
18MBP102	Microbial Physiology and Metabolism	II	a	4	0	0	4	40	60	100
18MBP103	Molecular genetics	II	b	4	0	0	4	40	60	100
18MBP104	Bioinstrumentation	VI	b	3	1	0	4	40	60	100
18MBP105A	Marine microbiology	I	a							
18MBP105B	Computer applications and Bioinformatics	VII	c,d	4	0	0	4	40	60	100
18MBP105C	Biochemistry	II	A							
18MBP111	Basic Practical – I	VI	b, e	0	0	4	2	40	60	100
18MBP112	Basic Practical – II	VI	b, e	0	0	4	2	40	60	100
	Journal Paper Analysis & Presentation	IV	C,e	2	0	0	-	-	-	-
	Semester total			21	1	8	24	280	420	700
SEMESTER–II										
18MBP201	Virology	I	a, b	3	1	0	4	40	60	100
18MBP202	Medical Bacteriology	I	a, c	4	0	0	4	40	60	100
18MBP203	Biostatistics and Research Methodology	VI	b, d	4	0	0	4	40	60	100
18MBP204	Environmental and agricultural microbiology	I	a,i	4	0	0	4	40	60	100
18MBP205A	Cell biology	I	a,c							
18MBP205B	Quality assurance and quality control	I	a,d,e	4	0	0	4	40	60	100
18MBP205C	Bioprocess engineering	IV	a,e							
18MBP211	Advanced Practical – III	I	b,e,f	0	0	4	2	40	60	100
18MBP212	Advanced Practical – IV	I	b,e,f	0	0	4	2	40	60	100
	Journal Paper Analysis & Presentation	IV	c,e	2	0	0	-	-	-	-
	Semester total			21	1	8	24	280	420	700

Course code	Name of the course	Objectives and out comes PEOs	Objectives and out comes POs	Instruction hours / week L	Instruction hours / week T	Instruction hours / week P	Credit (s)	Marks CIA	Marks ESE	Marks Total
SEMESTER-III										
18MBP301	Advanced Immunology	II	b, d	4	0	0	4	40	60	100
18MBP302	Food Microbiology	IV	a, c	4	0	0	4	40	60	100
18MBP303	Medical Mycology and Parasitology	I	a,e,f	4	0	0	4	40	60	100
18MBP304	Microbial Technology and Intellectual Property Rights	V	c,d,g	4	0	0	4	40	60	100
18MBP305A	Biofertilizer and Biomanure Technology	I	a,i	4	0	0	4	40	60	100
18MBP305B	Laboratory animal care	V	b,d,f							
18MBP305C	Bio nanotechnology	IV	a,d,g							
18MBP311	Application Oriented Practical – V	I	b,h	0	0	4	2	40	60	100
18MBP312	Application Oriented Practical – VI	I	b,i	0	0	4	2	40	60	100
	Journal Paper Analysis & Presentation	IV	c,d,e	2	0	0	-	-	-	-
	Semester total			22	0	8	24	280	420	700

Course code	Name of the course	Hrs / Week	Marks CIA	Marks ESE	Marks Total	Exam Hrs	Credit (s)
SEMESTER – IV							
18MBP491	Project and Viva Voce	-	80	120	200	-	15
	Semester total	-	80	120	200	-	15
		90	920	1380	2300		87

Elective courses*

Elective – 1 (I8MBP105) Course code	Elective – 1 (I8MBP105) Name of the course (Theory)	Elective – 2 (I8MBP205) Course Code	Elective – 2 (I8MBP205) Name of the course (Theory)	Elective – 3 (I8MBP305) Course Code	Elective – 3 (I8MBP305) Name of the course (Theory)
18MBP105A	Marine Microbiology	I8MBP205A	Cell biology	I8MBP305A	Biofertilizer and Biomanure Technology
18MBP105B	Computer Applications and Bioinformatics	I8MBP205B	Quality assurance and quality control	I8MBP305B	Laboratory animal care
18MBP105C	Biochemistry	I8MBP205C	Bioprocess engineering	I8MBP305C	Bionanotechnology

*Colour fonts highlights

Red colour : Entrepreneurship course / Green colour : Employability courses / Blue colour : Skill development courses

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Postgraduate Programme – M.Sc Microbiology

Programme Outcomes

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 inmicrobiology

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, biodegradationetc.

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	A	B	C	d	e	f	g	h	I
PEO I	X					X	X	X	
PEO II	X	X	X	X					X
PEO III			X	X	X	X	X		
PEO IV	X					X	X	X	X
PEO V		X	X	X		X			
PEO VI				X	X	X			X

DEPARTMENT OF PHYSICS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Physics
(2018–2019 Batch and onwards)

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
		Objectives and outcomes		Instruction hours / week				Maximum Marks		
								40	60	100
SEMESTER – 1										
18LSU101	Language – I	2	i	4	-	-	4	40	60	100
18ENU101	English	2	h, g	4	-	-	4	40	60	100
18PHU101	Mechanics	1,3	a	5	-	-	5	40	60	100
18PHU102	Properties Of Matter And Acoustics	1,6	a, b	4	-	-	4	40	60	100
18PHU103	Mathematical Physics – I	5	h	5	-	-	5	40	60	100
18PHU111	Mechanics Practical	1,6	e	-	-	2	1	40	60	100
18PHU112	Properties Of Matter And Acoustics Practical	5	e	-	-	2	1	40	60	100
18PHU113	Mathematical Physics Practical –I	4	h	-	-	4	2	40	60	100
	Semester Total			**22**	**-**	**8**	**26**	**320**	**480**	**800**
SEMESTER – 2										
18LSU201	Language –II	2	i	4	-	-	4	40	60	100
18PHU201	Electricity and Magnetism	1,3	a, d	5	-	-	5	40	60	100
18PHU202	Analog Systems and Applications	1,6	a, b	4	-	-	4	40	60	100
18PHU203	Mathematical Physics – II	5	h	5	-	-	5	40	60	100
18PHU211	Electricity and Magnetism Practical	1,6	a	-	-	2	1	40	60	100
18PHU212	Analog Systems and Applications Practical	5	a, b	-	-	2	1	40	60	100
18PHU213	Mathematical Physics Practical – II	4	a	-	-	4	2	40	60	100
18AEC201	Environmental Studies	3	d	4	-	-	4	40	60	100
	Semester Total			**22**	**-**	**8**	**26**	**320**	**480**	**800**
SEMESTER – 3										
18PHU301	Thermal Physics and Statistical Mechanics	3	a, c	4	-	-	4	40	60	100

Code	Title			L	T	P	C	Int	Ext	Total
18PHU302	Physics of Electronic Devices and Circuits	1	a, e	4	-	-	4	40	60	100
18PHU303A	SEC-1:Renewable Energy and Energy harvesting	7	e, f	03	-	-	3	40	60	100
18PHU303B	SEC-1:Physics Workshop skill									
18PHU304	Mathematics –I	5	e, h	4	-	-	4	40	60	100
18PHU311	Thermal Physics and Statistical Mechanics - Practical	6	a, e	-	-	4	2	40	60	100
18PHU312	Physics of Electronic Devices and Circuits Practical	6	a, e	-	-	4	2	40	60	100
18PHU313A	SEC-1 Practical:Renewable Energy and Energy harvesting Practical	6	e	-	-	03	1	40	60	100
18PHU313B	SEC-1 Practical: Physics Workshop skill Practical	6	e							
18PHU314	Mathematics Practical-I	4,5	e	-	-	4	2	40	60	100
	Semester total			**15**		**15**	**22**	**320**	**480**	**800**

SEMESTER – 4

Code	Title			L	T	P	C	Int	Ext	Total
18PHU401	Wave and optics	3	a, c	4	-	-	4	40	60	100
18PHU402	Nuclear and Particle physics	1	j	4	-	-	4	40	60	100
18PHU403A	SEC-2: Basic Instrumentation Skill	2	f	3	-	-	3	40	60	100
18PHU403B	SEC-2: Radiation Safety	1	a							
18PHU404	Mathematics –II	5	h	4	-	-	4	40	60	100
18PHU411	Wave and Optics Practical	6	e	-	-	04	2	40	60	100
18PHU412	Nuclear and Particle Physics Practical	6	j,f	-	-	04	2	40	60	100
18PHU413A	SEC-2 Practical: Basic Instrumentation Skill Practical	6	e	-	-	3	1	40	60	100
18PHU413B	SEC-2 Practical:Radiation Safety Practical	6	e							
18PHU414	Mathematics Practical - II	4	e	-	-	04	2	40	60	100
	Semester total			**15**	**-**	**15**	**22**	**320**	**480**	**800**

SEMESTER – 5

Code	Title			L	T	P	C	Int	Ext	Total
18PHU501	Electromagnetic Wave Propagation	3	a, h	4	-	-	4	40	60	100

				L	T	P				
18PHU502A	DSE-1:Elements of Modern Physics	1	c, h	04	-	-	4	40	60	100
18PHU502B	DSE-1:Medical Physics	2	c							
18PHU503A	DSE-2: Digital Electronics and Microprocessor	1	a, e	04	-	-	4	40	60	100
18PHU503B	DSE-2: Embedded System: Introduction to Microcontroller	1	a, e							
18PHU504	Chemistry-I	7	i	04	-	-	4	40	60	100
18PHU511	Electromagnetic Wave Propagation Practical	6	e	-	-	4	2	40	60	100
18PHU512A	DSE-1 Practical: Elements of Modern Physics Practical	6	e	-	-	03	1	40	60	100
18PHU512B	DSE-1 Practical: Medical Physics Practical	6	f							
18PHU513A	DSE-2 Practical: Digital Electronics and microprocessor Practical	6	e	-	-	03	1	40	60	100
18PHU513B	DSE-2 Practical: Embedded System: Introduction to Microcontroller Practical	6	e							
18PHU514	Chemistry Practical - I	6	e	-	-	04	2	40	60	100
	Semester total			**16**	**-**	**14**	**22**	**320**	**480**	**800**
	SEMESTER – 6									
18PHU601	Solid State Physics	7	c	4	-	-	4	40	60	100
18PHU602A	DSE-3: Nano Materials and Applications	2	f	4	-	-	4	40	60	100
18PHU602B	DSE-3: Biological Physics	3	f							
18PHU603	Chemistry-II	7	i	4	-	-	4	40	60	100
18PHU611	Solid State Physics Practical	1	e	-	-	04	2	40	60	100
18PHU612A	DSE-3 Practical: Nano Materials and Applications Practical	6	e, f	-	-	04	2	40	60	100
18PHU612B	DSE-3 Practical: Biological Physics Practical	6	f							
18PHU613	Chemistry Practical-II	6	e	-	-	4	2	40	60	100
18PHU691	DSE- 4:Project	8	a, e,	-	-	6	4	40	60	100

			g						
	Semester total			**12**	**-**	**18**	**22**	**280**	**420**	**700**
	ECA / NCC / NSS / Sports / General interest etc									
	G. Total						**140**	**1880**	**2820**	**4700**

SEC: Skill enhancement course; DSE: Discipline specific elective

Skill Enhancement Course		
	Course Code	**Course Title**
SEC-1	18PHU303A	Renewable Energy and Energy harvesting
	18PHU303B	Physics Workshop Skill
SEC-2	18PHU403A	Basic Instrumentation Skill
	18PHU403B	Radiation Safety

Skill Enhancement Course		
	Course Code	**Course Title**
SEC-1 PRACTICAL	18PHU313A	Renewable Energy and Energy harvesting Practical
	18PHU313B	Physics Workshop skill Practical
SEC-2 PRACTICAL	18PHU413A	Basic Instrumentation Skill Practical
	18PHU413B	Radiation Safety Practical

Discipline Specific Elective		
DSE-1	18PHU502A	Elements of Modern Physics
	18PHU502B	Medical Physics
DSE-2	18PHU503A	Digital Electronics and Microprocessor
	18PHU503B	Embedded System: Introduction to Microcontroller
DSE-3	18PHU602A	Nano Materials and Applications
	18PHU602B	Biological Physics
DSE-4	18PHU691	Project

Discipline Specific Elective Practical		
DSE-1 PRACTICAL	18PHU512A	Elements of Modern Physics Practical
	18PHU512B	Medical Physics Practical
DSE-2 PRACTICAL	18PHU513A	Digital Electronics and Microprocessor Practical
	18PHU513B	Embedded System: Introduction to Microcontroller Practical
DSE-3 PRACTICAL	18PHU612A	Nano Materials and Applications Practical
	18PHU612B	Biological Physics Practical

Generic Elective		
Semester – 3	18PHU304	Mathematics -I
Semester – 4	18PHU404	Mathematics –II
Semester – 5	18PHU504	Chemistry-I
Semester – 6	18PHU603	Chemistry-II

Generic Elective Practical		
Semester – 3	18PHU314	Mathematics Practical – I
Semester – 4	18PHU414	Mathematics Practical - II
Semester – 5	18PHU514	Chemistry Practical – I
Semester – 6	18PHU613	Chemistry Practical-II

Blue- Employability

Green –Entrepreneurship

Red- Skill development

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.

<u>PROGRAMME SPECIFIC OUTCOMES (PSOs)</u>

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

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

<u>PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)</u>

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	l
PEO1	X	X		X		X				X		

PEO2							X		X			
PEO3			X			X		X			X	X
PEO4				X	X					X		
PEO5	X		X		X			X			X	
PEO6		X		X		X						
PEO7			X					X		X		
PEO8	X				X		X					

DEPARTMENT OF PHYSICS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
PG PROGRAM (CBCS) – M.Sc. Physics
(2018–2019 Batch and onwards)

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – I										
18PHP101	Condensed Matter Physics	1, 3	a	4	-	-	4	40	60	100
18PHP102	Electronic Devices and Circuits	2,4	b	4	-	-	4	40	60	100
18PHP103	Classical Mechanics and Relativity	5	e	4	-	-	4	40	60	100
18PHP104	Mathematical Physics	1	a, b	4	-	-	4	40	60	100
18PHP105A/ 18PHP105B/ 18PHP105C	Elective-I	3, 6	d, f	4	-	-	4	40	60	100
18PHP111	General Physics Practical – I	4	b, f	-	-	4	2	40	60	100
18PHP112	Electronics Practical – I	4	d	-	-	4	2	40	60	100
Journal Paper Analysis & Presentation		5,7	d	2	-	-	-	-	-	-
Semester Total				**22**	**-**	**8**	**24**	**280**	**420**	**700**
SEMESTER – II										
18PHP201	Thermodynamics and Statistical Mechanics	1	b	4	-	-	4	40	60	100
18PHP202	Quantum Mechanics – I	3	c	4	-	-	4	40	60	100
18PHP203	Nuclear Physics	2	d	4	-	-	4	40	60	100
18PHP204	Spectroscopy	5	g	4	-	-	4	40	60	100
18PHP205A/ 18PHP205B/ 18PHP205C	Elective-II	6,1	a, f	4	-	-	4	40	60	100
18PHP211	General Physics Practical – II	4	b, f	-	-	4	2	40	60	100
18PHP212	Electronics Practical – II	4	d	-	-	4	2	40	60	100
Journal Paper Analysis & Presentation		5,7	d	2	-	-	-	-	-	-
Semester Total				**22**	**-**	**8**	**24**	**280**	**420**	**700**
SEMESTER – III										
18PHP301	Quantum Mechanics – II	3	b, f	4	-	-	4	40	60	100
18PHP302	Laser and its Applications	4	e	4	-	-	4	40	60	100
18PHP303	Electromagnetic theory and Electrodynamics	7	a, b	4	-	-	4	40	60	100
18PHP304	Digital Electronics and Microprocessor	2	c	4	-	-	4	40	60	100
18PHP305A	Elective-III Nanostructures and Characterization	1	d	4	-	-	4	40	60	100

Course code		Name of the course									
18PHP305B		Solar Energy and its utilization	2, 6	D							
18PHP305C		Optoelectronics	2	d, e							
18PHP311	Advanced Physics Practical		4	b, f	-	-	4	2	40	60	100
18PHP312	Advanced Electronics Practical		4	D	-	-	4	2	40	60	100
Journal Paper Analysis & Presentation			5,7	D	2	-					
Semester total							22	-	8	24	280	420	700

SEMESTER – IV													
18PHP491	Project		1,5,6	d, e, f	-	-	30	15	80	120	200
	Total				-	-	30	87	920	1380	2300

Elective Courses*

Elective – I (18PHP105)		Elective – II (18PHP205)		Elective – III (18PHP305)	
Course code	**Name of the course (Theory)**	**Course Code**	**Name of the course (Theory)**	**Course Code**	**Name of the course (Theory)**
18PHP105A	Material Characterization	18PHP205A	Digital Signal Processing	18PHP305A	Nanostructure Characterization
18PHP105B	Astronomy and Astrophysics	18PHP205B	Computational Physics	18PHP305B	Solar Energy and its utilization
18PHP105C	Crystal Growth Techniques	18PHP205C	Thin Film Physics	18PHP305C	Optoelectronics

Blue- Employability

Green –Entrepreneurship

Red- Skill development

PROGRAMME OUTCOMES –PG

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 –PG

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		X		X	X			
PEO2	X		X					X
PEO3				X		X	X	X
PEO4		X			X			
PEO5	X	X		X		X		
PEO6	X		X	X		X	X	X
PEO7		X	X		X		X	X

FACULTY OF ENGINEERING

KARPAGAM ACADEMY OF HIGHER EDUCATION

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

FACULTY OF ENGINEERING

B.E. AUTOMOBILE ENGINEERING

(For the regular programme students admitted during 2018-2019 and onwards)

CURRICULUM

SEMESTER I

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE101	Mathematics - I (Calculus and Linear Algebra for Mechanical and Automobile Engineering)	2	1,4	3	1	0	4	40	60	100	4
18BEAE102	Electromagnetism	1,2	4	3	1	3	5	40	60	100	7
18BEAE103	Basic Electrical Engineering	2,4	11	3	1	2	5	40	60	100	6
18BEAE111	Engineering Graphics and Design	2	3,4	1	0	4	3	40	60	100	5
Total				**10**	**3**	**9**	**17**	**160**	**240**	**400**	**22**

SEMESTER II

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE201	Mathematics - II (Calculus, Ordinary Differential Equations and Complex Variable for Mechanical and Automobile Engineering)	2	1,4	3	1	0	4	40	60	100	4
18BEAE202	Chemistry - I	1	1	3	1	3	6	40	60	100	7
18BEAE203	English	4	12	2	0	2	3	40	60	100	4
18BEAE204	Programming for Problem Solving	2	1,2	3	0	4	5	40	60	100	7
18BEAE205	Constitution of India	1	7	1	0	0	–	100	0	100	1

18BEAE211	Workshop/Manufacturing Practice Laboratory	2	2,9	1	0	4	3	40	60	100	5
Total				13	2	13	21	300	300	600	28

SEMESTER III

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE301	Mathematics - III (PDE, Probability and Statistics)	2	1,4	3	1	0	4	40	60	100	4
18BEAE302	Engineering Mechanics	2	2,4	3	1	0	4	40	60	100	4
18BEAE303	Applied Thermodynamics	2	2,3	3	0	0	3	40	60	100	3
18BEAE304	Automotive Engines	2,3	2,3	3	0	0	3	40	60	100	3
18BEAE305	Engineering Metrology and Measurements	2,3	2,3	3	0	0	3	40	60	100	3
18BEAE306	Biology for Engineers	4	6	3	0	0	3	40	60	100	3
18BEAE311	Automotive Engine Components and Measurements Laboratory	2,3	2,3	0	0	3	2	40	60	100	3
18BEAE312	Computer Aided Machine Drawing Laboratory	2,3	2,3,4	0	0	3	2	40	60	100	3
18BEAE313	Thermal Engineering Laboratory	2,3	2,3	0	0	3	2	40	60	100	3
18BEAE351	Soft Skills	4	7	1	0	2	–	100	0	100	3
				19	2	11	26	460	540	1000	32

SEMESTER IV

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE401	Fluid Mechanics and Heat Transfer	2	1,3	3	1	0	4	40	60	100	4
18BEAE402	Strength of Materials	2,3	1,3,4	3	1	0	4	40	60	100	4
18BEAE403	Theory of Machines	2,3	1,3,4	3	1	0	4	40	60	100	4
18BEAE404	Engineering Materials and Metallurgy	2,3	1,3	3	0	0	3	40	60	100	3
18BEAE441	Automotive Chassis and Transmission	2,3	2,3,4	3	0	3	5	40	60	100	6
18BEAE442	Automotive Electrical and Electronics Systems	2,4	2	3	0	3	5	40	60	100	6
18BEAE411	Fluid Mechanics and Strength of Materials Laboratory	2,3	2,3	0	0	3	2	40	60	100	3

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE451	Course Oriented Project - I	2,4	1,4,8,9	0	0	1	–	100	0	100	1
18BEAE452	Fuels and Lubricants	2	1,6	1	0	0	–	100	0	100	1
Total				**19**	**3**	**10**	**27**	**480**	**420**	**900**	**32**

SEMESTER V

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE501	Design of Machine Elements	2,3	1,2,3,4	3	1	0	4	40	60	100	4
18BEAE502	IC Engine Design	2,3	1,2,3,4	3	1	0	4	40	60	100	4
18BEAE503	Vehicle Dynamics	2,3	1,2,4	3	0	0	3	40	60	100	3
18BEAE504	Environmental Sciences	1,4	1,2,6,9	3	0	0	3	40	60	100	3
18BEAE5E_ _	Professional Elective - I	2	2,9	3	0	0	3	40	60	100	3
18B_ _ _OE_ _	Open Elective - I	2,4	2,11	3	0	0	3	40	60	100	3
18BEAE511	Dynamics and Mechatronics Laboratory	2,3	1,2,3	0	0	3	2	40	60	100	3
18BEAE551	Course Oriented Project - II	2,4	1,4,8,9	0	0	1	–	100	0	100	1
18BEAE552	Technical Presentation	4	11	0	0	1	–	100	0	100	1
18BEAE553	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	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE601	Automotive Chassis Components Design	2,3	1,2,3,4	3	1	0	4	40	60	100	4
18BEAE602	Engineering Economics and Financial Management	1,4	8	3	0	0	3	40	60	100	3
18BEAE641	Manufacturing Technology	2,3	1,2,3,4	3	0	3	5	40	60	100	6
18BEAE6E_ _	Professional Elective - II	2	2,9	3	0	0	3	40	60	100	3
18B_ _ _OE_ _	Open Elective - II	2,4	2,11	3	0	0	3	40	60	100	3

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18B_ _ _OE_ _	Open Elective - III	2,4	2,11	3	0	0	3	40	60	100	3
18BEAE611	Vehicle Maintenance Laboratory	2,3	1,2,3	0	0	3	2	40	60	100	3
18BEAE651	Mini Project	2,4	1,4,8,9	0	0	2	1	100	0	100	2
18BEAE652	Engine and Vehicle Management System	2	2,9	1	0	0	–	100	0	100	1
18BEAE653	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

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE701	Total Quality Management	1,3	7,10, 11,12	3	0	0	3	40	60	100	3
18BEAE7E_ _	Professional Elective - III	2	2,9	3	0	0	3	40	60	100	3
18BEAE7E_ _	Professional Elective - IV	2	2,9	3	0	0	3	40	60	100	3
18BEAE7E_ _	Professional Elective - V	2	2,9	3	0	0	3	40	60	100	3
18B_ _ _OE_ _	Open Elective - IV	2,4	2,11	3	0	0	3	40	60	100	3
18BEAE711	Computer Aided Design Analysis Laboratory	2,3	1,2,3,4,5	0	0	3	2	40	60	100	3
18BEAE751	Industrial Robotics	2	2,9	1	0	0	–	100	0	100	1
18BEAE791	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

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total	Hours / Week
18BEAE801	Professional Ethics and Entrepreneurship Development	1,3	7,10, 11,12	3	0	0	3	40	60	100	3
18BEAE8E_ _	Professional Elective - VI	2	2,9	3	0	0	3	40	60	100	3
18BEAE891	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

LIST OF PROFESSIONAL ELECTIVE COURSES

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
Professional Elective - I (Semester V)										
18BEAE5E01	Automotive Emissions and NVH Control	1,2	2,6	3	0	0	3	40	60	100
18BEAE5E02	Vehicle Body Engineering	2,3	1,2,3,4	3	0	0	3	40	60	100
18BEAE5E03	Two and Three Wheeler Technology	2,3	2,9	3	0	0	3	40	60	100
18BEAE5E04	Tractor and Farm Equipments	2,3	2,9,10	3	0	0	3	40	60	100
18BEAE5E05	Vibration and Noise Control	2,3	2,3,4	3	0	0	3	40	60	100
18BEAE5E06	Composite Materials	2,3	2,3	3	0	0	3	40	60	100
Professional Elective - II (Semester VI)										
18BEAE6E01	Advanced Theory of IC Engines	2,3	2,3,4	3	0	0	3	40	60	100
18BEAE6E02	Automotive Air Conditioning	2,3	2,9	3	0	0	3	40	60	100
18BEAE6E03	Automotive Safety	2,3	2,9	3	0	0	3	40	60	100
18BEAE6E04	Off-Road Vehicles	2,3	2,9,10	3	0	0	3	40	60	100
18BEAE6E05	Design for Manufacture and Assembly	2,3	2,3,5	3	0	0	3	40	60	100
18BEAE6E06	Industrial Engineering and Operations Research	2,3	1,2,8	3	0	0	3	40	60	100
Professional Elective - III (Semester VII)										
18BEAE7E01	Automotive Aerodynamics	2,3	1,2,3,4	3	0	0	3	40	60	100
18BEAE7E02	Automotive Testing	2,3	2,9,10	3	0	0	3	40	60	100
18BEAE7E03	Alternate Fuels and Energy Systems	2,3	2,6,8,10	3	0	0	3	40	60	100
18BEAE7E04	Applied Hydraulics and Pneumatics	2,3	2,3,4	3	0	0	3	40	60	100
18BEAE7E05	Optimization for Engineering Design	2,3	2,5,8	3	0	0	3	40	60	100
18BEAE7E06	Mechatronics	2,3	2,5,9	3	0	0	3	40	60	100
Professional Elective - IV (Semester VII)										
18BEAE7E07	Modern Vehicle Technology	2,3	2,9,10	3	0	0	3	40	60	100
18BEAE7E08	Intelligent Vehicle Technology	2,3	2,9,10	3	0	0	3	40	60	100
18BEAE7E09	Manufacturing of Automotive Components	2,3	2,3,9	3	0	0	3	40	60	100

18BEAE7E10	Computational Fluid Dynamics	2,3	2,4,5	3	0	0	3	40	60	100
18BEAE7E11	New Product Development	2,3	2,8,10,12	3	0	0	3	40	60	100
18BEAE7E12	Lean Manufacturing	2,3	2,8	3	0	0	3	40	60	100
Professional Elective - V (Semester VII)										
18BEAE7E13	Finite Element Analysis	2,3	2,3,4,5	3	0	0	3	40	60	100
18BEAE7E14	Hybrid Vehicle Technology	2,3	2,6,9,10	3	0	0	3	40	60	100
18BEAE7E15	Fuel Cell Technology	2,3	2,6,9,10	3	0	0	3	40	60	100
18BEAE7E16	Process Planning and Cost Estimation	2,3	2,8	3	0	0	3	40	60	100
18BEAE7E17	Product Lifecycle Management	2,3	2,8	3	0	0	3	40	60	100
18BEAE7E18	Computer Integrated Manufacturing	2,3	2,5,8	3	0	0	3	40	60	100
Professional Elective - VI (Semester VIII)										
18BEAE8E01	Vehicle Maintenance	2,3	2,6,9,12	3	0	0	3	40	60	100
18BEAE8E02	Fleet Management	2,3	2,9	3	0	0	3	40	60	100
18BEAE8E03	Non-Destructive Testing	2,3	2,9	3	0	0	3	40	60	100
18BEAE8E04	Non-Traditional Machining Processes	2,3	2,9	3	0	0	3	40	60	100
18BEAE8E05	Quality Control and Reliability Engineering	2,3	2,8	3	0	0	3	40	60	100
18BEAE8E06	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	PO	L	T	P	C	CIA	ESE	Total
BIOMEDICAL ENGINEERING										
18BEBMEOE01	Robotics in Medicine	2,4	9,11	3	0	0	3	40	60	100
18BEBMEOE02	Virtual Reality and Augmented Reality	2,4	11	3	0	0	3	40	60	100
18BEBMEOE03	Artificial Organs and Implants	2,4	9,11	3	0	0	3	40	60	100
BIOTECHNOLOGY										
18BTBTOE01	Bioreactor Design	2,4	11	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	2,4	9	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	2,4	9	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nanobiotechnology	2,4	9,11	3	0	0	3	40	60	100
CHEMICAL ENGINEERING										
18BTCEOE01	Energy Management in Chemical Industries	2,4	6,9	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer Technology	2,4	9,10	3	0	0	3	40	60	100
18BTCEOE03	Industrial Wastewater Treatment	2,4	9,10	3	0	0	3	40	60	100
18BTCEOE04	Solid and Hazardous Waste Management	2,4	9,10	3	0	0	3	40	60	100
CIVIL ENGINEERING										
18BECEOE01	Housing, Plan and Management	2,4	9,10	3	0	0	3	40	60	100
18BECEOE02	Building Services	2,4	9,10	3	0	0	3	40	60	100
18BECEOE03	Repair and Rehabilitation of Structures	2,4	9,10	3	0	0	3	40	60	100
18BECEOE04	Computer-Aided Civil Engineering Drawing	2,4	11	3	0	0	3	40	60	100
COMPUTER SCIENCE ENGINEERING										
18BECSOE01	Internet Programming	2,4	5	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	2,4	5	3	0	0	3	40	60	100
18BECSOE03	PC Hardware and Troubleshooting	2,4	5	3	0	0	3	40	60	100
18BECSOE04	Java Programming	2,4	5	3	0	0	3	40	60	100
18BECSOE05	Machine Learning	2,4	5	3	0	0	3	40	60	100

	ELECTRICAL AND ELECTRONICS ENGINEERING									
18BEEEOE01	Electric Hybrid Vehicle	2,4	2,9,10	3	0	0	3	40	60	100
18BEEEOE02	Energy Management and Energy Auditing	2,4	9,10	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	2,4	5	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	2,4	7,9	3	0	0	3	40	60	100
	ELECTRONICS AND COMMUNICATION ENGINEERING									
18BEECOE01	Real Time Embedded Systems	2,4	2,3,4,	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	2,4	11	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	2,4	9,11	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	2,4	9,11	3	0	0	3	40	60	100
18BEECOE05	Principles of Modern Communication System	2,4	9,11	3	0	0	3	40	60	100
	FOOD TECHNOLOGY									
18BTFTOE01	Processing of Food Materials	2,4	9,11	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	2,4	9,11	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	2,4	9,11	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	2,4	9,11	3	0	0	3	40	60	100
	MECHANICAL ENGINEERING									
18BEMEOE01	Computer Aided Design	2,4	2,3,4,5	3	0	0	3	40	60	100
18BEMEOE02	Industrial Safety and Environment	2,4	9	3	0	0	3	40	60	100
18BEMEOE03	Transport Phenomena	2,4	2	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Biomechanics	2,4	11	3	0	0	3	40	60	100
	SCIENCE AND HUMANITIES									
18BESHOE01	Solid Waste Management	2,4	9	3	0	0	3	40	60	100
18BESHOE02	Green Chemistry	2,4	6	3	0	0	3	40	60	100
18BESHOE03	Applied Electrochemistry	2,4	6	3	0	0	3	40	60	100
18BESHOE04	Industrial Chemistry	2,4	6	3	0	0	3	40	60	100
18BESHOE05	Technical Writing	2,4	11	3	0	0	3	40	60	100
18BESHOE06	Geophysics	2,4	9	3	0	0	3	40	60	100
18BESHOE07	Engineering Acoustics	2,4	2,9	3	0	0	3	40	60	100
18BESHOE08	Industrial Mathematics - I	2,4	1,9	3	0	0	3	40	60	100

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
18BESHOE09	Industrial Mathematics - II	2,4	1,9	3	0	0	3	40	60	100
18BESHOE10	Fuzzy Mathematics	2,4	1,9	3	0	0	3	40	60	100
18BESHOE11	Mathematical Physics	2,4	1,2	3	0	0	3	40	60	100
18BESHOE12	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	T	P	C	CIA	ESE	Total
18BEAEOE01	Automobile Engineering	2,4	2	3	0	0	3	40	60	100
18BEAEOE02	Two and Three Wheeler Technology	2,4	2	3	0	0	3	40	60	100
18BEAEOE03	Vehicle Maintenance	2,4	2,9	3	0	0	3	40	60	100
18BEAEOE04	Modern Vehicle Technology	2,4	2,9	3	0	0	3	40	60	100
18BEAEOE05	Fleet Management	2,4	2,11	3	0	0	3	40	60	100

Skill Development

Employability Skill

Entrepreneurship Skill

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

KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University Established Under Section 3 of UGC Act 1956)
FACULTY OF ENGINEERING
B. E. BIOMEDICAL ENGINEERING (REGULAR)
COURSE OF STUDY AND SCHEME OF EXAMINATIONS
(2018 and onwards)

SUB. CODE	TITLE OF THE COURSE	Category	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
								SEMESTER I				
								THEORY				
18BECC101	Engineering Mathematics-I	BSC	a,b,d,j	i,ii, iv	3	1	0	4	40	60	100	4
18BECH102	Engineering Chemistry	BSC	a,b,c,d, j	i, iv	3	1	3	5.5	40	60	100	7
18BEBME103	Programming for Problem Solving	ESC	a,b,d,e, j	i, iv	3	0	4	5	40	60	100	7
18BEBME104	Basic Electrical & Electronics Engineering	ESC	a,b,c,f, g	i, iv	3	1	2	5	40	60	100	6
	TOTAL				12	3	9	19.5	160	240	400	24
						VALUE ADDED COURSE						
18BECC151	Yoga	MC	1		0	0	-	100	0	100	1	
TOTAL CONTACT HOURS PER WEEK					25							

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
								SEMESTER II				
								THEORY				
18BECC201	Technical English	HSMC	f,g,h,j,l	i, iv	3	0	0	3	40	60	100	3
18BECC202	Engineering Mathematics-II	BSC	a,b,d,j	i,ii, iv	3	1	0	4	40	60	100	4
18BEPH203	Engineering Physics	BSC	a,b,c,d,j	i, iv	3	1	3	5.5	40	60	100	7
18BEBME204	Introduction to Biomedical Engineering	ESC	a,b,c,d,f,g, j	i,ii,iv	3	0	0	3	40	60	100	3
18BEBME205	Electronic	ESC	a,b,c,d,g,j	i,ii,	3	1	2	5	40	60	100	6

	Devices and Circuits			iii, iv								
	TOTAL				15	3	5	20.5	200	300	500	23
				VALUE ADDED COURSE								
18BEBME251	Business Plan	MC	f,g,h,i,j,k,n	ii,iv		0	0	-	100	0	100	1
TOTAL CONTACT HOURS PER WEEK				**24**								

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
				SEMESTER III								
				THEORY								
18BEBME301A / 18BEBME301B	Optimization and Calculus of Variables /Linear Algebra and partial differential equations	BS	a,b,c,d,f,g,j	i,ii, iv	3	1	0	4	40	60	100	5
18BECC302	Digital electronics	PCH	a,b,d,f,,j	i,ii, iv	3	0	0	3	40	60	100	3
18BEBME303	C++ and Data Structures	ESC	a,b,c,d,f,g,j	i,ii, iv	3	0	0	3	40	60	100	3
18BEBME304	Medical Physics	PCS	a,b,c,d,f,g,	i,ii, iv	3	0	0	3	40	60	100	3
18BEBME305	Fundamentals of Biochemistry	PCS	a,b,c,d,f,g,j	i,ii, iv	3	0	0	3	40	60	100	3
18BEBME306	Anatomy and Human Physiology	PCS	a,b,c,d,f,g,j	i,ii,	3	0	0	3	40	60	100	3
				PRACTICALS								
18BEBME311	Bio Chemistry & Human Physiology Laboratory	PCS	h,l,j,l	i,ii	0	0	4	2	40	60	100	3
18BEBME312	Digital Electronics Laboratory	PCH	h, l, j, l	i,ii	0	0	4	2	40	60	100	3
18BEBME313	Course Oriented project-I	PC	h, l, j, l	i,ii	0	0	2	1	100	-	100	2
	TOTAL				18	1	10	24	420	480	900	28

VALUE ADDED COURSE												
18BEBME351	Soft skills for Bio-Medical Entrepreneurs	MC	f,g,h,i,j, k,n	ii,iv	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS PER WEEK					29							

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
SEMESTER IV												
THEORY												
18BEBME401	Probability and Statistics	BS	a,b,d,j	i,ii, iv	3	1	0	4	40	60	100	4
18BEBME402	LinearIntegratedCircuits	PCH	a,b,c,d,g, j	i,ii, iii	3	0	0	3	40	60	100	3
18BEBME403	Biosensors and Transducers	PCH	a,b,c,d,g, j	i,ii, iii, iv	3	0	0	3	40	60	100	3
18BEBME404	Microprocessor and Microcontroller	PCH	a,b,c,d,g, j	i,ii, iii	3	0	0	3	40	60	100	3
18BEBME405	Environmental science and Engineering	ESC	a,b,c,d,g, j	i,ii, iii, iv	3	0	0	3	40	60	100	3
18BEBME406	Analog & Digital Communication	PCH	a,b,c,d,g, j	i,ii, iii	3	0	0	3	40	60	100	3
PRACTICALS												
18BEBME411	Microprocessor and Microcontroller Laboratory	PCH	h,l,j,l	i,ii	0	0	3	2	40	60	100	3
18BEBME412	Biosensors and Transducers Lab	PCH	h,l,j,l	i,ii	0	0	3	2	40	60	100	3
	TOTAL				18	2	9	23	320	480	800	25
VALUE ADDED COURSE												
18BEBME451	Hands on training in Biomedical equipments	MC	h,l,j,l	i,ii	0	0	1	-	100	0	100	1
TOTAL CONTACT HOURS PER WEEK					26							

SUB. CODE	TITLE OF THE COURSE	Sub. Are	PO		L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS

SUB. CODE	TITLE OF THE COURSE	Sub. Area a	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
		a		PEO								/ WEEK

SEMESTER V												
THEORY												
18BEBME501	Bio Control System	PCH	a,b,c,d,g,j	i,ii,iii	3	1	0	3	40	60	100	5
18BEBME502	Biomedical Instrumentation	PCH	a,b,c,d,g,j	i,ii,iii, iv	3	0	0	3	40	60	100	3
18BEBME503	Biomedical Signal Processing	PCH	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100	3
18BECC504	ProfessionalEthics,PrinciplesofManagementandEntrepreneurshipdevelopment	HS	j,h,g, k	i, iv	3	0	0	3	40	60	100	3
18BEBME5E--	Professional Elective I	PE	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100	3
18BEBME5E--	Professional Elective II	PE	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100	3
PRACTICALS												
18BEBME511	Biomedical Instrumentation & Signal Processing Lab	PCH	h,l,j,l	i,ii	0	0	3	2	40	60	100	3
18BEBME512	Course Oriented project-II	PCH	h,l,j,l,n	i,ii	0	0	3	1	40	60	100	3
	TOTAL				18	1	6	21	320	480	800	26
VALUE ADDED COURSE												
18BECC551	Fundamentals of Marketing for Bio-Medical Entrepreneurs	HS	h,l,j,l	i,ii	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS PER WEEK				**27**								

SUB. CODE	TITLE OF THE COURSE	Sub. Area a	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
SEMESTER VI												
THEORY												
18BEBME601	Bio-Medical Image processing	PCH	a,b,c,d,	i,ii,	3	0	0	3	40	60	100	3

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
			g,j,m	iii								
18BEBME602	Biomechanics	PCH	a,b,c,d,g,j	i,ii,iii,iv	3	0	0	3	40	60	100	3
18BEBME603	Diagnostic and Therapeutic Equipment – I&II	PCH	a,b,c,d,g,j,m	i,ii,iii	3	0	0	3	40	60	100	3
18BECC604	Healthcare and Hospital Management	PCS	a,b,c,d,g,j	i,ii,iii,iv	3	0	0	3	40	60	100	3
18BEBME6E--	Professional Elective-III	PE	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100	3
18BEBME6E--	Professional Elective-IV	PE	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100	3
PRACTICALS												
18BEBME611	Bio-Medical Image processing Lab	PCH	h,l,j,l,m	i,ii	0	0	3	2	40	60	100	3
18BEBME612	Diagnostic and Therapeutic Equipments Lab	PCH	h,l,j,l,m	i,ii	0	0	3	2	40	60	100	3
TOTAL					18	0	6	22	320	480	800	24
VALUE ADDED COURSE												
18BEBME651	Mini Project	MC	h,l,j,l,n	i,ii	0	0	1	-	100	0	100	1
18BEBME652	Problem solving and Python Programming	MC	h,l,j,l	i,ii	0	0	1	-	100	0	100	1
TOTAL CONTACT HOURS PER WEEK				26								

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
SEMESTER VII												
THEORY												
18BEBME701	Virtual Bioinstrumentation	PCH	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
18BEBME702	Rehabilitation engineering	PCH	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
18____OE__	Open Elective-1	OE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
18____OE__	Open Elective-2	OE	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
18BEBM	Professional	PE	a,b,c,d,g,	i,ii, iii	3	0	0	3	40	60	100	3

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO / PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
E7E__	Elective-V		j								
PRACTICALS											
18BEBME 711	Virtual Bioinstrumentation Lab	PC	h,l,j,l / i,ii	0	0	3	2	40	60	100	3
18BEBME 712	Hospital Training	PC	h,l,j,l / i,ii	0	0	3	2	40	60	100	3
18BEBME791	Project Work Phase I	PW	h,l,j,l,n / i,ii	0	0	8	4	40	60	100	8
TOTAL				15	0	14	23	320	480	800	29
TOTAL CONTACT HOURS PER WEEK				29							

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO / PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
SEMESTER VIII											
THEORY											
18BEBME801	Artificial organs and Implants	PCH	a,b,c,d,g,j / i,ii, iii	3	0	0	3	40	60	100	3
18BEBME8E_	Professional Elective-VI	PE	a,b,c,d,g,j / i,ii, iii, iv	3	0	0	3	40	60	100	3
18BEBME8E__	Professional Elective-VII	PE	a,b,c,d,g,j / i,ii, iii	3	0	0	3	40	60	100	3
PRACTICALS											
18BEBME891	Project Work Phase II and VivaVoce	PW	a,b,c,d,g,j,n / i,ii, iii,iv	0	0	32	16	120	180	300	32
TOTAL				9	0	32	25	240	360	600	41
TOTAL CONTACT HOURS PER WEEK				41							

LIST OF ELECTIVES

PROFESSIONAL ELECTIVES

SEMESTER V

Elective I & II

SUB. CODE	TITLE OF THE COURSE	PO	PEO	L	T	P	C	CIA	ESE	TOTAL
18BEBME5E01	Ergonomics	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME5E02	Biometric Systems	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME5E03	Medical Optics	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME5E04	Biomaterials	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME5E05	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	PO	PEO	L	T	P	C	CIA	ESE	TOTAL
18BEBME6E01	Physiological Modelling	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME6E02	Telehealth Technology	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME6E03	Cancer Biology	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME6E04	Bio signal Conditioning Circuits	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME6E05	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	PO	PEO	L	T	P	C	CIA	ESE	TOTAL
18BEBME7E01	Neural engineering	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME7E02	Lasers and Fiber Optics in Medicine	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME7E03	Patient and Devices Safety	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME7E04	Radiological equipments	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100

SEMESTER VIII Elective VI & VII

SUB. CODE	TITLE OF THE COURSE	PO	PEO	L	T	P	C	CIA	ESE	TOTAL
18BEBME8E01	Biological Spectroscopy	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E02	Robotics in medicine	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E03	Nanotechnology in Medicine	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E04	Virtual Reality and Augmented Reality	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E05	Speech Processing	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E06	Rapid Prototyping	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E07	Bio MEMS	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E08	Intellectual Property Rights	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E09	Artificial Intelligence and Expert Systems	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEBME8E10	Neural Networks and Applications	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100

OPEN ELECTIVES
SEMESTER VII & SEMESTER VIII

SUB. CODE	TITLE OF THE COURSE	PO	PEO	L	T	P	C	CIA	ESE	TOTAL
SCIENCE AND HUMANITIES										
18BESHOE01	Probability and Random Process	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE02	Fuzzy Mathematics	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE03	Linear Algebra	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE04	Engineering Acoustics	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE05	Solid Waste Management	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE06	Green Chemistry	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE07	Applied Electrochemistry	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE08	Industrial Chemistry	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BESHOE09	English for Technocrats	a,b,c,d,g,j	i,ii,iii	1	4	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
18BECSOE01	Internet Programming	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BECSOE03	PC hardware and Troubleshooting	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BECSOE04	Java Programming	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
18BEEEOE01	Electric Hybrid Vehicles	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100
18BEEEOE02	Energy Management and Energy Auditing	a,b,c,d,g,j	i,ii,iii	3	0	0	3	40	60	100

| 18BEEEOE03 | Programmable Logic Controller | a,b,c,d,g,j | i,ii, iii | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 18BEEEOE04 | Renewable Energy Resources | | | 3 | 0 | 0 | 3 | 40 | 60 | 100 |

ELECTRONICS AND COMMUNICATION ENGINEERING

18BEECOE01	Real Time Embedded Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

BIOTECHNOLOGY

18BTBTOE01	Bioreactor Design	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nano Biotechnology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

MECHANICAL ENGINEERING

18BEMEOE01	Computer Aided design	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BEMEOE02	Industrial safety and Environment	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BEMEOE03	Transport Phenomena	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Bio mechanics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

AUTOMOBILE ENGINEERING

| 18BEAEOE01 | Automobile Engineering | a,b,c,d,g,j | i,ii, iii | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 18BEAEOE02 | Basics of Two and Three Wheelers | a,b,c,d,g,j | i,ii, iii | 3 | 0 | 0 | 3 | 40 | 60 | 100 |

18BEAEOE03	Automobile Maintenance	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BEAEOE04	Introduction to Modern Vehicle Technology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
CIVIL ENGINEERING										
18BECEOE01	Housing, Plan and Management	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BECEOE02	Building Services	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BECEOE03	Management of irrigation systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
18BECEOE04	Advanced construction technology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

Note:
- Blue Font represents Employability Courses
- Green Font represents Entrepreneurship Courses
- Red Font Represents Skill Development Courses

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.

ii. 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

l. 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 MAPPING

PEO/PO	a	b	c	d	e	f	g	h	i	j	k	l
i	✓	✓	✓	✓	✓					✓		
ii		✓	✓	✓		✓	✓	✓				
iii				✓					✓		✓	
iv		✓		✓					✓		✓	✓

PEO – PSO MAPPING

PEO/PSO	m	n
i	✓	✓
ii		✓
iii	✓	
iv		✓

KARPAGAM ACADEMY OF HIGHER EDUCATION

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	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PEO1	✓	✓	✓		✓			✓	✓		✓	✓
PEO2	✓	✓		✓	✓		✓		✓	✓	✓	✓
PEO3			✓		✓	✓	✓	✓		✓	✓	✓

PEO-PSO mapping

	PSO1	PSO2	PSO3
PEO1	✓	✓	✓
PEO2	✓	✓	✓
PEO3		✓	✓

SEMESTER I

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BECE101	Mathematics-I (Calculus, Multivariable Calculus & Linear Algebra)	1	1	3	1	0	4	40	60	100
18BECE102	Chemistry-I	1	1	3	1	3	6	40	60	100
18BECE103	Basic Electrical Engineering	1	1	3	1	2	5	40	60	100
18BECE111	Engineering Graphics & Design	1	1	1	0	4	3	40	60	100
TOTAL				10	3	9	18	160	240	400

SEMESTER II

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BECE201	Mathematics-II (Differential Equations)	1	11	3	1	0	4	40	60	100
18BECE202	Mechanics and Mechanics of Solids	1,2	3	3	1	3	5	40	60	100
18BECE203	English	1	10	2	0	2	3	40	60	100
18BECE204	Programming For Problem Solving	1	2	3	0	4	5	40	60	100
18BECE211	Workshop / Manufacturing Practices Laboratory	1	1	1	0	4	3	40	60	100
TOTAL				12	2	13	20	200	300	500

SEMESTER III

ourse Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
18BECE301	Mathematics-III (Transform & Discrete Mathematics)	1	1	3	1	0	4	40	60	100
18BECE302	Basic Electronics	1	1	1	0	2	2	40	60	100
18BECE303	Biology for Engineers	1	1	3	0	0	3	40	60	100
18BECE304	Energy Science & Engineering	1	1	1	1	0	2	40	60	100
18BECE305	Introduction to Civil Engineering	1	1	2	0	0	2	40	60	100

18BECE306	Engineering Mechanics	1	1	3	1	0	4	40	60	100
18BECE307	Effective Technical Communication	1	10	3	0	0	3	40	60	100
18BECE311	Computer-aided Civil Engineering Drawing	1	4,5,9,10	1	0	2	2	40	60	100
TOTAL				18	3	2	22	320	480	800

SEMESTER IV

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
18BECE401	Introduction to Mechanical Engineering	1	1	2	1	0	3	40	60	100
18BECE402	Engineering Geology	1,2	2	2	0	0	2	40	60	100
18BECE403	Disaster Preparedness & Planning Management	1,2	1,4	1	1	0	2	40	60	100
18BECE404	Introduction to Solid Mechanics	1	3	2	0	0	2	40	60	100
18BECE441	Instrumentation & Sensor Technologies for Civil Engineering Applications	1,2	1,4	1	1	2	3	40	60	100
18BECE442	Introduction to Fluid Mechanics	1	3	2	0	2	3	40	60	100
18BECE443	Surveying & Geomatics	1	6	1	1	2	3	40	60	100
18BECE411	Materials, Testing &Evaluation	1,2	4,9	2	0	3	4	40	60	100
18BECE451s	Civil Engineering - Societal & Global Impact	1,3	8	2	0	0	2	40	60	100
TOTAL				15	4	9	24	360	540	900

SEMESTER V

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
18BECE501	Mechanics of Materials	1	3	3	1	0	4	40	60	100
18BECE502	Structural Engineering	1	3	2	4	0	4	40	60	100
18BECE503	Hydrology & Water Resources Engineering	1,2	2	2	1	0	3	40	60	100
18BECE504	Transportation Engineering	1,2	2,3	3	0	0	3	40	60	100
18BECE541	Hydraulic Engineering	1,3	7	2	0	2	3	40	60	100
18BECE542	Geotechnical Engineering	1,3	7	2	0	2	3	40	60	100
18BECE543	Environmental Engineering	1,3	6	2	0	2	3	40	60	100
18BECE551	Professional Practice, Law & Ethics	3	8	2	0	0	0	100	0	0
TOTAL				19	3	6	23	380	420	800

SEMESTER VI

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
18BECE601	Construction Engineering & Management	1	9,11	2	1	0	3	40	60	100
18BECE602	Estimation & Costing	1	11	3	1	0	4	40	60	100
18BECE6E--	Elective-I	1	6,12	3	0	0	3	40	60	100
18BECE6E--	Elective-II	1	6,12	3	0	0	3	40	60	100
18BECE6E--	Elective-III	1	6,12	3	0	0	3	40	60	100
18BECE6E--	Elective-IV	1	6,12	3	0	0	3	40	60	100
TOTAL				17	2	0	19	240	360	600

SEMESTER VII

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
18BECE7E--	Elective V	1	6,12	3	0	0	3	40	60	100
18BECE7E--	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
18BECE791	Project Work-I	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 Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
18BECE8E--	Elective VII	1	6,12	3	0	0	3	40	60	100
18BECE8E--	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
18BECE891	Project Work-II (Continued from VII Semester)	1,2,3	4,5,9,11	0	0	12	6	80	120	200
TOTAL				12	0	12	18	240	360	600

TOTAL NO OF CREDITS=161

L: Lecture Hour   T: Tutorial Hour   CIA: Continuous Internal Assessment
 P: Practical Hour   C: Credit   ESE: End semester Examination

LIST OF ELECTIVES PROFESSIONAL ELECTIVES (PE)

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

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

STRUCTURAL ENGINEERING

Course Code	Course Title	Pre-requisite	PEO	PO	Instruction hours/week			Credits	Maximum Marks		
					L	T	P		CIA	ESE	Total
18BECEE01	Structural Analysis-I	Nil	1	2,3	3	0	0	3	40	60	100
18BECEE02	Structural Analysis-II	18BECEE01	1	2,3	3	0	0	3	40	60	100
18BECEE03	Advanced Structural Analysis	18BECEE02	1	2,3	3	0	0	3	40	60	100
18BECEE04	Structural Mechanics	18BECEE03	1,2	3,4	3	0	0	3	40	60	100
18BECEE05	Reinforced Concrete	18BECEE06	1	2,3	3	0	0	3	40	60	100
18BECEE06	Concrete Technology	Nil	1	2	3	0	0	3	40	60	100
18BECEE07	Design of Concrete Structures-I	18BECEE05	1	2,3	3	0	0	3	40	60	100
18BECEE08	Design of Concrete Structures-II	18BECEE07	1	2,3	3	0	0	3	40	60	100
18BECEE09	Prestressed Concrete	18BECEE08	1,2	1,9,12,15	3	0	0	3	40	60	100
18BECEE10	Design of Steel Structures	18BECEE08	1,2	1,2,3	3	0	0	3	40	60	100
18BECEE11	Concrete Materials	18BECEE06	1,2	2,3,4	3	0	0	3	40	60	100

GEOTECHNICAL ENGINEERING

Course Code	Course Title	Pre-requisite	PEO	PO	L	T	P	Credits	CIA	ESE	Total
					Instruction hours/week				Maximum Marks		
18BECEE12	Soil Mechanics-I	Nil	1	3	3	0	0	3	40	60	100
18BECEE13	Soil Mechanics-II	18BECEE12	1	3	3	0	0	3	40	60	100
18BECEE14	Foundation Engineering	18BECEE13	1,2	2,3,4	3	0	0	3	40	60	100
18BECEE15	Environmental Geo- technology	Nil	1,2	2,3,4	3	0	0	3	40	60	100

ENVIRONMENTAL ENGINEERING

Course Code	Course Title	Pre-requisite	PEO	PO	L	T	P	Credits	CIA	ESE	Total
					Instruction hours/week				Maximum Marks		
18BECEE16	Ecological Engineering	Nil	1,2	3,6,12	3	0	0	3	40	60	100
18BECEE17	Transport of Water and Wastewater	Nil	1,2	4,7,11,14	3	0	0	3	40	60	100
18BECEE18	Physico-Chemical Processes for Water and Wastewater Treatment	18BECEE17	1,2	7,8,12	3	0	0	3	40	60	100
18BECEE19	Biological Processes for Contaminant Removal	18BECEE19	1,2	7,8,12	3	0	0	3	40	60	100
18BECEE20	Rural Water Supply and Onsite Sanitation Systems	18BECEE19	1,2	1,9,12	3	0	0	3	40	60	100
18BECEE21	Solid and Hazardous Waste Management	Nil	1,2	4,7,11,14	3	0	0	3	40	60	100
18BECEE22	Air and Noise Pollution and Control	Nil	1,2	3,4,5,7	3	0	0	3	40	60	100
18BECEE23	Environmental Impact Assessment and Life Cycle Analyses	18BECEE22	1,2	4,7,11,14	3	0	0	3	40	60	100

CONSTRUCTION ENGINEERING & MANAGEMENT

Course Code	Course Title	Pre-requisite	PEO	PO	Instruction hours/week			Credits	Maximum Marks		
					L	T	P		CIA	ESE	Total
18BECEE24	Building Construction Practice	18BECEE11	1,2	3,4,5,7	3	0	0	3	40	60	100
18BECEE25	Construction Project Planning &Systems	18BECEE25	1,2	3,4,5,7	3	0	0	3	40	60	100
18BECEE26	Sustainable Construction Methods	18BECEE25	1,2	3,4,5,7	3	0	0	3	40	60	100
18BECEE27	Construction Engineering Materials.	Nil	1,2	3,4,5,7	3	0	0	3	40	60	100
18BECEE28	Contracts Management	18BECEE25	1,2	3,4,5,7	3	0	0	3	40	60	100
18BECEE29	Construction Equipment & Automation	18BECEE25	1,2	3,4,5,7	3	0	0	3	40	60	100
18BECEE30	Repairs & Rehabilitation of Structures	18BECEE25	1,2	4.5.7.12	3	0	0	3	40	60	100

LIST OF OPEN ELECTIVES

COURSES OFFERED BY OTHER DEPARTMENTS

Course Code	Course Title	PEO	PO	Instruction hours/week			Credits	Maximum Marks		
				L	T	P		CIA	ESE	Total
SCIENCE AND HUIMANITIES										
18BESHOE01	Solid Waste Management	1,2	7,11,14	3	0	0	3	40	60	100
18BESHOE02	Green Chemistry	1,2	1,3,5	3	0	0	3	40	60	100
18BESHOE03	Applied Electrochemistry	1,2	1,3,5	3	0	0	3	40	60	100
18BESHOE04	Industrial Chemistry	1,2	1,3,5	3	0	0	3	40	60	100
18BESHOE05	Technical Writing	1	9,10,12	3	0	0	3	40	60	100
18BESHOE06	Geophysics	1,2	1,3,4	3	0	0	3	40	60	100
18BESHOE07	Engineering Acoustics	1,2	1,3,4	3	0	0	3	40	60	100
18BESHOE08	Industrial Mathematics – I	1	1	3	0	0	3	40	60	100
18BESHOE09	Industrial Mathematics – II	1	1	3	0	0	3	40	60	100
18BESHOE10	Fuzzy Mathematics	1	1	3	0	0	3	40	60	100
18BESHOE11	Mathematical Physics	1	1	3	0	0	3	40	60	100
18BESHOE12	Linear Algebra	1	1	3	0	0	3	40	60	100
COMPUTER SCIENCE ENGINEERING										
18BECSOE01	Internet Programming	1,2	1,3	3	0	0	3	40	60	100

18BECSOE02	Multimedia and Animation	2	1,3	3	0	0	3	40	60	100
18BECSOE03	PC hardware and Troubleshooting	2	5,6	3	0	0	3	40	60	100
18BECSOE04	Java Programming	1,2	1,3	3	0	0	3	40	60	100

ELECTRICAL & ELECTRONICS ENGINEERING

18BEEEOE01	Electric Hybrid Vehicle	1,2	1,5	3	0	0	3	40	60	100
18BEEEOE02	Energy Management & Energy Auditing	1,2	1,6,7	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	1	1,4	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	1,2	1,6,7	3	0	0	3	40	60	100

ELECTRONICS & COMMUNICATION ENGINEERING

18BEECOE01	Real TimeEmbedded Systems	1,2	1,2	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	1	1	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	1,2	1,5	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	1,2	1,5	3	0	0	3	40	60	100
18BEECOE05	Principles of Modern Communication System	1,2	1,6	3	0	0	3	40	60	100

BIOTECHNOLOGY

18BTBTOE01	Bioreactor design	1,2	1,3,6	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	1	1	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	1	1	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nanobiotechnology	1,2	1	3	0	0	3	40	60	100

MECHANICAL ENGINEERING

18BEMEOE01	COMPUTER AIDED DESIGN	1,2	1,3,4,6	3	0	0	3	40	60	100
18BEMEOE02	INDUSTRIAL SAFETY AND ENVIRONMENT	1,2	1,3,12	3	0	0	3	40	60	100
18BEMEOE03	TRANSPORT PHENOMENA	1,2	1,3,5	3	0	0	3	40	60	100
18BEMEOE04	INTRODUCTION TO BIOMECHANICS	1	1,2	3	0	0	3	40	60	100

AUTOMOBILE ENGINEERING

18BEAEOE01	Automobile Engineering	1	1,2	3	0	0	3	40	60	100
18BEAEOE02	Basics of Two and Three Wheelers	1	1,5	3	0	0	3	40	60	100
18BEAEOE03	Automobile Maintenance	1	1,12	3	0	0	3	40	60	100

| 18BEAEOE04 | Introduction to Modern Vehicle Technology | 1 | 1,12 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 18BEAEOE05 | Commercial Fleet Operation | 1 | 1,12 | 3 | 0 | 0 | 3 | 40 | 60 | 100 |

CHEMICAL ENGINEERING

18BTCEOE01	Energy Management In Chemical Industries	1,2	1,6,9	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer Technology	1,2	1,6,9	3	0	0	3	40	60	100
18BTCEOE03	Industrial Wastewater Treatment	1,2	4,7,11,14	3	0	0	3	40	60	100
18BTCEOE04	Solid and Hazardous Waste Management	1,2	4,7,11,14	3	0	0	3	40	60	100

FOOD TECHNOLOGY

18BTFTOE01	Processing of Food Materials	1,2	1,12,15	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	1,2	1,6,9	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	1,2	1,6,9	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	1,2	4,7,14	3	0	0	3	40	60	100

BIOMEDICAL ENGINEERING

18BEBMEOE01	Robotics in medicine	1,2	1,2	3	0	0	3	40	60	100
18BEBMEOE02	Virtual Reality and Augmented Reality	1,2	1,2	3	0	0	3	40	60	100
18BEBMEOE03	Artificial organs and Implants	1,2	1,2	3	0	0	3	40	60	100

COURSES OFFERED TO OTHER DEPARTMENT

SUB. CODE	TITLE OF THE PAPER	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
18BECEOE01	Housing Plan and Management	1,2	5,9,6	3	0	0	3	40	60	100
18BECEOE02	Building Services	1,2	8	3	0	0	3	40	60	100
18BECEOE03	Repair and Rehabilitation of Structures	1,2	7,9,11	3	0	0	3	40	60	100
18BECEOE04	Computer Aided Civil Engineering Drawing	1,2	3,4,5,7	3	0	0	3	40	60	100

**-- Skill Development

**-- Employability

**--Entrepreneurship

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
(2018 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.

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MAPPING:

PEOs	a	b	c	d	e	f	g	h	i	j
I	√			√			√	√	√	
II		√			√				√	√
III			√		√	√		√	√	
IV	√			√			√			√
V		√	√			√			√	√

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
(2018 BATCH ONWARDS)

COURSE CODE	NAME OF THE COURSE	COURSE OBJECTIVES AND OUT COMES		INSTRUCTION HOURS /WEEK			CREDITS	MAXIMUM MARKS		
		PEO's	PO's	L	T	P		CIA 40	ESE 60	TOTAL 100
SEMESTER – I										
18PMEWE101	Surface Water Hydrology	I,II	a,b,h	3	0	0	3	40	60	100
18PMEWE102	Probability and statistical methods	I,II	a,b,c,i	3	0	0	3	40	60	100
18PMEWE1E0	1. Industrial Wastewater Pollution – Prevention And Control	I,III	a,b,d,j	3	0	0	3	40	60	100
	2. Soil Pollution Engineering	I,III	c,d,f,i							
	3. Design Of Biological Treatment Systems	I,IV	e,f,g,j							
	4. Climate change and Adaptation	I,II,V	a,b,g							
18PMEWE111	Environmental Engineering lab	III	c,d,i	0	0	2	2	40	60	100
Total				9	0	2	11	160	240	400
SEMESTER – II										
18PMEWE201	Design of Hydraulic and Environmental Engineering Structures	I,II	a,b,i	3	0	0	3	40	60	100
18PMEWE202	Air pollution and control	I,II	a,b,c	3	0	0	3	40	60	100
18PMEWE2E0	1. Water Supply Distribution And Buried Pipelines	I,III	a,b,d,i	3	0	0	3	40	60	100
	2. Ground Water and Drainage Engineering	I,III	c,d,f,j							
	3. Rural Water Supply And On Site Sanitation	I,IV	e,f,g,i							
	4. Advanced Ground Water Hydrology	I,II,V	a,b,g,h							
	5. River Engineering	III,V	a,d,f							
18PMEWE211	Geotechnical engineering lab	III	c,d,i	0	0	2	2	40	60	100
Total				9	0	2	11	160	240	400

SEMESTER – III								
18PMEWE301	Environmental Geo-technology	I,II	a,b,i	3	0	0	3	40	60	100
18PMEWE302	Research Methodology and IPR	I,II	a,b,c,h	2	0	0	2	40	60	100
18PMEWE3E0	1. Environmental Impact Assessment of Water Resources Development 2. Environmental Quality Monitoring 3. Environment, Health and Safety in Industries 4. Environmental Hydraulics	I,III I,III I,IV I,II,V	a,b,d,h,i c,d,f,i e,f,g,I,h a,b,g	3	0	0	3	40	60	100
18PMEWE311	Geographical Information system lab	III	c,d,i	0	0	2	2	40	60	100
Total				**8**	**0**	**2**	**10**	**160**	**240**	**400**

SEMESTER – IV								
18PMEWE4E0	1. Solid and Hazardous waste management 2. Groundwater Modeling and Management 3. Landfill Engineering And Remediation Technology 4. Air and Water Quality Modeling 5. Flood and Drought Management	I,III I,III I,IV I,II,V III,V	a,b,d c,d,f,i e,f,g a,b,h a,d,i	3	0	0	3	40	60	100
18PMEWE4E0	6. Rehabilitation And Modernisation of Irrigation Systems 7. Watershed Conservation And Management 8. Urban Water Resources Management 9. Water Power and Dam Engineering 10. Coastal Engineering	I,III I,III I,IV I,II,V III,V	a,b,j c,d,h e,f,i a,b,i a,d,j	3	0	0	3	40	60	100
18PMEWE411	Numerical Analysis Lab	III	c,d,i	0	0	2	2	40	60	100
18PMEWE412	Mini Project	III	c,d,i	0	0	4	2	40	60	100*
Total				**6**	**0**	**6**	**10**	**160**	**240**	**400**

				L	T	P	C	CIA	ESE	Total
SEMESTER – V										
18PMEWEOE0	1. Business Analytics 2. Industrial Safety 3. Operations Research 4. Cost Management of Engineering Projects 5. Composite Materials 6. Waste to Energy 7. Remote Sensing and GIS Applications in Environmental Management 8. Resource And Energy Recovery From Waste	I,III I,III I,IV I,II,V III,V II,V III,IV I,III,V	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
18PMEWE591	Project Work – Phase I	III	c,d	0	0	20	10	40	60	100
Total				**3**	**0**	**20**	**13**	**80**	**120**	**200**
SEMESTER – VI										
18PMEWE691	Project Work – Phase II	III	c,d,i	0	0	32	16	120	180	300
Total				**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

**-- Skill Development
**-- Employability
**--Entrepreneurship

KARPAGAM ACADEMY OF HIGHER EDUCATION
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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, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

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 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.

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, and modern 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 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 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 or leader 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.

l) **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 SPECFIC 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.

PEO\ PO, PSO MAPPING:

PO, PSO / PEO	a	b	c	d	e	f	g	h	i	j	k	l	m1	m2
PEO1	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓
PEO2	✓	✓	✓	✓	✓			✓	✓	✓				✓
PEO3	✓	✓	✓		✓	✓	✓	✓		✓	✓		✓	✓

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
(2018 BATCH ONWARDS)

SEMESTER I

COURSE CODE	COURSE TITLE	COURSE AREA	PEO	PO, PSO	L	T	P	Credits	CIA	ESE	TOTAL
			Objectives & Outcomes		Instruction hours/week				Maximum Marks		
									40	60	100
18BECS101	Mathematics-I (Calculus and Linear Algebra for Computer Science Engineers)	BS	I,III	a,f,i,j	3	1	0	4	40	60	100
18BECS102	English	HS	II	f,g,i	2	0	2	3	40	60	100
18BECS141	Semiconductor Physics	BS	I	a,d,f, h,i,j, k	3	1	3	5	40	60	100
18BECS142	Programming For Problem Solving	ES	I	a,j,k	3	0	4	5	40	60	100
				TOTAL	11	2	9	17	160	240	400

SEMESTER II

COURSE CODE	COURSE TITLE	COURSE AREA	PEO	PO, PSO	L	T	P	Credits	CIA	ESE	TOTAL
			Objectives & Outcomes		Instruction hours/week				Maximum Marks		
									40	60	100
18BECS201	Probability and Statistics	BS	I,III	a,h,i, j	3	1	0	4	40	60	100
18BECS241	Chemistry-I	BS	I,III	a,b,c ,d,e,f ,i,j,k	3	1	3	6	40	60	100
18BECS242	Basic Electrical Engineering	ES	I,III	j,l	3	1	2	5	40	60	100
18BECS211	Workshop/ Manufacturing Practices	ES	II	c,i,j	1	0	4	3	40	60	100
18BECS212	Engineering Graphics& Design	ES	I,II	g,j,k	1	0	4	3	40	60	100
				TOTAL	11	3	13	21	200	300	500

SUB. CODE	TITLE OF THE PAPER	SUB. AREA	PEO	PO, PSO	L	T	P	C	CIA	ESE	TOTAL
				SEMESTER –III							
18BECS301	Mathematics-III (Differential Calculus)	BS	I	a,b,c,d,f ,m2	3	1	0	4	40	60	100
18BECS302	Environmental Studies	HS	II	f,g,h	3	0	0	3	40	60	100
18BECS311	IT Workshop (Sci Lab/ MATLAB)	PC			1	0	4	3	40	60	100
18BECS341	Analog Electronic Circuits	ES	I	a,b,c,m 1	3	0	4	5	40	60	100
18BECS342	Data structure & Algorithms	PC	I,III	a,b,c,d, m1, m2	3	0	4	5	40	60	100
18BECS343	Digital Electronics	PC	I	a,b,c,m 1	3	0	4	5	40	60	100
18BECS351	PC hardware Assembly and Troubleshooting	MC	I	a,b,e,m 1	1	1	0	0	100	-	100
				TOTAL				25	340	360	700

SUB. CODE	TITLE OF THE PAPER	SUB. AREA	PEO	PO, PSO	L	T	P	C	CIA	ESE	TOTAL
				SEMESTER –IV							
18BECS401	Discrete Mathematics	PC	I	a,b,c,f,m 1	3	1	0	4	40	60	100
18BECS402	Management 1 (Organization al Behavior)	HS	II	f,h,I,g	3	0	0	3	40	60	100
18BECS441	Computer Organization & Architecture	ES	I	a,b,c	3	0	4	5	40	60	100
18BECS442	Operating Systems	PC	I,III	a,b,c,d,e, f,l,m2	3	0	4	5	40	60	100
18BECS443	Design & Analysis of Algorithms	PC	I,III	a,b,c,d,f, m1,m2	3	0	4	5	40	60	100
18BECS451	Mobile Application Development	MC	I	a,b,c,d,e, f,m1,m2	0	1	1	0	100	-	100
				TOTAL				22	300	300	600

SUB. CODE	TITLE OF THE PAPER	SUB. AREA	PEO	PO,PSO	L	T	P	C	CIA	ESE	TOTAL
				SEMESTER –V							
18BECS501	Signals & Systems	ES	I	a,b,c,d	3	0	0	3	40	60	100
18BECS502	Formal Language & Automata Theory	PC	I	a,b,c,d, f,m1	3	0	0	3	40	60	100
18BECS503	Professional Ethics	HS	II, III	a,f,g,h, I,j,k,l	3	0	0	3	40	60	100
18BECS541	Database Management Systems	PC	I	a,b,e,m 1	3	0	4	5	40	60	100
18BECS542	Object Oriented Programming	PC	I	a,b,c,d, f,k,m1	2	0	4	4	40	60	100
18BECSExx	Elective-I	PE			3	0	0	3	40	60	100
18BECS551	In plant Training	MC	I,III	a,b,c,d, e,f,g,h, I,j,k,l, m1	-	-	-	0	100	-	100
				TOTAL			21		340	360	700

SUB. CODE	TITLE OF THE PAPER	SUB. AREA	PEO	PO,PSO	L	T	P	C	CIA	ESE	TOTAL
				SEMESTER –VI							
18BECS641	Complier Design	PC	I	a,b,c,d, m1	3	0	4	5	40	60	100
18BECS642	Computer Networks	PC	I,III	a,b,c,d,e ,m1	3	0	4	5	40	60	100
18BECSExx	Elective-II	PE			3	0	0	3	40	60	100
18BECSExx	Elective-III	PE			3	0	0	3	40	60	100
18BECSOExx	Open Elective-I (Humanities)	OE			3	0	0	3	40	60	100
18BECS651	CCNA- Introduction to Networks	MC	I,III	a,b,c,e, m1	0	0	1	0	100	-	100
18BECS691	Project-1	PW	I,III	a,b,c,d, e,f,g,h, I,j,k,l, m1	0	0	6	3	40	60	100
				TOTAL			22		340	360	700

SUB. CODE	TITLE OF THE PAPER	SUB. AREA	PEO	PO, PSO	L	T	P	C	CIA	ESE	TOTAL

					L	T	P	C	CIA	ESE	TOTAL
SEMESTER –VII											
18BECSExx	Elective-IV	**PE**			3	0	0	3	40	60	100
18BECSExx	Elective-V	**PE**			3	0	0	3	40	60	100
18BECSOExx	Open Elective-II	**OE**			3	0	0	3	40	60	100
18BECC704	Biology	**BS**	a,f		2	1	0	3	40	60	100
18BECS751	CCNA –Routing and Switching Essentials	**MC**			0	0	1	0	100	0	100
18BECS791	Project-II	**PW**			0	0	12	6	40	60	100
							TOTAL	**18**	**300**	**300**	**600**

SUB. CODE	TITLE OF THE PAPER	SUB. AREA	PEO	PO,PSO	L	T	P	C	CIA	ESE	TOTAL
SEMESTER –VIII											
18BECSExx	Elective-VI	**PE**			3	0	0	3	40	60	100
18BECSOExx	Open Elective-III	**OE**			3	0	0	3	40	60	100
18BECSOExx	Open Elective-IV	**OE**			3	0	0	3	40	60	100
18BECS891	Project-III	**PW**			0	0	12	6	40	60	100
							TOTAL	**15**	**160**	**240**	**400**

List of Mandatory Courses

1. 18BECS351 PC hardware Assembly and Troubleshooting
2. 18BECS451 Mobile Application Development
3. 18BECS551 In plant Training
4. 18BECS651 CCNA- Introduction to Networks
5. 18BECS751 CCNA –Routing and Switching Essentials

LIST OF PROFESSIONAL ELECTIVES

SUB. CODE	TITLE OF THE PAPER	PEO	PO, PSO	L	T	P	C	CIA	ESE	TOTAL
Professional Elective for semester-V										
18BECS5E01	Advanced Data Structures	I	a,b,c,d, m1	3	0	0	3	40	60	100
18BECS5E02	Advanced Computer Architecture	I	a,b,c,m1	3	0	0	3	40	60	100
18BECS5E03	Design Patterns	I	a,b,c	3	0	0	3	40	60	100
18BECS5E04	Advanced Databases	I,III	a,b,e	3	0	0	3	40	60	100
Professional Elective for semester-V										
18BECS5E05	Advanced Operating Systems	I	a,b,c,m1	3	0	0	3	40	60	100
18BECS5E06	C# and.NET	I	a,b,c,d,e, m1	3	0	0	3	40	60	100
18BECS5E07	Servlets and JSP	I	a,b,c,d,e, m1	3	0	0	3	40	60	100
18BECS5E08	User Interface Design	I	a,b,c,f,j,	3	0	0	3	40	60	100

			m1							
Professional Elective for semester-VI										
18BECS6E01	Internet of Things	I	a,b,c,e, m1,m2	3	0	0	3	40	60	100
18BECS6E02	Network Routing Algorithms	I	a,b,c,m1	3	0	0	3	40	60	100
18BECS6E03	Distributed Computing	I	a,b,c,d, m1	3	0	0	3	40	60	100
18BECS6E04	Video Analytics	I,III	a,b,c,d,e, m1	3	0	0	3	40	60	100
Professional Elective for semester-VI										
18BECS6E05	Wireless Sensor Networks	I	a,b,c,m1	3	0	0	3	40	60	100
18BECS6E06	Service Oriented Architecture	I	a,b,c,d, m1	3	0	0	3	40	60	100
18BECS6E07	Software Project Management	I,III	a,b,c,d,j, k, m1	3	0	0	3	40	60	100
18BECS6E08	TCP/IP Design and Implementation	I	a,b,c,m1	3	0	0	3	40	60	100
Professional Elective for semester-VII										
18BECS7E01	Managing Big Data	I,III	a,b,c,d,e, m1	3	0	0	3	40	60	100
18BECS7E02	Ad Hoc Networks	I	a,b,c,d, m1	3	0	0	3	40	60	100
18BECS7E03	Cloud Computing	I	a,b,c,m1	3	0	0	3	40	60	100
18BECS7E04	Information Security	I	a,b,c,m1	3	0	0	3	40	60	100
18BECS7E05	Devops	I,III	a,b,c,d,e, m1	3	0	0	3	40	60	100
Professional Elective for semester-VIII										
18BECS8E01	Semantic Web	I	a,b,c,d, m1	3	0	0	3	40	60	100
18BECS8E02	E-Commerce	I	f	3	0	0	3	40	60	100
18BECS8E03	Human Computer Interaction	I,III	a,b,c,d,e, m1	3	0	0	3	40	60	100
18BECS8E04	Natural Language Processing	I	a,b,c,d, m1	3	0	0	3	40	60	100
18BECS8E05	Digital Marketing	I	a,b,c,d,e, m1	3	0	0	3	40	60	100

**--Skill Development

**--Enterpreneurship

**--Employability

OPEN ELECTIVES

SUB. CODE	TITLE OF THE COURSE	PEO	PO, PSO	L	T	P	C	CIA	ESE	TOTAL
Science & Humanities										
18BESHOE01	Solid Waste Management	I, III	a,b,c,g	3	0	0	3	40	60	100
18BESHOE02	Green Chemistry	I, III	a,b,c,g	3	0	0	3	40	60	100
18BESHOE03	Applied Electrochemistry	I,II,III	a,b,c,	3	0	0	3	40	60	100
18BESHOE04	Industrial Chemistry	I,II	a,b,c,d,g,h,j	3	0	0	3	40	60	100
18BESHOE05	Technical Writing	I	a,b,d	3	0	0	3	40	60	100
18BESHOE06	Geophysics	I	a,b,c,	3	0	0	3	40	60	100
18BESHOE07	Engineering Acoustics	I,II	a, b, c, d, g, h, j	3	0	0	3	40	60	100
18BESHOE08	Industrial Mathematics – I	I,II,III	a,b,d,g,h	3	0	0	3	40	60	100
18BESHOE09	Industrial Mathematics – II	I,II	a,c,d,h,j	3	0	0	3	40	60	100
18BESHOE10	Fuzzy Mathematics	I	a,b,c	3	0	0	3	40	60	100
18BESHOE11	Mathematical Physics	I	a,g,h,j	3	0	0	3	40	60	100
18BESHOE12	Linear Algebra	I,II	a,b,g,h,j	3	0	0	3	40	60	100
Bio Medical Engineering										
18BEBMEOE01	Robotics in medicine	I,II,III	a,b,c	3	0	0	3	40	60	100
18BEBMEOE02	Virtual Reality and Augmented Reality	I,II	a,b,d,g,h	3	0	0	3	40	60	100

Code	Title			L	T	P	C	CIE	SEE	Total
18BEBMEOE03	Artificial organs and Implants	I	a,b, g,h, j	3	0	0	3	40	60	100
Chemical Engineering										
18BTCEOE01	Energy Management In Chemical Industries	I,II,III	a,b, c	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer Technology	I,II	a,d, g,h, j	3	0	0	3	40	60	100
18BTCEOE03	Industrial Wastewater Treatment	I	a,b, c,d	3	0	0	3	40	60	100
18BTCEOE04	Solid And Hazardous Waste Management	I	a,b, g,h, j	3	0	0	3	40	60	100
Electrical & Electronics Engineering										
18BEEEOE01	Electric Hybrid Vehicles	I	a,b, c	3	0	0	3	40	60	100
18BEEEOE02	Energy Management & Energy Auditing	I	a,b, c,h, j	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	I,II	a,b, g,h, j	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	I,II,III	a,b, c,d, g,h, j	3	0	0	3	40	60	100
Electronics & Communication Engineering										
18BEECOE01	Real Time Embedded Systems	I,II	a,b, c,d	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	I	a,b, c,,j	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	I	a,b, c,d	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	I,II	a,b, d	3	0	0	3	40	60	100
18BEECOE05	Principles of Modern Communication System	I,II	a,d, g,h, j	3	0	0	3	40	60	100
Food Technology										
18BTFTOE01	Processing Of Food Materials	I, III	a,b, c,d	3	0	0	3	40	60	100

Course Code	Course Title			L	T	P	C			
		I	a,b, c,g, h,j							
18BTFTOE02	Nutrition and Dietetics			3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat	I,II,III	a,b, c,d	3	0	0	3	40	60	100
18BTFTOE04	Agriculture Waste and Byproducts utilization	I,II	a,b, c,g, h	3	0	0	3	40	60	100
Bio Technology										
18BTBTOE01	Bioreactor Design	I,II,III	a,b, c,	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	I, III	a,b, d	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	I	a,b, c,	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nano Biotechnology	I	a,b, c,d, g,h, j	3	0	0	3	40	60	100
Mechanical Engineering										
18BEMEOE01	Computer Aided Design	I	a,b, c,d	3	0	0	3	40	60	100
18BEMEOE02	Industrial Safety and Environment	I	a,b, d,g	3	0	0	3	40	60	100
18BEMEOE03	Transport phenomena	I, III	a,b, c,d	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Biomechanics	I,II,III	a,b, c,d, g,h, j	3	0	0	3	40	60	100
Automobile Engineering										
18BEAEOE01	Automobile Engineering	I, III	a,b, d,g	3	0	0	3	40	60	100
18BEAEOE02	Basics of two and three Wheelers	I,II	a,b, d,	3	0	0	3	40	60	100
18BEAEOE03	Automobile Maintenance	I	a,b, c	3	0	0	3	40	60	100
18BEAEOE04	Introduction to Modern Vehicle Technology	I,II,III	a,b, c	3	0	0	3	40	60	100
18BEAEOE05	Commercial Fleet Operation	I,III	a,b, g,h, j	3	0	0	3	40	60	100

		Civil Engineering									
18BECEOE01	Housing, Plan and Management	I,III	a,b, c,d	3	0	0	3	40	60		100
18BECEOE02	Building Services	I,III	a,b ,c, d	3	0	0	3	40	60		100
18BECEOE03	Repair And Rehabilitation Of Structures	I,II	a,b ,d	3	0	0	3	40	60		100
18BECEOE04	Computer Aided Civil Engineering Drawing	I	a,b ,c	3	0	0	3	40	60		100

Courses Offered to other Departments

SUB. CODE	TITLE OF THE COURSE	PEO	PO, PSO	L	T	P	C	CIA	ESE	TOTAL
18BECSOE01	Internet Programming	I,III	a,b,c,g,h,m1	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	I,III	a,b,c,g,h,j,m2	3	0	0	3	40	60	100
18BECSOE03	PC hardware and Troubleshooting	I	a,b,c,d,j,m2	3	0	0	3	40	60	100
18BECSOE04	Java Programming	I,II	a,b,c,d,m1	3	0	0	3	40	60	100
18BECSOE05	Machine Learning	I,II	a,b,g,h,m2	3	0	0	3	40	60	100

Computer Science and Engineering

i)   **CATEGORY**

1. BS-Basic Sciences
2. ES-Engineering Sciences
3. HS-Humanities and Sciences
4. PC-Professional Course
5. PE- Professional Elective
6. OE- Open Elective
7. PW-Project Work
8. MC-Mandatory Course

ii)   **PEOs -Programme Educational Objectives.**
iii)   **PO-Programme Outcomes.**
iv)   **PSOs-Programme Specific Outcomes.**

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

l) 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	✓	✓
PEO2	✓	✓
PEO3	✓	

SEMESTER I										
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
18BEEC101	Mathematics-I	1,3	a,e,g,j,k	3	1	0	4	40	60	100
18BEEC102	Semiconductor Physics	1,3	a,b,d,e,g,j,k,l	3	1	3	5	40	60	100
18BEEC103	English	2,3	e,f,g,i	2	0	2	3	40	60	100
18BEEC104	Programming For Problem Solving	2	a,b,j	3	0	4	5	40	60	100
18BEEC105	Yoga	3	h,j	1	0	0	0	100	-	100
TOTAL				**12**	**2**	**9**	**17**	**260**	**240**	**500**
SEMESTER II										
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
18BEEC201	Mathematics-II	1,3	a,e,g,j,k	3	1	0	4	40	60	100
18BEEC202	Chemistry-I	1,3	a,b,d,e,g,j	3	1	3	6	40	60	100
18BEEC203	Basic Electrical Engineering	1,2	a,b,e,j	3	1	2	5	40	60	100
18BEEC204	Environmental Sciences	1,2,5	b,c,e,j	3	0	0	3	40	60	100
18BEEC205	Workshop/ Manufacturing Practices	1,2	a,b,e,j	1	0	4	3	40	60	100
18BEEC206	Engineering Graphics &Design	1,2	a,b,e,j	1	0	4	3	40	60	100
TOTAL				**14**	**3**	**13**	**24**	**240**	**360**	**600**

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
								CIA	ESE	Total
		PEO	PO	L	T	P		40	60	100
18BEEC301	Linear Algebra and Partial Differential Equations	1,3	a,e,g,j,k	3	1	0	4	40	60	100
18BEEC302	Electronic Devices	1,2	a,c,d,j,l,m	3	0	0	3	40	60	100
18BEEC303	Digital system design	1,2	a,b,c,e,l,m	3	0	0	3	40	60	100
18BEEC304	C++ and data structures	1,3	b,c,h,l	3	0	0	3	40	60	100
18BEEC305	Signals and systems	1,2	b,c,l,m	3	0	0	3	40	60	100
18BEEC306	Network Theory	1,2	b,l,m	3	0	0	3	40	60	100
18BEEC311	C++ and data structures Laboratory	1,3	b,c,e,h,l	0	0	2	1	40	60	100
18BEEC312	Electronic Devices Laboratory	1,2	b,c,e,d,j,l	0	0	2	1	40	60	100
18BEEC313	Digital system design Laboratory	1,2	b,c,e,l,m	0	0	2	1	40	60	100
18BEEC351	PCB Designing	1,2	e,l,m	1	0	0	-	100	-	100
TOTAL				19	1	6	22	460	540	1000

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEEC401	Material Sciences	1,2	a,b,d,,g,j,l	3	0	0	3	40	60	100
18BEEC402	Analog circuits	1,2	a,b,c,l	3	0	0	3	40	60	100
18BEEC403	Analog and digital Communication	1,2	a,d,l	3	0	0	3	40	60	100
18BEEC404	Microcontroller	1,2	b,c,d,m	3	0	0	3	40	60	100
18BEEC405	Economics for Engineers	3	d,h,k	3	0	0	3	40	60	100
18BEEC411	Microcontroller Laboratory	1,2	b,c,d,e,m	0	0	2	1	40	60	100
18BEEC412	Analog circuits Laboratory	1,2	a,b,c,e,l,m	0	0	2	1	40	60	100
18BEEC413	Analog and digital Communication Laboratory	1,2	a,d,e,l,m	0	0	2	1	40	60	100
18BEEC451	Constitution of India	3	g	1	0	0	-	100	-	100
TOTAL				**16**	**0**	**6**	**18**	**420**	**480**	**900**

SEMESTER IV

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA 40	ESE 60	Total 100
18BEEC501	Probability and Random Processes	1,3	a,e,g,j,k	3	1	0	4	40	60	100
18BEEC502	Computer Architecture	1,2,3	h,l,m	3	0	0	3	40	60	100
18BEEC503	Digital Signal Processing	1,2	a,b,c,l,m	3	0	0	3	40	60	100
18BEEC504	Electromagnetic waves	1,2	a,d,l,m	3	0	0	3	40	60	100
18BESHOE**/ 18BECSOE**/ 18BEEEOE**/ 18BTBTOE**/ 18BEMEOE**/ 18BEAEOE**/ 18BECEOE**/ 18BTCEOE**/ 18BTFTOE**/ 18BEBMEOE**	Open Elective-I	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
18BEEC5E**	Professional Elective-I	1,2	a,c,h,l,m	3	0	0	3	40	60	100
18BEEC511	Digital Signal Processing Laboratory	1,2	a,b,c,e,l,m	0	0	2	1	40	60	100
18BEEC512	Antenna Laboratory	1,2	a,b,c,e,l,m	0	0	2	1	40	60	100
18BEEC551	In plant Training	1,2	d,h,i,l,n	-	-	-	-	100	-	100
TOTAL				18	1	4	21	420	480	900

		SEMESTER VI									
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**			
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**	
								40	**60**	**100**	
18BEEC601	Total Quality management	3	d,e	3	0	0	3	40	60	100	
18BEEC602	Control systems	1,2	c,l,m	3	0	0	3	40	60	100	
18BEEC603	Computer Networks	1,2,3	c,h,l,m	3	0	0	3	40	60	100	
18BEEC6E**	Professional Elective-II	1,2	a,c,h,l,m	3	0	0	3	40	60	100	
18BESHOE**/ 18BECSOE**/ 18BEEEOE**/ 18BTBTOE**/ 18BEMEOE**/ 18BEAEOE**/ 18BECEOE**/ 18BTCEOE**/ 18BTFTOE**/ 18BEBMEOE**	Open Elective-II	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100	
18BEEC611	Computer Networks Laboratory	1,2,3	c,e,h,l,m	0	0	4	2	40	60	100	
18BEEC612	Electronic Measurement Laboratory	1,2	c,e,l	0	0	2	1	40	60	100	
18BEEC613	Mini Project	1,2,3	g,h,l,m,n	0	0	2	1	40	60	100	
18BEEC651	Soft Skills	3	i,j	1	-	-	-	100	-	100	
TOTAL				**16**	**0**	**8**	**19**	**420**	**480**	**900**	

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEEC701	Professional Ethics	3	f,g	3	0	0	3	40	60	100
18BEEC7E**	Professional Elective-III	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E**	Professional Elective-IV	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E**	Professional Elective-V		a,c,l,m	3	0	0	3	40	60	100
18BESHOE**/ 18BECSOE**/ 18BEEEOE**/ 18BTBTOE**/ 18BEMEOE**/ 18BEAEOE**/ 18BECEOE**/ 18BTCEOE**/ 18BTFTOE**/ 18BEBMEOE**	Open Elective-III	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
18BEEC791	Project Work-Phase I	1,2,3	c,l,m,n	0	0	10	5	100	-	100
18BEEC751	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

SEMESTER VII

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BESHOE**/ 18BECSOE**/ 18BEEEOE**/ 18BTBTOE**/ 18BEMEOE**/ 18BEAEOE**/ 18BECEOE**/ 18BTCEOE**/ 18BTFTOE**/ 18BEBMEOE**	Open Elective-IV	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
18BESHOE**/ 18BECSOE**/ 18BEEEOE**/ 18BTBTOE**/ 18BEMEOE**/ 18BEAEOE**/ 18BECEOE**/ 18BTCEOE**/ 18BTFTOE**/ 18BEBMEOE**	Open Elective-V	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100
18BEEC8E**	Professional Elective-VI	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E**	Professional Elective-VII	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC891	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

SEMESTER VII

PROFESSIONAL ELECTIVE LIST

SEMESTER V-ELECTIVE I

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
SEMESTER V								40	60	100
18BEEC5E01	Biomedical Electronics	1,2,3	a,c,h,l,m	3	0	0	3	40	60	100
18BEEC5E02	Antennas and Wave Propagation	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC5E03	Information theory and coding	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC5E04	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 VI -ELECTIVE II

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
SEMESTER VI								40	60	100
18BEEC6E01	Power Electronics	1,2,3	a,c,h,l,m	3	0	0	3	40	60	100
18BEEC6E02	Introduction to MEMS	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC6E03	CMOS design	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC6E04	Nano Electronics	1,2	a,c,l,m	3	0	0	3	40	60	100
TOTAL				12	0	0	12	160	240	400

SEMESTER VII - ELECTIVES III,IV & V

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
SEMESTER VII								40	60	100
18BEEC7E01	Satellite Communication	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E02	Embedded Systems	1,2	a,c,l,m	3	0	0	3	40	60	100

Course Code	Course Title	PEO	PO	L	T	P	Credits	CIA	ESE	Total
18BEEC7E03	Microwave Theory and Techniques	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E04	VLSI Technology	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E05	Mixed Signal Design	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E06	Internet of Things	1,2,3	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E07	Artificial Neural Networks	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E08	Advanced Microprocessors	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E09	Digital Logic Design with PLDs and VHDL	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E10	Speech and Audio Processing	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E11	Mobile Communication and Networking	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC7E12	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**

SEMESTER VIII - ELECTIVE VI, VII

SEMESTER VII

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEEC8E01	FPGA Design	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E02	Fiber optic communication	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E03	Wavelets	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E04	High Speed Networks	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E05	Error correcting codes	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E06	Adaptive signal processing	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E07	Wireless Sensor Networks	1,2	a,c,l,m	3	0	0	3	40	60	100
18BEEC8E08	ASIC Design	1,2	a,c,l,m	3	0	0	3	40	60	100
TOTAL				**24**	**0**	**0**	**24**	**320**	**480**	**800**

OPEN ELECTIVE LIST

SEMESTER V, VI, VII&VIII

Course Code	Course Title	Objectives & Outcomes PEO	Objectives & Outcomes PO	Instruction hours/week L	Instruction hours/week T	Instruction hours/week P	Credits	Maximum Marks CIA 40	Maximum Marks ESE 60	Maximum Marks Total 100
SEMESTER V, VI, VII&VIII										
Science and Humanities										
18BESHOE01	Solid Waste Management	1,3	a,c,d,g	3	0	0	3	40	60	100
18BESHOE02	Green Chemistry	1,3	c,e,h,j,l	3	0	0	3	40	60	100
18BESHOE03	Applied Electrochemistry	1,3	c,e,h,j,l	3	0	0	3	40	60	100
18BESHOE04	Industrial Chemistry	1,3	c,e,h,j,l	3	0	0	3	40	60	100
18BESHOE05	Technical Writing	1,3	i	3	0	0	3	40	60	100
18BESHOE06	Geophysics	1,3	a,b,d,e,g,j,	3	0	0	3	40	60	100
18BESHOE07	Engineering Acoustics	1,3	a,b,d,e,g,j,	3	0	0	3	40	60	100
18BESHOE08	Industrial Mathematics – I	1,3	a,e,g,j,k	3	0	0	3	40	60	100
18BESHOE09	Industrial Mathematics – II	1,3	a,e,g,j,k	3	0	0	3	40	60	100
18BESHOE10	Fuzzy Mathematics	1,3	a,e,g,j,k	3	0	0	3	40	60	100
18BESHOE11	Mathematical Physics	1,3	a,b,c,d,i,g	3	0	0	3	40	60	100
18BESHOE12	Linear Algebra	1,3	a,e,g,j,k	3	0	0	3	40	60	100
Computer Science and Engineering										
18BECSOE01	Internet Programming	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100
18BECSOE03	PC Hardware and Trouble shooting	1,3	a,b,c,d,e	3	0	0	3	40	60	100
18BECSOE04	Java Programming	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100
18BECSOE05	Machine Learning	1,3	a,b,c,d,e,j	3	0	0	3	40	60	100

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA 40	ESE 60	Total 100
Electrical and Electronics Engineering										
18BEEEOE01	Electric Hybrid Vehicles	1,3	a,b,c,d,e,l	3	0	0	3	40	60	100
18BEEEOE02	Energy Management and Energy Auditing	1,3	a,d,f,g,k	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	1,3	a,d,f,g	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	1,3	a,d,f,g,k	3	0	0	3	40	60	100
Biotechnology										
18BTBTOE01	Bioreactor Design	1,3	a,b,c,d,e,g,j,l	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	1,3	a,b,c,d,e,g,j,l	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	1,3	a,b,c,d,e,g,j,l	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nanobiotechnology	1,3	a,b,c,d,e,g,j,l	3	0	0	3	40	60	100
Mechanical Engineering										
18BEMEOE01	Computer Aided design	1,3	a,b,c,d,e,m	3	0	0	3	40	60	100
18BEMEOE02	Industrial safety and Environment	1,3	b,c,d,g	3	0	0	3	40	60	100
18BEMEOE03	Transport Phenomena	1,3	b,c,d,g	3	0	0	3	40	60	100
18BEMEOE04	Introduction to biomechanics	1,3	b,c,d,g	3	0	0	3	40	60	100
Automobile Engineering										
18BEAEOE01	Automobile Engineering	1,3	a,b,c,d	3	0	0	3	40	60	100
18BEAEOE02	Two and Three Wheeler Technology	1,3	a,b,c,d	3	0	0	3	40	60	100
18BEAEOE03	Vehicle Maintenance	1,3	a,b,c,d	3	0	0	3	40	60	100
18BEAEOE04	Modern Vehicle Technology	1,3	a,b,c,d	3	0	0	3	40	60	100
18BEAEOE05	Fleet Management	1,3	a,b,c,d	3	0	0	3	40	60	100

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
Civil Engineering										
18BECEOE01	Housing, Plan and Management	1,3	a,b,c,d,e,f,g,h,j	3	0	0	3	40	60	100
18BECEOE02	Building Services	1,3	a,b,c,d,e,f,g,h,j	3	0	0	3	40	60	100
18BECEOE03	Repair and Rehabilitation Of Structures	1,3	a,b,c,d,e,f,g,h,j	3	0	0	3	40	60	100
18BECEOE04	Computer Aided Civil Engineering Drawing	1,3	a,b,c,d,e,f,g,h,j	3	0	0	3	40	60	100
Chemical Engineering										
18BTCEOE01	Energy Management in Chemical Industries	1,3	a,d,f,g,k	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer Technology	1,3	c,g	3	0	0	3	40	60	100
18BTCEOE03	Industrial Wastewater Treatment	1,3	c,g	3	0	0	3	40	60	100
18BTCEOE04	Solid & Hazardous Waste Management	1,3	c,g	3	0	0	3	40	60	100
Food Technology										
18BTFTOE01	Processing of Food Materials	1,3	a,b,c,d,e,g,j,l	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,d,e,g,j,l	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	1,3	a,b,c,d,e,g,j,l	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	1,3	b,c.d,g	3	0	0	3	40	60	100
Biomedical Engineering										
18BEBMEOE01	Robotics in Medicine	1,3	a,d,e,l,m	3	0	0	3	40	60	100
18BEBMEOE02	Virtual Reality and Augmented Reality	1,3	d,e,j,l,m	3	0	0	3	40	60	100
18BEBMEOE03	Artificial organs and Implants	1,3	c,l	3	0	0	3	40	60	100

COURSES OFFERED TO OTHER DEPARTMENTS

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
Electronics and Communication Engineering										
18BEECOE01	Real Time Embedded Systems	1,2,3	a,b,c,d,e,j,l ,m	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	1,2,3	a,b,c,d,e,j,l ,m	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	1,2,3	a,b,c,d,e,j, l,m	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	1,2,3	a,b,c,d,e,j, l,m	3	0	0	3	40	60	100
18BEECOE05	Principles of Modern Communication System	1,2,3	a,b,c,d,e,j, l,m	3	0	0	3	40	60	100

Color code
Employability
Skill Development
Enterpreneurship

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

CURRICULUM 2018

(FULL TIME PROGRAMME)

Department of Electrical and Electronics 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- 641021, India.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
FACULTY OF ENGINEERING
UG PROGRAM (CBCS) – B.E –EEE (FULL TIME)
(2018–2019 Batch and onwards)

Course Code	Course Title	Objectives & Outcomes PEO	Objectives & Outcomes PO	Instruction hours/week L	Instruction hours/week T	Instruction hours/week P	Credits	Maximum Marks CIA 40	Maximum Marks ESE 60	Maximum Marks Total 100
SEMESTER I										
18BEEE101	Mathematics-I (Calculus and Differential Equations)	1,2	a,b,e,l	3	1	0	4	40	60	100
18BEEE102	English	2	i,j,l	2	0	2	3	40	60	100
18BEEE141	Waves, Optics and Introduction to Quantum Mechanics	1,2	a,g,j,k,l	3	1	3	5	40	60	100
18BEEE142	Programming For Problem Solving (With C)	1	a,b,c,d,e,l	3	0	4	5	40	60	100
			TOTAL	11	2	9	17	160	240	400

Course Code	Course Title	Objectives & Outcomes PEO	Objectives & Outcomes PO	Instruction hours/week L	Instruction hours/week T	Instruction hours/week P	Credits	Maximum Marks CIA 40	Maximum Marks ESE 60	Maximum Marks Total 100
SEMESTER II										
18BEEE201	Mathematics-II (Linear Algebra, Transform calculus and Numerical Method)	2	a,b,c,e,l	3	1	0	4	40	60	100
18BEEE241	Chemistry-I	1,2	a,b,c,e,l	3	1	3	6	40	60	100
18BEEE242	Basic Electrical Engineering	1,2	a,b,c,e,g,l	3	1	2	5	40	60	100
18BEEE211	Workshop/ Manufacturing Practices	1,2	a,c,d,e,f,j	1	0	4	3	40	60	100
18BEEE212	Engineering Graphics& Design	1,2	c,d	1	0	4	3	40	60	100
			TOTAL	11	3	13	21	200	300	500

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – III										
18BEEE301	Electrical Circuit Analysis	1	a,b,c,d,e,l	3	1	0	4	40	60	100
18BEEE302	Analog Electronics	2	a,b,c,d,e,l	3	0	0	3	40	60	100
18BEEE303	Electrical Machines – I	1	a,b,c,d,e,j	3	0	0	3	40	60	100
18BEEE304	Electromagnetic Fields	1	a,b,c,d,e,j	3	1	0	4	40	60	100
18BEEE305	Engineering Mechanics	2	a,c,d,f	3	1	0	4	40	60	100
18BEEE311	Analog Electronics Laboratory	2	a,d,e,k,l	0	0	2	1	40	60	100
18BEEE312	Electrical Machines Laboratory - I	1	a,d,e,k,l	0	0	2	1	40	60	100
18BEEE351	NSS/NCC/PCB Design/Electricity Standards									0
Semester Total				**15**	**3**	**4**	**20**	**280**	**420**	**700**
SEMESTER – IV										
18BEEE401	Digital Electronics	2	a,d,e	3	0	0	3	40	60	100
18BEEE402	Electrical Machines – II	1	a,b,c,d,e,g,l	3	0	0	3	40	60	100
18BEEE403	Power Electronics	2	a,b,c,d,e,g	3	0	0	3	40	60	100
18BEEE404	Signals and Systems	1	a,b,c,d,e,g,l	2	1	0	3	40	60	100
18BEEE405	Mathematics – III (Probability and Statistics)	1	a,b ,d,i	3	1	0	4	40	60	100
18BEEE406	Environmental Studies	1	a,c,e,f,g,h,l	2	1	0	3	40	60	100
18BEEE411	Digital Electronics Laboratory	2	a,d,e,k,l	0	0	2	1	40	60	100
18BEEE412	Power Electronics Laboratory	2	a,c,d,j,k,l	0	0	2	1	40	60	100
18BEEE413	Electrical machines Lab-II	1	a,b,c,d,e,l	0	0	2	1	40	60	100
18BEEE451	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		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - V										
18BEEE501	Power Systems – I	2	a,b,c,d,e,g,l	3	0	0	3	40	60	100
18BEEE502	Control Systems	1	a,b,c,d,e,l	3	0	0	3	40	60	100
18BEEE503	Microprocessors	1	a,c,e,h,i,k,l	3	0	0	3	40	60	100
18BEEE504	Engineering Economics and Financial Management	1	a,e,f,i	3	0	0	3	40	60	100
18BEEE5E_ _	Program Elective - I			3	0	0	3	40	60	100
18BE_ _5OE_ _	Open Elective-I			3	0	0	3	40	60	100
18BEEE511	Power Systems Laboratory – I	2	a,c,d,j,k,l	0	0	2	1	40	60	100
18BEEE512	Control Systems Laboratory	1	c,d,e,f,i,j	0	0	2	1	40	60	100
18BEEE513	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
SEMESTER – VI										
18BEEE601	Total Quality Management	-	b,e,f,g,h,i,j	3	0	0	3	40	60	100
18BEEE602	Power Systems – II	1	a,b,c,d,e,g,l	3	0	0	3	40	60	100
18BEEE641	Measurements and Instrumentation	1	a,b,c,d,e,l	2	0	2	3	40	60	100
18BEEE6E_ _	Program Elective - II			3	0	0	3	40	60	100
18BEEE6E_ _	Program Elective - III			3	0	0	3	40	60	100
18BE_ _6OE_ _	Open Elective-II			3	0	0	3	40	60	100
18BEEE611	Power Systems Laboratory – II	1	a,c,d,j,k,l	0	0	2	1	40	60	100
18BEEE612	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	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - VII										
18BEEE701	Professional Ethics	-	a,b,d g,k,l	3	0	0	3	40	60	100
18BEEE7E_ _	Program Elective -IV			3	0	0	3	40	60	100
18BEEE7E_ _	Program Elective -V			3	0	0	3	40	60	100
18BE_ _7OE_ _	Open Elective-III			3	0	0	3	40	60	100
18BE_ _7OE__	Open Elective-IV			3	0	0	3	40	60	100
18BEEE791	Project Stage-I	1,2	-	0	0	6	3	80	120	200
Semester Total				**15**	**0**	**6**	**18**	**280**	**420**	**700**
SEMESTER – VIII										
18BEEE8E_ _	Program Elective -VI			3	0	0	3	40	60	100
18BE _ _8OE_ _	Open Elective-V			3	0	0	3	40	60	100
18BE_ _ 8OE_ _	Open Elective-VI			3	0	0	3	40	60	100
18BEEE891	Project Stage-II	1,2	-	0	0	16	8	80	120	200
Semester Total				**9**	**0**	**16**	**17**	**200**	**300**	**500**
Program Total				**113**	**11**	**68**	**158**	**2160**	**3240**	**5400**

TOTAL CREDITS: 158

PROFESSIONAL ELECTIVE COURSES

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA 40	ESE 60	Total 100
SEMESTER V										
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										
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

SEMESTER VII										
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
19BEEE7E01	Wind and Solar Energy Systems	2	a,b,c, d,e,g,l	3	0	0	3	40	60	100
19BEEE7E02	Electrical and Hybrid Vehicles	2	a,c,d,h ,m,n	3	0	0	3	40	60	100
19BEEE7E03	Power System Protection	2	a,b,c,d ,e,g,l	3	0	0	3	40	60	100
19BEEE7E04	HVDC Transmission Systems	2	a,b,c, h,i,l	3	0	0	3	40	60	100
19BEEE7E05	Power Quality and FACTS	2	a,b,c, d,e,j,l	3	0	0	3	40	60	100
19BEEE7E06	Power System Dynamics and Control	2	a,c,e	3	0	0	3	40	60	100
SEMESTER VIII										
Course Code	**Course Title**	**Objectives & Outcomes**		**Instruction hours/week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
19BEEE8E01	Advanced Electric Drives	1	a,b,c,d, e,g	3	0	0	3	40	60	100
19BEEE8E02	Power System Stability	2	d,e	3	0	0	3	40	60	100
19BEEE8E03	Power Generation Systems	2	c,d,e,g ,h,i	3	0	0	3	40	60	100
19BEEE8E04	Virtual Instrumentation	1	a,b,e,h ,l,m,n	3	0	0	3	40	60	100

LIST OF OPEN ELECTIVES

COURSE OFFERED BY OTHER DEPARTMENT

SUB. CODE	TITLE OF THECOURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
AUTOMOBILE ENGINEERING										
18BEAEOE01	Automobile Engineering	1,2	a,b,d,g	3	0	0	3	40	60	100
18BEAEOE02	Two And Three Wheeler Technology	1,2	a,b,d,	3	0	0	3	40	60	100
18BEAEOE03	Vehicle Maintenance	I	a,b,c	3	0	0	3	40	60	100
18BEAEOE04	Modern Vehicle Technology	1,2,	a,b,c	3	0	0	3	40	60	100
18BEAEOE05	Fleet Management	1,2	a,b,g,h,j	3	0	0	3	40	60	100
BIOMEDICAL ENGINEERING										
18BEBMEOE01	Robotics in medicine	1,2,	a,b,c	3	0	0	3	40	60	100
18BEBMEOE02	Virtual Reality and Augmented Reality	1,2	a,b,d,g,h	3	0	0	3	40	60	100
18BEBMEOE03	Artificial organs and Implants	1	a,b,g,h,j	3	0	0	3	40	60	100
BIOTECHNOLOGY										
18BTBTOE01	Bioreactor Design	1,2,	a,b,c,	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	1,2	a,b,d	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	1	a,b,c,	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nano biotechnology	1	a,b,c,d,g,h,j	3	0	0	3	40	60	100
CHEMICAL ENGINEERING										
18BTCEOE01	Energy Management in Chemical Industries	1,2	a,b,c	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer Technology	1,2	a,d,g,h,j	3	0	0	3	40	60	100
18BTCEOE03	Industrial wastewater treatment	1	a,b,c,d	3	0	0	3	40	60	100
18BTCEOE04	Solid and Hazardous waste management	1	a,b, g,h,j	3	0	0	3	40	60	100
CIVIL ENGINEERING										
18BECEOE01	Housing, Plan and Management	1,2	a,b,c,d	3	0	0	3	40	60	100
18BECEOE02	Building Services	1,2	a,b,c,d	3	0	0	3	40	60	100
18BECEOE03	Repair and Rehabilitation of Structures	1,2	a,b,d	3	0	0	3	40	60	100
18BECEOE04	Computer Aided Civil Engineering Drawing	1	a,b,c	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
18BECSOE01	Internet Programming	1,2	a,b,c,g,h	3	0	0	3	40	60	100

Code	Title			L	T	P	C			
18BECSOE02	Multimedia and Animation	1,2	a,b,c,g,h,j	3	0	0	3	40	60	100
18BECSOE03	PC Hardware and Trouble shooting	1	a,b,c,d ,j	3	0	0	3	40	60	100
18BECSOE04	Java Programming	1,2	a,b,c,d,	3	0	0	3	40	60	100
18BECSOE05	Machine Learning	1,2	a,b,g,h,	3	0	0	3	40	60	100
ELECTRONICS AND COMMUNICATION ENGINEERING										
18BEECOE01	Real Time Embedded Systems	1,2	a,b,c,d	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	1	a,b,c,j	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	1	a,b,c,d	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	1,2	a,b,d	3	0	0	3	40	60	100
18BEECOE05	Principles of Modern Communication System	1,2	a,d,g,h,j	3	0	0	3	40	60	100
FOOD TECHNOLOGY										
18BTFTOE01	Processing of Food Materials	1,2	a,b,c,d	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	1	a,b,c,g,h,j	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	1,2,	a,b,c,d	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	1,2	a,b,c,g,h	3	0	0	3	40	60	100
MECHANICAL ENGINEERING										
18BEMEOE01	Computer Aided Design	1	a,b,c,d	3	0	0	3	40	60	100
18BEMEOE02	Industrial Safety and Environment	1	a,b,d,g	3	0	0	3	40	60	100
18BEMEOE03	Transport Phenomena	1,2	a,b,c,d	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Biomechanics	1,2	a,b,c,d,g,h,j	3	0	0	3	40	60	100
SCIENCE AND HUIMANITIES										
18BESHOE01	Solid Waste Management	1,2	a,b,c,g	3	0	0	3	40	60	100
18BESHOE02	Green Chemistry	1	a,b,c,g,h,j	3	0	0	3	40	60	100
18BESHOE03	Applied Electrochemistry	1,2,	a,b,c,	3	0	0	3	40	60	100
18BESHOE04	Industrial Chemistry	1,2	a,b,c,d,g,h,j	3	0	0	3	40	60	100
18BESHOE05	Technical writing	1	a,b,d	3	0	0	3	40	60	100
18BESHOE06	Geophysics	1	a,b,c,	3	0	0	3	40	60	100
18BESHOE07	Engineering Acoustics	1,2	a,b,c,d,g,h,j	3	0	0	3	40	60	100
18BESHOE08	Industrial Mathematics I	1,2	a,b,d,g,h	3	0	0	3	40	60	100
18BESHOE09	Industrial Mathematics II	1,2	a,c,d,h,j	3	0	0	3	40	60	100
18BESHOE10	Fuzzy Mathematics	1	a,b,c	3	0	0	3	40	60	100
18BESHOE11	Mathematical Physics	1	a,g,h,j	3	0	0	3	40	60	100

18BESHOE12	Linear Algebra	1,2	a,b, g,h,j	3	0	0	3	40	60	100
COURSES OFFERED TO OTHER DEPARTMENT										
18BEEEOE01	Electric Hybrid Vehicle	2	a,c,d,h,m,n	3	0	0	3	40	60	100
18BEEEOE02	Energy Management & Energy Auditing	2	b,e,f,g,h,i,j,n	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	1,2	a,b,d,e,l	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	1	a,b,c,d,e,g,l	3	0	0	3	40	60	100

**--Skill Development

**--Employability

**--Entrepreneurship

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.
c	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.
l	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 EDUCATIONAL OBJECTIVES	PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES													
	a	b	c	d	e	f	g	h	i	j	k	l	m	n
1	✓	✓	✓	✓	✓	✓						✓	✓	✓
2	✓	✓	✓	✓	✓	✓		✓		✓			✓	✓

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

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER - I										
18PBEEE101	Engineering Mathematics-I	1	a,b,e,i	3	0	0	3	40	60	100
18PBEEE102	Electrical Machines -I	1,2	a,b,d,i	3	0	0	3	40	60	100
18PBEEE103	ElectronicDevices and Circuits	1,2	a,b,d,f	3	0	0	3	40	60	100
18PBEEE104	Computer Fundamentals and C Programming	1,2	a,e,h,i	3	0	0	3	40	60	100
18PBEEE111	Computer Practices &Programming Laboratory	1,2	a,e,h,i.j	0	0	3	2	40	60	100
	Semester Total			12	0	3	14	200	300	500
SEMESTER – II										
18PBEEE201	Engineering Mathematics -II	1	a,b,e,i	3	0	0	3	40	60	100
18PBEEE202	Electrical Machines-II	1,2	a,b,d,i	3	0	0	3	40	60	100
18PBEEE203	Measurements and Instrumentation	1,2	a,b,d,f	3	0	0	3	40	60	100
18PBEEE204	Environmental Sciences	1,2	c,f,	3	0	0	3	40	60	100
18PBEEE211	DC and ACMachines Laboratory	1,2	a,b,d,i	0	0	3	2	40	60	100
	Semester Total			12	0	3	14	200	300	500
	Program Total			**24**	**0**	**6**	**28**	**400**	**600**	**1000**

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - III										
18PBEEE301	Power Electronics	1	a,b,e,i	3	0	0	3	40	60	100
18PBEEE302	Analysis of Electric Circuits	1,2	a,b,d,i	3	0	0	3	40	60	100
18PBEEE303	Control System Engineering	1,2	a,b,d,f	3	0	0	3	40	60	100
18PBEEE304	Renewable Energy Sources	1,2	a,e,h,i	3	0	0	3	40	60	100
18PBEEE311	Control System Engineering Laboratory	1,2	a,e,h,i.j	0	0	3	2	40	60	100
	Semester Total			12	0	3	14	200	300	500
SEMESTER – IV										
18PBEEE401	Solid State Drives	1	a,b,e,i	3	0	0	3	40	60	100
18PBEEE402	Transmission and Distribution Systems	1,2	a,b,d,i	3	0	0	3	40	60	100
18PBEEE403	Linear Integrated Circuits	1,2	a,b,d,f	3	0	0	3	40	60	100
18PBEEE404	Power Plant Engineering	1,2	c,f,	3	0	0	3	40	60	100
18PBEEE411	Power Electronics and Drives Laboratory	2	a,b,d,i	0	0	3	2	40	60	100
	Semester Total			12	0	3	14	200	300	500

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - V										
18PBEEE501	High Voltage Engineering	1	a,b,e,i	3	0	0	3	40	60	100
18PBEEE502	Power System Analysis	1,2	a,b,d,i	3	0	0	3	40	60	100
18PBEEE5--	Professional Elective I	1,2	a,b,d,f	3	0	0	3	40	60	100
18PBEEE5--	Professional Elective II	1,2	a,e,h,i	3	0	0	3	40	60	100
18PBEEE511	Electronics Laboratory	1,2	a,e,h,i.j	0	0	3	2	40	60	100
18PBEEE551	Mini Project			0	0	3	1	100	0	100
Semester Total				12	0	6	15	300	300	600
SEMESTER – VI										
18PBEEE601	Power System Operation and Control	1	a,b,e,i	3	0	0	3	40	60	100
18PBEEE602	Engineering Economics and Financial Management	1,2	a,b,e,d,i	3	0	0	3	40	60	100
18PBEEE6E__	Professional Elective III	1,2	a,b,d,f	3	0	0	3	40	60	100
18PBEEE6E__	Professional Elective IV	1,2	a,c,f,	3	0	0	3	40	60	100
18PBEEE611	Power System Simulation Laboratory	2	a,b,d,i	0	0	3	2	40	60	100
18PBEEE691	Project work and Viva-Voce Phase 1			0	0	3	3	40	60	100
Semester Total				12	0	6	17	240	360	600

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - VII										
18PBEEE701	Total Quality Management	1	a,b,e,i	3	0	0	3	40	60	100
18PBEEE7E__	Professional Elective V	1,2	a,b,d,i	3	0	0	3	40	60	100
18PBEEE7E__	Professional Elective VI	1,2	a,b,d,f	3	0	0	3	40	60	100
18PBEEE791	Project work and Viva-Voce Phase 2	1,2	a,e,h,i	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 ELECTIVE –I & II

S. No	SUB. CODE	TITLE OF THE COURSE	PEO	PO & PSO	L	T	P	C	CIA	ESE	TOTAL
1.	18PBEEE5E01	Data Structures and Algorithms	1	a,b,c,d,k	3	0	0	3	40	60	100
2.	18PBEEE5E02	Computer Networks	1	a,b,c,d,k	3	0	0	3	40	60	100
3.	18PBEEE5E03	Network Analysis and Synthesis	1	a,b,c,d,k,m,n	3	0	0	3	40	60	100
4.	18PBEEE5E04	Special Electrical Machines	1,2	a,b,c,f,k,m,n	3	0	0	3	40	60	100
5.	18PBEEE5E05	Energy Management, Utilization and Auditing	1,2	a,b,e,d,k,m	3	0	0	3	40	60	100
6.	18PBEEE5E06	Distributed Generation	1,2	a,e,f,g	3	0	0	3	40	60	100
7.	18PBEEE5E07	Industrial Automation	1,2	a,c,d,k	3	0	0	3	40	60	100
8.	18PBEEE5E08	Consumer Electronics	1	a,c,j,k,l	3	0	0	3	40	60	100

PROFESSIONAL ELECTIVE –III & IV

S. No	SUB. CODE	TITLE OF THE COURSE	PEO	PO & PSO	L	T	P	C	CIA	ESE	TOTAL
1.	18PBEEE6E01	Design of Electrical Apparatus	1,2	a,b,c,i	3	0	0	3	40	60	100
2.	18PBEEE6E02	Digital Logic Circuits	1,2	a,b,d	3	0	0	3	40	60	100
3.	18PBEEE6E03	HVDC and EHVAC	1,2	a,c,d,i	3	0	0	3	40	60	100
4.	18PBEEE6E04	Computer Architecture	1	a,b,c,d,k	3	0	0	3	40	60	100
5.	18PBEEE6E05	Introduction to Neural Networks	1,2	a,c,d,h,n	3	0	0	3	40	60	100

6.	18PBEEE6E06	Biomedical Instrumentation	1,2	a,c,d,h ,n	3	0	0	3	40	60	100
7.	18PBEEE6E07	Sensors and Transducers	1,2	a,b,c,k	3	0	0	3	40	60	100
8.	18PBEEE6E08	Flexible AC Transmission Systems	1,2	a,b,c,d ,k	3	0	0	3	40	60	100
9.	18PBEEE6E09	Professional Ethics	1	a,b,d	3	0	0	3	40	60	100
10	18PBEEE6E10	Microprocessor and Microcontroller	1,2	a,b,d	3	0	0	3	40	60	100

PROFESSIONAL ELECTIVE –V & VI

1.	18PBEEE7E01	Fuzzy logic and its Applications	1,2	b,d,I,j, n	3	0	0	3	40	60	100
2.	18PBEEE7E02	Digital Signal Processing	1,2	b,d,I,j	3	0	0	3	40	60	100
3.	18PBEEE7E03	Power Quality	1,2	a,c,d, h	3	0	0	3	40	60	100
4.	18PBEEE7E04	Power System Restructure	1,2	b,c,d, h	3	0	0	3	40	60	100
5.	18PBEEE7E05	Modern Semiconductor Devices	1,2	b,c,f,m	3	0	0	3	40	60	100
6.	18PBEEE7E06	Industrial Electronics	1,2	a,b,c,h	3	0	0	3	40	60	100
7.	18PBEEE7E07	Smart Grid	1,2	a,b,c,h	3	0	0	3	40	60	100
8.	18PBEEE7E08	Electric Hybrid Vehicle	1,2	a,c,d,h	3	0	0	3	40	60	100
9.	18PBEEE7E09	Power System Protection and Switchgear	1,2	b,c,d,h	3	0	0	3	40	60	100

**--Skill Development

**--Employability

**--Entrepreneurship

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 able to analyze the problem using first principles of Mathematics and Engineering Sciences.
c	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
l	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:

PEO \PO&PSO	a	b	c	d	e	f	g	h	i	j	k	l	m	n
PEO1	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓
PEO2	✓	✓	✓	✓	✓	✓		✓		✓			✓	✓

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEEIRNG
FACULTY OF ENGINEEIRNG
PG PROGRAM (CBCS) – M.E POWER SYSTEMS ENGINEERING (PART TIME)
(2018–2019 Batch and onwards)

Course Code	Name of the Course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
SEMESTER- I										
18PMEPS101	Power System Analysis	1,2,3	a,b,d,f	3	0	0	3	40	60	100
18PMEPS102	Power System Dynamics-I	1,2,4	a,b,d,f	3	0	0	3	40	60	100
18PMEPS103_	Program Elective – I	1,2,4	a,b,d,f	3	0	0	3	40	60	100
SEMESTER- II										
18PMEPS201	Digital Protection of Power System	1,2,3	a,b,d,f	3	0	0	3	40	60	100
18PMEPS202	Power System Dynamics-II	1,2,4	a,b,d,f	3	0	0	3	40	60	100
18PMEPS203_	Program Elective – I	1,2,4	a,b,d,f	3	0	0	3	40	60	100
SEMESTER- III										
18PMEPS301_	Program Elective – III	1,2,3	a,b,d,f	3	0	0	3	40	60	100
18PMEPS302_	Program Elective – IV	1,2,3	a,b,d,f	3	0	0	3	40	60	100
18PMEPS303	Research Methodology and IPR	1,2,4	a,b,d	3	0	0	2	40	60	100
18PMEPS311	Power System Steady State Analysis Lab	1,2,3	a,b,d,f	0	0	3	2	40	60	100
Total				9	0	3	10	160	240	400
SEMESTEZR IV										
18PMEPS401_	Program Elective – V	1,2,3	a,b,d,f	3	0	0	3	40	60	100
18PMEPS402_	Open Elective	1,2,4	a,d,f,h	3	0	0	3	40	60	100

18PMEPS411_	Lab II	1,2,3	a,b ,d,f	**0**	**0**	**3**	**2**	**40**	**60**	**100**
Total				**6**	**0**	**3**	**8**	**120**	**180**	**300**
SEMESTER -V										
18PMEPS511_	Lab III	1,2,4	a,d ,f,h	**0**	**0**	**3**	**2**	**40**	**60**	**100**
18PMEPS591	Project Phase I	1,2,4	a,d ,f,h	**0**	**0**	**9**	**6**	**40**	**60**	**100**
Total				**0**	**0**	**12**	**8**	**80**	**120**	**200**
SEMESTER -VI										
18PMEPS691	Phase-II Dissertation	1,2,4	a,d ,f,h	**0**	**0**	**18**	**12**	**120**	**180**	**300**
Total				**0**	**0**	**18**	**12**	**120**	**180**	**300**

List of Elective Courses

Program Elective – I		Open Elective	
Course Code	**Course Name**	**Course Code**	**Course Name**
18PMEPS103A	Renewable Energy System	**18PMEPS402A**	Business Analytics
18PMEPS103B	Smart grids	**18PMEPS402B**	Industrial Safety
18PMEPS103C	High Power Converters	**18PMEPS402C**	Operations Research
Program Elective – II		**18PMEPS402D**	Cost Management of Engineering Projects
18PMEPS203A	Restructured Power Systems	**18PMEPS402E**	Composite Materials
18PMEPS203B	Advanced Digital Signal Processing	**18PMEPS402F**	Waste to Energy
18PMEPS203C	Dynamics of Electrical Machines	**Lab Courses**	
18PMEPS203D	Power Apparatus Design	**18PMEPS411A**	Power System Dynamics Lab
Program Elective – III		**18PMEPS411B**	Renewable Energy Lab
18PMEPS301A	Electrical Power Distribution System	**18PMEPS511A**	Power System Protection Lab
18PMEPS301B	Mathematical Methods for Power Engineering	**18PMEPS511B**	Power Quality Lab
18PMEPS301C	Pulse Width Modulation for PE Converters	**18PMEPS511C**	Artificial Intelligence Lab
18PMEPS301D	Electric and Hybrid Vehicles	**18PMEPS511D**	Power Electronics Applications to Power Systems Lab
Program Elective – IV			
18PMEPS302A	Advanced Micro-Controller Based Systems		
18PMEPS302B	SCADA System and Applications		
18PMEPS302C	Power Quality		
18PMEPS302D	Artificial Intelligence		
Program Elective – V			
18PMEPS401A	Power System Transients		
18PMEPS401B	FACTS and Custom Power Devices		
18PMEPS401C	Industrial Load Modeling and Control		

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.

l. 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 Educational Objective	Program Outcome									
	a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**
PEO 1	√	√	√	√	√	√	√	√	√	√
PEO 2	√	√	√	√	√			√	√	√
PEO 3								√		
PEO 4	√		√	√		√		√	√	√
PEO 5	√	√	√	√		√		√	√	√
PEO 6	√	√	√	√	√	√	√	√	√	√
PEO 7	√	√	√	√		√		√	√	√

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 OF EXAMINATION

(2018 Batch Onwards)

SEMESTER I										
Course Code	**Course title**	**Objectives & Outcomes**		**Instruction Hours / Week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
18BEME101	Mathematics-I(Calculus and Linear Algebra for Mechanicaland AutomobileEngineering)	1	1,2,8,9	3	1	0	4	40	60	100
18BEME102	Electro Magnetism	1, 3	1,2,3,5,8,9	3	1	2	5	40	60	100
18BEME103	Basic Electrical Engineering	1, 3	1,2,3,8,9,11	3	1	2	5	40	60	100
18BEME311	Engineering Graphics-I	1, 2	1,2,3,5,9	1	0	4	3	40	60	100
	Total			10	3	8	17	160	240	400

SEMESTER II										
Course Code	**Course title**	**Objectives & Outcomes**		**Instruction Hours / Week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
18BEME201	Mathematics-II (Calculus, OrdinaryDifferential Equations and Complex variable for Mechanical and Automobile Engineering)	1	1,2,8,9	3	1	0	4	40	60	100
18BEME202	Chemistry I	1	1,2,5, 10	3	1	3	6	40	60	100
18BEME203	English	2	4,5,10	2	0	2	3	40	60	100
18BEME204	Programming for problem Solving	1	1,2,9	3	0	4	5	40	60	100
18BEME205	Constitution of India			1	-	-	-	100	-	100
18BEME211	Workshop / Manufacturing Practice	1, 2	1,2,3,5	1	0	4	3	40	60	100
18BEME212	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

SEMESTER III

Course Code	Course title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BEME301	Mathematics III	1	1,3,5,6,7,8	3	1	0	4	40	60	100
18BEME302	Biology for Engineers	1	1,3,5,6,7,8	3	0	0	3	40	60	100
18BEME303	Engineering Mechanics	1	1,2,3,4,10,11	3	1	0	3	40	60	100
18BEME304	Thermodynamics	1	1,2,3,4,10	3	1	0	3	40	60	100
18BEME341	Basic Electronics Engineering	1	1,2,3,4,10	3	0	2	4	40	60	100
18BEME311	Machine Drawing	1	1,2,3,4,10	2	0	3	4	40	60	100
18BEME351	Aptitude Training	-	-	1	0	0	-	100	-	100
18BEME352A / 18BEME352B	Welding Process / Welding Metallurgy	-	-	2	0	0	-	100	-	100
18BEME353	Material Testing Laboratory	-	-	0	0	3	-	100	-	100
	Total			20	3	8	21	540	360	900

SEMESTER IV

Course Code	Course title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BEME401	Instrumentation & Control systems	1	1,2,3,4,10	3	0	0	3	40	60	100
18BEME402	Environmental Studies	1	1,2,3,4,10	3	0	0	3	40	60	100
18BEME441	Engineering Materials and Metallurgy	1	1,2,3,4,10	3	0	2	4	40	60	100
18BEME442	Applied Thermodynamics	1	1,2,3,4,10	3	1	2	5	40	60	100
18BEME443	Strength of Materials	1	1,2,3,4,10	3	1	2	5	40	60	100
18BEME444	Fluid Mechanics & Fluid Machines	1	1,2,3,4,10	3	1	2	5	40	60	100
18BEME451	Technical Presentation	-	-	1	0	0	-	100	-	100
18BEME452A / 18BEME452B	Welding Economics and Management / Process Modeling	-	-	2	0	0	-	100	-	100
18BEME453	Mini Project I on Welding	-	-	1	0	0	-	100	-	100
	Total			22	3	8	25	540	360	900

SEMESTER V

Course Code	Course title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BEME501	Design of Machine Elements	1	1,2,3,4,9	3	1	0	4	40	60	100
18BEME541	Heat and Mass Transfer	1	1,2,3,4,5	3	1	2	5	40	60	100
18BEME542	Manufacturing Technology I	1	1,2,3,6,8,9	3	0	2	4	40	60	100
18BEME543	Theory of Machines	1	1,2,3,4,10	3	1	2	5	40	60	100
18BE_____	Open Elective I	-	-	3	0	0	3	40	60	100
18BEME551	Essence of Indian Traditional Knowledge	-	-	1	0	0	-	100	-	100
18BEME552	Geometrical Dimensioning and Tolerance	1	1,2,3,4,5,8,9	1	0	0	-	100	-	100
18BEME553A / 18BEME553B	Welding Application Technology / Repair Welding and Reclamation	-	-	2	0	0	-	100	-	100
18BEME554	Welding Process Laboratory	-	-	0	0	3	-	100	-	100
18BEME555	Project I (Course Oriented)	-	-	1	0	0	1	100	-	100
	Total			20	3	9	22	700	300	1000

SEMESTER VI

Course Code	Course title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BEME601	Design of Transmission Systems	1	1,2,3,4,8,9,10	3	1	0	4	40	60	100
18BEME641	Manufacturing Technology II	1	1,2,3,6,8,9	3	0	2	4	40	60	100
18BEME642	Industrial Metrology	1	1,2,3,6,8,9	3	0	2	4	40	60	100
18BEME6E_	Professional Elective-I	-	-	3	0	0	3	40	60	100
18BEME6E_	Professional Elective-II	-	-	3	0	0	3	40	60	100
18BE_____	Open Elective II	-	-	3	0	0	3	40	60	100
18BEME611	Computer Aided Modeling and Simulation Laboratory	1	1,2,3,4,5,8,9	0	0	3	2	40	60	100
18BEME651	Robotics and Automation	1	1,2,3,4,5	1	0	0	-	100	-	100
18BEME652A / 18BEME652B	Welding Codes and Standards / Welding Consumables	-	-	2	0	0	-	100	-	100
18BEME653	Heat Treatment Laboratory			0	0	3	-	100	-	100
18BEME654	Mini Project II on Welding			0	0	1	-	100	-	100
18BEME691	Project II (Mini)	-	-	1	0	0	1	100	-	100
	Total			22	1	11	24	780	420	1200

SEMESTER VII

Course Code	Course title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BEME741	Automation in Manufacturing	1	1,2,3,4,5,8,9	3	0	2	4	40	60	100
18BEME742	Computer Aided Engineering	1	1,2,3,4,5,8,9	3	1	2	5	40	60	100
18BEME7E_	Professional Elective-III	-	-	3	0	0	3	40	60	100
18BEME7E_	Professional Elective-IV	-	-	3	0	0	3	40	60	100
18BEME7E_	Professional Elective-V	-	-	3	0	0	3	40	60	100
18BE_____	Open Elective III	-	-	3	0	0	3	40	60	100
18BEME751	Motors and Pumps	-	-	1	0	0	-	100	-	100
18BEME752A / 18BEME752B	Design Aspects of Welding & Casting / Design of Weldments	-	-	2	0	0	-	100	-	100
18BEME753	Welding Simulation Laboratory	-	-	0	0	3	-	100	-	100
18BEME754	Mini Project III on Welding	-	-	0	0	1	-	100	-	100
18BEME791	Project III	-	-	0	0	6	3	100	-	100
	Total			21	1	14	24	740	360	1100

SEMESTER VIII

Course Code	Course title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BEME8E_	Professional Elective-VI	-	-	3	0	0	3	40	60	100
18BE_____	Open Elective IV	-	-	3	0	0	3	40	60	100
18BE_____	Open Elective V	-	-	3	0	0	3	40	60	100
18BEME891	Project IV	-	-	0	0	12	6	100	200	300
	Total			9	0	12	15	220	380	600

PROFESSIONAL ELECTIVE I

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEME6E01	Emerging Materials	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME6E02	Renewable Energy Sources	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME6E03	Industrial Robotics	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEME6E04	Advanced I.C. Engines	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME6E05	Hydraulics and Pneumatics Power Control	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BEME6E06	Automobile Engineering	1	1,2,3,7,9,15	3	0	0	3	40	60	100

PROFESSIONAL ELECTIVE II

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEME6E07	Design of Jigs, Fixtures and Press Tools	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME6E08	Refrigeration and Air Conditioning	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME6E09	Advanced Manufacturing Processes	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEME6E10	Vibration Analysis and Control	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME6E11	Design and Analysis of Experiments	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BEME6E12	Hybrid Vehicle Technology	1	1,2,3,7,9,15	3	0	0	3	40	60	100

PROFESSIONAL ELECTIVE III

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEME7E01	Design for Manufacture and Assembly	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E02	Computational Fluid Dynamics	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E03	Power Plant Engineering	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEME7E04	Energy Conservation Methods and Energy Audit	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E05	Additive Manufacturing	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BEME7E06	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	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEME7E07	Gas Dynamics and Jet Propulsion	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E08	Design of Mechatronic Systems	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E09	Machine Tool Design	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEME7E10	Computer Integrated Manufacturing	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E11	Advanced Welding Technology	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BEME7E12	Operation Research	1	1,2,3,7,9,15	3	0	0	3	40	60	100

PROFESSIONAL ELECTIVE V

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEME7E13	Manufacture and Inspection of Gears	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E14	Composite Materials	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E15	Design of HVAC Systems	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEME7E16	Non Destructive Testing	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME7E17	Industrial Safety Engineering	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BEME7E18	Surface Engineering	1	1,2,3,7,9,15	3	0	0	3	40	60	100

PROFESSIONAL ELECTIVE VI

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEME8E01	Quality Control and Reliability Engineering	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME8E02	Production Planning and Control	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME8E03	Cogeneration and Waste Heat Recovery Systems	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEME8E04	Industrial Engineering	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEME8E05	Computer Aided Drafting and Cost Estimation	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BEME8E06	Total Quality Management	1	1,2,3,7,9,15	3	0	0	3	40	60	100

COURSES OFFERED BY OTHER DEPARTMENTS

SCIENCE & HUMANITIES

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BESHOE01	Probability and Random Process	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BESHOE02	Fuzzy Mathematics	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BESHOE03	Linear Algebra	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BESHOE04	Engineering Acoustics	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BESHOE05	Solid Waste Management	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BESHOE06	Green Chemistry	1	1,2,3,7,9,15	3	0	0	3	40	60	100
18BESHOE07	Applied Electrochemistry	1,2	2,3,4,5,13	3	0	0	3	40	60	100
18BESHOE08	Industrial Chemistry	1,2	2,3,4,5,14	3	0	0	3	40	60	100
18BESHOE09	Technical Writing	1	2,3,4,5,12	3	0	0	3	40	60	100

COMPUTER SCIENCE AND ENGINEERING

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BECSOE01	Internet Programming	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	1	1,2,3,7,9,15	3	0	0	3	40	60	100
18BECSOE03	PC Hardware and Trouble shooting	1,2	2,3,4,5,13	3	0	0	3	40	60	100
18BECSOE04	Java Programming	1,2	2,3,4,5,14	3	0	0	3	40	60	100

ELECTRICAL AND ELECTRONICS ENGINEERING

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEEEOE01	Electric Hybrid Vehicles	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEEEOE02	Energy Management & Energy Auditing	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100

ELECTRONICS AND COMMUNICATION ENGINEERING

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEECOE01	Real Time Embedded Systems	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	1	1,2,3,7,9,13	3	0	0	3	40	60	100

BIOTECHNOLOGY

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTBTOE01	Bioreactor Design	1	1,2,3,7,9,15	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	1,2	2,3,4,5,13	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	1,2	2,3,4,5,14	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nano Biotechnology	1	2,3,4,5,12	3	0	0	3	40	60	100

AUTOMOBILE ENGINEERING

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BEAEOE01	Automobile Engineering	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BEAEOE02	Two and Three Wheelers Technology	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BEAEOE03	Vehicle Maintenance	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BEAEOE04	Modern Vehicle Technology	1	1,2,3,7,9,15	3	0	0	3	40	60	100
18BEAEOE05	Fleet Management	1,2	2,3,4,5,13	3	0	0	3	40	60	100

CIVIL ENGINEERING

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BECEOE01	Housing, Plan and Management	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BECEOE02	Building Services	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BECEOE03	Management of Irrigation Systems	1	2,3,4,5,12	3	0	0	3	40	60	100
18BECEOE04	Advanced Construction Technology	1	1,2,3,7,9,15	3	0	0	3	40	60	100

CHEMICAL ENGINEERING

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTCEOE01	Energy Management in Chemical Industries	1	1,2,3,7,13,15	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer Technology	1	1,2,3,7,9,13	3	0	0	3	40	60	100
18BTCEOE03	Industrial Wastewater Treatment	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
18BTCEOE04	Solid and Hazardous Waste Management	1	1,2,3,7,9,15	3	0	0	3	40	60	100

FOOD TECHNOLOGY										
		Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
Course Code	Course title							CIA	ESE	Total
		PEO	PO	L	T	P		40	60	100
18BTFTOE01	Processing of Food Materials	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	1,3	1,2,3,7, 9,12	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	1	1,2,3,7, 9,15	3	0	0	3	40	60	100
COURSES OFFERED TO OTHER DEPARTMENTS										
		Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
Course Code	Course title							CIA	ESE	Total
		PEO	PO	L	T	P		40	60	100
18BEMEOE01	Computer Aided Design	1	1,2,3,7, 13,15	3	0	0	3	40	60	100
18BEMEOE02	Industrial Safety and Environment	1	1,2,3,7, 9,13	3	0	0	3	40	60	100
18BEMEOE03	Transport Phenomena	1	1,2,3,7, 9,14	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Biomechanics	1	1,2,3,7, 9,15	3	0	0	3	40	60	100

■ Skill Development

■ Employability Skill

■ Entrepreneurship Skill

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.

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

B. E. MECHANICAL ENGINEERING (PART TIME)

COURSE OF STUDY AND SCHEME OF EXAMINATIONS
(2018 and onwards)

SEMESTER I

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
THEORY										
18PBEME101	Engineering Mathematics I	1	1,2	3	1	0	4	40	60	100
18PBEME102	Engineering Mechanics	1	1,2,4	3	0	0	3	40	60	100
18PBEME103	Basic Electrical and Electronics Engineering	1	1	3	0	0	3	40	60	100
18PBEME104	Manufacturing Technology	1	4	3	0	0	3	40	60	100
PRACTICAL										
18PBEME111	Computer Aided Design Laboratory	1,3	3,4	0	0	3	2	40	60	100
TOTAL				16			15	200	300	500

SEMESTER II

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
THEORY										
18PBEME201	Engineering Mathematics II	1	1,2	3	1	0	4	40	60	100
18PBEME202	Strength of Materials	1	1,2,4	3	0	0	3	40	60	100
18PBEME203	Kinematics of Machinery	1	1,2,4	3	0	0	3	40	60	100
18PBEME204	Fundamentals of Computer Programming	2	3,4	3	0	0	3	40	60	100
PRACTICAL										
18PBEME211	Strength of Materials Laboratory	1,3	3,4	0	0	3	2	40	60	100
TOTAL				16			15	200	300	500

SEMESTER III

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
THEORY										
18PBEME301	Applied Thermodynamics	1	1,2,3	3	1	0	4	40	60	100
18PBEME302	Engineering Materials and Metallurgy	1	3,4,8	3	0	0	3	40	60	100
18PBEME303	Industrial Metrology and Measurements	1	3,4	3	0	0	3	40	60	100
18PBEME304	Fluid Mechanics and Machinery	1	1,2,4	3	0	0	3	40	60	100
PRACTICAL										
18PBEME311	Fluid Mechanics and Metrology Laboratory	1,3	3,4	0	0	3	2	40	60	100
TOTAL				16			15	200	300	500

SEMESTER IV

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
THEORY										
18PBEME401	Mechatronics	1,3	4,7	3	0	0	3	40	60	100
18PBEME402	Heat and Mass Transfer	1	1,2,3	3	1	0	4	40	60	100
18PBEME403	Dynamics of Machinery	1	1,2,4	3	0	0	3	40	60	100
18PBEME404	Environmental Sciences	1,3	7,8	3	0	0	3	40	60	100
PRACTICAL										
18PBEME411	Thermal Engineering Laboratory	1,3	3,4	0	0	3	2	40	60	100
TOTAL				16			15	200	300	500

SEMESTER V

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
THEORY										
18PBEME501	Operations Research	1	6,7,9,10	3	0	0	3	40	60	100
18PBEME502	Design of Machine Elements	1	2,3,4	3	1	0	4	40	60	100
18PBEME503	Computer Integrated Manufacturing	1,3	7,9,10	3	0	0	3	40	60	100
18PBEMEE-	Professional Elective - I			3	0	0	3	40	60	100
PRACTICAL										
18PBEME511	Computer Aided Manufacturing Laboratory	1,3	3,4	0	0	3	2	40	60	100
TOTAL					16		15	200	300	500

SEMESTER VI

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
THEORY										
18PBEME601	Engineering Economics and Financial Management	2	5,6,10	3	0	0	3	40	60	100
18PBEME602	Smart Manufacturing	1,2	7,9	3	0	0	3	40	60	100
18PBEME603	Entrepreneurship Development	2,3	6,10,11	3	0	0	3	40	60	100
18PBEMEE-	Professional Elective - II			3	0	0	3	40	60	100
PRACTICAL										
18PBEME611	Computer Aided Analysis Laboratory	1,3	3,4	0	0	3	2	40	60	100
TOTAL					15		14	200	300	500

SEMESTER VII

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
THEORY										
18PBEME701	Total Quality Management	2,3	5,6,10	3	0	0	3	40	60	100
18PBEMEE-	Professional Elective - III			3	0	0	3	40	60	100
18PBEMEE-	Professional Elective - IV			3	0	0	3	40	60	100
PRACTICAL										
18PBEME791	Project Work and Viva Voce	1,2,3	1,3,4,9	0	0	9	6	40	60	100
TOTAL					18		15	160	240	400

PROFESSIONAL ELECTIVES

DESIGN ENGINEERING

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
18PBEMEED01	Design of Transmission Systems	1	2,3,4	3	0	0	3	40	60	100
18PBEMEED02	Design of Jigs, Fixtures and Press Tools	1,3	2,3,4	3	0	0	3	40	60	100
18PBEMEED03	Design for Manufacture and Assembly	1,3	2,3,4	3	0	0	3	40	60	100
18PBEMEED04	Hydraulics and Pneumatics Power Control	1,3	4,7	3	0	0	3	40	60	100
18PBEMEED05	Design and Analysis of Experiments	1	2,3,4	3	0	0	3	40	60	100
18PBEMEED06	Advanced Strength of Materials	1	2,3,4	3	0	0	3	40	60	100
18PBEMEED07	Finite Element Methods	1	2,3,4	3	0	0	3	40	60	100
18PBEMEED08	Machine Tool Design	1,3	2,3,4	3	0	0	3	40	60	100
18PBEMEED09	Design of Mechatronic Systems	1,3	3,4,7	3	0	0	3	40	60	100
18PBEMEED10	Tribology	1	2,3,4	3	0	0	3	40	60	100

PRODUCTION ENGINEERING

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
18PBEMEEP01	Advanced Manufacturing Processes	1	4,7	3	0	0	3	40	60	100
18PBEMEEP02	Microprocessor in Automation	1,3	4,7,9	3	0	0	3	40	60	100
18PBEMEEP03	Automation in Manufacturing	1,3	4,7,9	3	0	0	3	40	60	100
18PBEMEEP04	Quality Control and Reliability Engineering	1,2	3,7,	3	0	0	3	40	60	100
18PBEMEEP05	Composite Materials	1	4,7,9	3	0	0	3	40	60	100
18PBEMEEP06	Non Destructive Testing	1,3	4,7,9	3	0	0	3	40	60	100
18PBEMEEP07	Production Planning and Control	1,2	4,7,10	3	0	0	3	40	60	100
18PBEMEEP08	Industrial Robotics	1	4,7,9	3	0	0	3	40	60	100
18PBEMEEP09	Advanced Welding Technology	1	4,7,9	3	0	0	3	40	60	100

THERMAL ENGINEERING

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
18PBEMEET01	Gas Dynamics and Jet Propulsion	1	2,3,4	3	0	0	3	40	60	100
18PBEMEET02	Power Plant Engineering	1	2,3,4	3	0	0	3	40	60	100
18PBEMEET03	Renewable Energy Sources	1	4,5,9	3	0	0	3	40	60	100
18PBEMEET04	Refrigeration and Air Conditioning	1	2,3,4	3	0	0	3	40	60	100
18PBEMEET05	Cogeneration and Waste Heat Recovery Systems	1	4,5,9	3	0	0	3	40	60	100
18PBEMEET06	Computational Fluid Dynamics	1	2,3,4	3	0	0	3	40	60	100
18PBEMEET07	Design of Heat Exchangers	1	2,3,4	3	0	0	3	40	60	100
18PBEMEET08	Cryogenic Engineering	1	2,3,4	3	0	0	3	40	60	100
18PBEMEET09	Advanced Thermodynamics	1	2,3,4	3	0	0	3	40	60	100

AUTOMOTIVE ENGINEERING

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
18PBEMEEA01	Automobile Engineering	1	3,4	3	0	0	3	40	60	100
18PBEMEEA02	Two and Three Wheeler Technology	1,3	3,4	3	0	0	3	40	60	100
18PBEMEEA03	Intelligent Vehicle Technology	1,3	2,3,7,9	3	0	0	3	40	60	100
18PBEMEEA04	Off Road Vehicles	1,3	3,7,8	3	0	0	3	40	60	100
18PBEMEEA05	Vehicle Troubleshooting and Maintenance	1,3	7,8,9	3	0	0	3	40	60	100
18PBEMEEA06	Electric Vehicle Technology	1,3	2,3,7,9	3	0	0	3	40	60	100

MANAGEMENT SYSTEMS

SUB. CODE	TITLE OF THE COURSE	PEO's	PO's	L	T	P	C	CIA	ESE	TOTAL
18PBEMEEM01	Principles of Management	2,3	5,10	3	0	0	3	40	60	100
18PBEMEEM02	Project Management	2,3	5,10	3	0	0	3	40	60	100
18PBEMEEM03	Manufacturing Systems Management	2,3	5,9,10	3	0	0	3	40	60	100
18PBEMEEM04	Marketing Management	2,3	5,10	3	0	0	3	40	60	100
18PBEMEEM05	Industrial Safety Management	2,3	5,7,10	3	0	0	3	40	60	100
18PBEMEEM06	Lean Manufacturing	2,3	5,9,10	3	0	0	3	40	60	100

▇ Skill Development

▇ Employability Skill

▇ Entrepreneurship Skill

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.

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

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**

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
(2018 BATCH ONWARDS)

2018 – 2019 BATCH

SEMESTER I

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTBT101	Mathematics-I	2,3	a,b,e,h,I,m	3	1	0	4	40	60	100
18BTBT102	Chemistry-I	2,3	a,b,c,d, e,f,i,k,m	3	1	3	6	40	60	100
18BTBT103	Basic Electrical Engineering	2,3	a,b,c,e,i ,k,m	3	1	2	5	40	60	100
18BTBT111	Engineering Graphics &Design	2	a,d,e,m	1	0	4	3	40	60	100
			TOTAL	10	3	9	18	160	240	400

SEMESTER II

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTBT201	Mathematics –II	2,3	a,b,e,h ,I,m	3	1	0	4	40	60	100
18BTBT202	Engineering Physics	2,3	a,b,c,e, h,i,k,m	3	1	3	5	40	60	100
18BTBT203	English	1,2,3	h,i,k,l,m	2	0	2	3	40	60	100
18BTBT204	Programming for Problem Solving	1	a,b,d,m	3	0	4	5	40	60	100
18BTBT205	Biochemistry	1,2	a,b,c,e,m	3	1	3	6	40	60	100
			TOTAL	14	3	12	23	200	300	500

SEMESTER III

Course Code	Course Title	Objectives & Outcomes PEO	Objectives & Outcomes PO	Instruction hours/week L	Instruction hours/week T	Instruction hours/week P	Credits	Maximum Marks CIA	Maximum Marks ESE	Maximum Marks Total
								40	60	100
18BTBT301	Transforms and partial differential equation	1,3	a,b,m	3	1	0	4	40	60	100
18BTBT302	Cell Biology	1,3	a,b,d,m	3	0	0	3	40	60	100
18BTBT303	Microbiology	1,3	a,b,c,g,I,m	3	0	0	3	40	60	100
18BTBT304	Principles of Chemical Engineering	1,3	a,b,d,m,n	3	0	0	3	40	60	100
18BTBT305	Instrumental Methods of analysis	1,3	a,b,c,m	3	0	2	4	40	60	100
18BTBT311	Cell Biology and Microbiology Lab	1,3	a,b,c,d,m,n	0	0	4	2	40	60	100
18BTBT351	Constitution of India	1,3	a,b,c,d,g,m,n	1	0	0	-	100	-	100
18BTBT352	Synthesis of Organic molecules	1,2	h,l,m	0	0	1	-	100	-	100
			TOTAL	16	1	7	19	440	360	800

SEMESTER IV

Course Code	Course Title	Objectives & Outcomes PEO	Objectives & Outcomes PO	Instruction hours/week L	Instruction hours/week T	Instruction hours/week P	Credits	Maximum Marks CIA	Maximum Marks ESE	Maximum Marks Total
								40	60	100
18BTBT401	Probability and Biostatistics	1,3	a,b,m	3	1	0	4	40	60	100
18BTBT402	Unit operations	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100
18BTBT403	Chemical Thermodynamics	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100
18BTBT404	Basics of Industrial Biotechnology	1,2,3	a,b,c,f,g,m,n	3	0	0	3	40	60	100
18BTBT405	Molecular Biology	1,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
18BTBT406	Environmental Studies	1,3	f,g,h,l,m,o	3	0	0	3	40	60	100
18BTBT411	Chemical Engineering Lab	1,2,3	a,b,c,d,f,m,n	0	0	4	2	40	60	100
18BTBT451	Production of commercially valuable bioproducts	1,3	a,f,g	0	0	1	-	100	-	100
			TOTAL	18	1	5	21	380	420	800

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total

SEMESTER V

Course Code	Course Title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BTBT501	Bioprocess Principles	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100
18BTBT502	Genetic Engineering	1,2,3	a,b,c,d,e,f,m,n	3	0	0	3	40	60	100
18BTBT503	Biopharmaceutical Technology	1,2,3	a,b,c,d,f,m,n	3	0	0	3	40	60	100
18BTBT504	Cancer Biology	1,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
18BTBT505	Bioinformatics	1,3	a,b,c,d,e,m,o	3	0	2	4	40	60	100
18BTBT511	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
18BTBT551	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

SEMESTER VI

Course Code	Course Title	PEO	PO	L	T	P	Credits	CIA 40	ESE 60	Total 100
18BTBT601	Mass Transfer Operations	1,2,3	a,b,c,d	3	1	0	4	40	60	100
18BTBT602	Immunology	1,3	a,b,c,d	3	0	0	3	40	60	100
18BTBT603	Bioprocess Engineering	1,2,3	a,b,c,d,e,f	3	0	0	3	40	60	100
18BTBT604	Enzymology & Enzyme technology	1,3	a,b,c,d,f	3	0	0	3	40	60	100
18____6E--	Open Elective I	-	-	3	0	0	3	40		
18BTBT6E--	Professional Elective II	-	-	3	0	0	3	40		
18BTBT611	Immunology Lab	1,3	a,b,c,d,n,o	0	0	4	2	40	60	100
18BTBT612	Bioprocess Lab	1,2,3	a,b,c,d,e,f	0	0	4	2	40	60	100
18BTBT651	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

Summer Internship / Mini project – During Summer Vacation – Non credit course

SEMESTER VII

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTBT701	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
18BTBT702	Downstream Processing	1,2,3	a,b,c, d,e,f,m,n	3	1	0	4	40	60	100
18____7E--	Open Elective - II	-	-	3	0	0	3	40		
18BTBT7E--	Professional Elective III	-	-	3	0	0	3	40		
18BTBT7E--	Professional Elective IV	-	-	3	0	0	3	40		
18BTBT711	Downstream Processing Lab	1,3	a,b,c, d,e,f,m,n,o	0	0	4	2	40	60	100

SEMESTER VIII

Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTBT8E--	Professional Elective V	-	-	3	0	0	3	40	60	100
18BTBT8E--	Professional Elective VI	-	-	3	0	0	3	40	60	100
TOTAL				6	0	22	16	200	300	500

Professional Elective - I

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – V										
18BTBT5E01	Environmental Biotechnology	1,3	a,b,f, g,m,o	3	0	0	3	40	60	100
18BTBT5E02	Developmental Biology	1,3	a,b,c,m	3	0	0	3	40	60	100
18BTBT5E03	Bioorganic Chemistry	1,3	a,b,c ,d,m	3	0	0	3	40	60	100
18BTBT5E04	Biomass energy	1,3	a,b,c ,d,f,g,m	3	0	0	3	40	60	100
18BTBT5E05	Molecular Pathogenesis	1,3	a,b,c ,d,m	3	0	0	3	40	60	100
18BTBT5E06	Human Anatomy and Physiology	1	a,b,m	3	0	0	3	40	60	100

Professional Elective – II & III

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - VI										
18BTBT6E01	Recombinant enzyme and therapeutic agents production	1,2,3	a,b,c ,d,e,fm,n	3	0	0	3	40	60	100
18BTBT6E02	Biological Wastewater Treatment	1,2,3	a,b,c ,d,f,m,n	3	0	0	3	40	60	100
18BTBT6E03	Food Biotechnology	1,3	a,b,f, g,m	3	0	0	3	40	60	100
18BTBT6E04	Good Manufacturing Practice	1,2,3	f,g,h,m	3	0	0	3	40	60	100
18BTBT6E05	Nanobiotechnology	1,3	a,b,m	3	0	0	3	40	60	100
18BTBT6E06	IPR and ethical issues in biotechnology	1,2,3	f,g,h ,I,m	3	0	0	3	40	60	100
18BTBT6E07	Phytochemicals and Herbal Medicine	1,3	a,b,f, g,m	3	0	0	3	40	60	100
18BTBT6E08	Programming in Bioinformatics	1,3	a,b,c,m,o	3	0	0	3	40	60	100

Course code	Name of the course	PEOs	Pos	L	T	P	Credits	CIA	ESE	Total
18BTBT6E09	Industrial safety and Hazards Management	1,2,3	f,g,h,I,m	3	0	0	3	40	60	100
18BTBT6E10	Plant Biotechnology	1,3	a,b,c,m	3	0	0	3	40	60	100
18BTBT6E11	Introduction to Data Analytics	1,3	a,b,c,m	3	0	0	3	40	60	100
18BTBT6E12	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

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	Pos	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – VII										
18BTBT7E01	Protein Engineering	1,3	a,b,c,d,m	3	0	0	3	40	60	100
18BTBT7E02	Recombinant DNA technology	1,3	a,b,c,d,e,m,n	3	0	0	3	40	60	100
18BTBT7E03	Molecular Diagnostics	1,3	a,b,c,d,m,n	3	0	0	3	40	60	100
18BTBT7E04	Chemical Reaction Engineering	1,3	a,b,c,d,f,m	3	0	0	3	40	60	100
18BTBT7E05	Immunotechnology	1,3	a,b,c,d,m	3	0	0	3	40	60	100
18BTBT7E06	Animal Biotechnology	1,2,3	a,b,c,d,f,m	3	0	0	3	40	60	100

Professional Elective – V & VI

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – VIII										
18BTBT8E01	Agriculture Biotechnology	1,3	a,b,c,d,f,g,m	3	0	0	3	40	60	100
18BTBT8E02	Stem cell Technology	1,2,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100

18BTBT8E03	Tissue Engineering	1,2,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
18BTBT8E04	Marine Biotechnology	1,3	a,b,c,f,m	3	0	0	3	40	60	100
18BTBT8E05	Genomics and Proteomics	1,3	a,b,cd,e,m	3	0	0	3	40	60	100
18BTBT8E06	Structural Biology	1,3	a,b,c,d,m	3	0	0	3	40	60	100
18BTBT8E07	Clinical Trial and management	1,2,3	a,b,f,g,h,I,m	3	0	0	3	40	60	100
18BTBT8E08	Introduction to systems Biology	1,2,3	a,b,c,d,m	3	0	0	3	40	60	100
18BTBT8E09	Genome informatics and Big data analysis	1,3	a,b,c,d,e,m	3	0	0	3	40	60	100
18BTBT8E10	Health informatics	1,2,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
18BTBT8E11	Molecular Modeling	1,3	a,b,c,d,e,m	3	0	0	3	40	60	100
18BTBT8E12	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	PO	L	T	P	C	CIA	ESE	TOTAL
SCIENCE AND HUMANITIES										
18BTSHOE01	Solid Waste Management	1,2	a,b,c,d,f,m	3	0	0	3	40	60	100
18BTSHOE02	Green Chemistry	1,2,3	a,b,c,d,e,f,g,m	3	0	0	3	40	60	100
18BTSHOE03	Applied Electrochemistry	2,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
18BTSHOE04	Industrial Chemistry	2,3	a,b,c,d,f,g,I,m	3	0	0	3	40	60	100
18BTSHOE05	Technical Writing	2,3	a,h,i,j,l	3	0	0	3	40	60	100
18BTSHOE06	Geophysics	2,3	a,b,c,e, k,m	3	0	0	3	40	60	100
18BTSHOE07	Engineering Acoustics	2,3	a,b,c,d,m	3	0	0	3	40	60	100
18BTSHOE08	Industrial Mathematics – I	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
18BTSHOE09	Industrial Mathematics – Ii	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
18BTSHOE10	Fuzzy Mathematics	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
18BTSHOE11	Mathematical Physics	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
18BTSHOE12	Linear Algebra	2,3	a,b,m	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
18BECSOE01	Internet Programming	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
18BECSOE03	PC Hardware and Trouble shooting	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
18BECSOE04	Java Programming	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
18BEEEOE01	Electric Hybrid Vehicle	2	a,b,m	3	0	0	3	40	60	100
18BEEEOE02	Energy Management & Energy Auditing	2	a,b,f,g,m	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	2	a,b	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	1,2	a,b,c,e,f,g,m	3	0	0	3	40	60	100

ELECTRONICS AND COMMUNICATION ENGINEERING

Code	Title									
18BEECOE01	Real Time Embedded Systems	1	a,b	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	1	a,b	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	1	a,b,m	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	1	a,b	3	0	0	3	40	60	100
18BEECOE05	Principles of Modern Communication system	1	a,b	3	0	0	3	40	60	100

AUTOMOBILE ENGINEERING

Code	Title									
18BEAOE01	Automobile Engineering	1	a,b	3	0	0	3	40	60	100
18BEAOE02	Two And Three Wheeler Technology	1	a,b	3	0	0	3	40	60	100
18BEAOE03	Vehicle Maintenance	1	a,b	3	0	0	3	40	60	100
18BEAOE04	Modern Vehicle Technology	1	a,b	3	0	0	3	40	60	100
18BEAOE05	Fleet Management	1	a,b	3	0	0	3	40	60	100

CIVIL ENGINEERING

Code	Title									
18BECEOE01	Housing Plan And Management	1	a,b,c,m	3	0	0	3	40	60	100
18BECEOE02	Building Services	1	a,b	3	0	0	3	40	60	100
18BECEOE03	Repair And Rehabilitation Of Structures	1	a,b	3	0	0	3	40	60	100
18BECEOE04	Computer Aided Civil Engineering Drawing	1,3	a,b,e,m,o	3	0	0	3	40	60	100

MECHANICAL ENGINEERING

Code	Title									
18BEMEOE01	Computer Aided Design	1,3	a,b,e,m,o	3	0	0	3	40	60	100
18BEMEOE02	Industrial Safety and Environment	1,3	a,b,c,f,g,m	3	0	0	3	40	60	100
18BEMEOE03	Transport Phenomena	1	a,b	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Biomechanics	1,3	a,b,c,e,m	3	0	0	3	40	60	100

CHEMICAL ENGINEERING

Code	Title									
18BTCEOE01	Energy management in chemical industries	1,3	a,b,c,d,f,m	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer technology	1,3	a,b,c,d,f,m	3	0	0	3	40	60	100

FOOD TECHNOLOGY

18BTFTOE01	Processing of Food Materials	1,3	a,b,c,m	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,m	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	1,3	a,b,c,m	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	1,3	a,b,c,d,g,m	3	0	0	3	40	60	100

BIOMEDICAL ENGINEERING

18BEBMEOE01	Robotics In Medicine	1	a,b,c,e,m	3	0	0	3	40	60	100
18BEBMEOE02	Virtual Reality And Augmented Reality	1	a,b,c,e,m	3	0	0	3	40	60	100
18BEBMEOE03	Artificial Organs And Implants	1,3	a,b,c,e,h,m,o	3	0	0	3	40	60	100

BIOTECHNOLOGY

18BTBTOE01	Bioreactor Design	1,2,3	a,b,c,d,m	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	1	a,b,c,g,m	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	1,3	a,b,c,d,e,m,n	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nanobiotechnology	1,3	a,b,m	3	0	0	3	40	60	100

Note:
- Blue font represents Employability courses
- Green font represents Entrepreneurship courses
- Red font represents Skill development courses

<div align="center">**Department of Biotechnology**</div>

<div align="center">**B.TECH BIOTECHNOLOGY**</div>

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 bio-products 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.

l. **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.

PEO – PO & PSO Mapping

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
PEO1	✓	✓	✓	✓	✓	✓	✓						✓	✓	✓
PEO2							✓	✓	✓	✓	✓			✓	✓
PEO3		✓	✓			✓	✓					✓	✓	✓	✓

FACULTY OF ENGINEERING

DEGREE OF BACHELOR OF TECHNOLOGY IN CHEMICAL ENGINEERING

DEPARTMENT OF CHEMICAL ENGINEERING

(REGULAR PROGRAMME)

CURRICULUM AND SYLLABI

(2018 – 2019)

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   (2018 BATCH ONWARDS)

SEMESTER I										
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTCE101	Mathematics-I	3	1,2,4,8,11	3	1	0	4	40	60	100
18BTCE102	Physics	2,3	1,2,5,6,8,10,11	3	1	3	5	40	60	100
18BTCE103	English	1,2,3	9,11	2	0	2	3	40	60	100
18BTCE104	Chemistry-I	2,3	1,2,3,5,6,7,8, 11	3	1	0	4	40	60	100
18BTCE105	Engineering Graphics	1,2	1,3	1	0	4	3	40	60	100
			TOTAL	12	3	9	18	200	300	500

SEMESTER II										
Course Code	Course Title	Objectives & Outcomes		Instruction hours/week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
18BTCE201	Mathematics-II	3	1,2,4,8,10	3	1	0	4	40	60	100
18BTCE202	Chemistry –II	2,3	1,2,3,5,6,7,8,11	3	1	0	4	40	60	100
18BTCE203	Electrical And Electronics Engineering	1,2	1,2,3,5,6	3	1	2	5	40	60	100
18BTCE204	Thermodynamics-I	1,2	1,3,5,6	3	1	0	4	40	60	100

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
18BTCE205	Programming for Problem Solving	1	1,2,3	3	0	4	5	40	60	100
18BTCE206	Chemistry Lab	1,3	1,4,6,7,8,11	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)
(2018–2018 Batch and onwards)

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – III										
18BTCE301	Heat Power Engineering	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100
18BTCE302	Fluid Mechanics	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100
18BTCE303	Chemical Process Calculations	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100
18BTCE304	Mechanical Operations	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100
18BTCE305	Thermodynamics – II	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100

Code	Course			L	T	P	C			
18BTCE311	Engineering Workshop	1,2	1,2,3,4, 5,6,7,8, 9,1011, 12	1	0	4	3	40	60	100
Semester Total				**16**	**5**	**4**	**23**	**240**	**360**	**600**
SEMESTER – IV										
18BTCE401	Heat Transfer	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100
18BTCE402	Mass Transfer-I	1,2	1,2,3,4, 5,6,7,11 ,12	3	0	0	3	40	60	100
18BTCE403	Chemical Process Industries	1,2	1,2,3,4, 5,6,7,11 ,12	3	1	0	4	40	60	100
18 BTCE404	Materials Technology	1,2	1,2,3,4, 5,6,7,11 ,12	3	0	0	3	40	60	100
18BTCE405	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
18BTCE406	Environmental Science	1,2	1,2,3,4, 5,6,7,11 ,12	3	0	0	3	40	60	100
18BTCE411	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
18BTCE412	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				**20**	**2**	**6**	**25**	**320**	**480**	**800**
Program Total				**36**	**7**	**10**	**48**	**580**	**720**	**1300**

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – V										
18BTCE501	Chemical Reaction Engineering – I	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100
18BTCE502	Mass Transfer-II	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE5PE1	Core Elective- I	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE5OE	Open Elective-I	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE504	HASS- III (Professional Ethics in Engineering)	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE505	Process Modelling and Simulation	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE511	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
18BTCE512	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**	**380**	**420**	**800**
SEMESTER – VI										
18BTCE601	Chemical Reaction Engineering – II	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE602	Process Economics	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE6PE2	Professional Core Elective – II	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE603	Process Control	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
18BTCE604	HASS – IV (Principles of Management)	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE6OE	Open Elective – II	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE611	Chemical Reaction Engineering Laboratory	1,2	1,2,3,4,5,6,7,8,9,10,11,12	0	0	4	2	40	60	100
18BTCE612	Internship		1,2,3,4,5,6,7,8,10,11,12	0	0	0	0	100	0	100
	Semester Total			**18**	**0**	**4**	**20**	**380**	**420**	**800**
	Program Total			**36**	**1**	**8**	**44**	**760**	**840**	**1600**

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – VII										
18BTCE701	Transport Phenomena	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE7PE3	Professional Core Elective – 3	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE7PE4	Professional Core Elective -4	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE7OE	Open Elective-3	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE7OE	Open Elective-4	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
18BTCE711	Design and Simulation Laboratory	1,2	1,2,3,4,5,6,7,8,	1	0	4	3	40	60	100

			9,10,11, 12							
18BTCE712	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
18BTCE761	Project Stage-I	1,2	1,2,3,4, 5,6,7,8, 9,10,11, 12	0	0	6	3	80	120	200
	Semester Total			14	0	14	24	360	540	900
SEMESTER – VIII										
18BTCE801	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	0	12	40	60	100
	Program Total			14	0	14	36	400	600	1000

TOTAL CREDITS = 152

LIST OF PROFESSIONAL ELECTIVES

S. No	Course Code	Course Title	L	T	P	C
1.	18BTCEPE1	Water Conservation and Management	3	0	0	3
2.	18BTCEPE2	Sustainability Engineering	3	0	0	3
3.	18BTCEPE3	Interfacial Engineering	3	0	0	3
4.	18BTCEPE4	Nanoscience and Nanotechnology	3	0	0	3
5.	18BTCEPE5	Advanced Separation Processes	3	0	0	3
6	18BTCEPE6	Polymer Science and Engineering	3	0	0	3
7	18BTCEPE7	Environmental Pollution and Control	3	0	0	3
8	18BTCEPE8	Renewable Energy	3	0	0	3
9	18BTCEPE9	Optimization Methods	3	0	0	3

LIST OF OPEN ELECTIVES

COURSE OFFERED BY OTHER DEPARTMENT

SUB. CODE	TITLE OF THE COURSE	L	T	P	C	CIA	ESE	TOTAL
SCIENCE AND HUMANITIES								
18BTSHOE01	Solid Waste Management	3	0	0	3	40	60	100
18BTSHOE02	Green Chemistry	3	0	0	3	40	60	100
18BTSHOE03	Applied Electrochemistry	3	0	0	3	40	60	100
18BTSHOE04	Industrial Chemistry	3	0	0	3	40	60	100
18BTSHOE05	Technical writing	3	0	0	3	40	60	100
18BTSHOE06	Geophysics	3	0	0	3	40	60	100
18BTSHOE07	Engineering Acoustics	3	0	0	3	40	60	100
18BTSHOE08	Industrial Mathematics I	3	0	0	3	40	60	100
18BTSHOE09	Industrial Mathematics II	3	0	0	3	40	60	100
18BTSHOE10	Fuzzy Mathematics	3	0	0	3	40	60	100
18BTSHOE11	Mathematical Physics	3	0	0	3	40	60	100
18BTSHOE12	Linear Algebra	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING								

18BECSOE01	Internet Programming	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	3	0	0	3	40	60	100
18BECSOE03	PC Hardware and Trouble shooting	3	0	0	3	40	60	100
18BECSOE04	Java Programming	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING								
18BEEEOE01	Electric Hybrid Vehicles	3	0	0	3	40	60	100
18BEEEOE02	Energy Management & Energy Auditing	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	3	0	0	3	40	60	100
ELECTRONICS AND COMMUNICATION ENGINEERING								
18BEECOE01	Real Time Embedded Systems	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	3	0	0	3	40	60	100
18BEECOE05	Principles of Modern Communication System	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING								
18BEAEOE01	Automobile Engineering	3	0	0	3	40	60	100
18BEAEOE02	Basics of Two and Three Wheelers	3	0	0	3	40	60	100
18BEAEOE03	Automobile Maintenance	3	0	0	3	40	60	100
18BEAEOE04	Introduction to Modern Vehicle Technology	3	0	0	3	40	60	100
CIVIL ENGINEERING								
18BECEOE01	Housing, Plan and Management	3	0	0	3	40	60	100
18BECEOE02	Building Services	3	0	0	3	40	60	100
18BECEOE03	Repair and Rehabilitation of Structures	3	0	0	3	40	60	100
18BECEOE04	Computer Aided Civil Engineering Drawing	3	0	0	3	40	60	100
MECHANICAL ENGINEERING								
18BEMEOE01	Computer Aided Design	3	0	0	3	40	60	100
18BEMEOE02	Industrial Safety and Environment	3	0	0	3	40	60	100

18BEMEOE03	Transport Phenomena	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Biomechanics	3	0	0	3	40	60	100
CHEMICAL ENGINEERING								
18BTCEOE01	Energy Management in Chemical Industries	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer Technology	3	0	0	3	40	60	100
18BTCEOE03	Industrial wastewater treatment	3	0	0	3	40	60	100
18BTCEOE04	Solid and Hazardous waste management	3	0	0	3	40	60	100
BIOTECHNOLOGY								
18BTBTOE01	Bioreactor Design	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of nano biotechnology	3	0	0	3	40	60	100
FOOD TECHNOLOGY								
18BTFTOE01	Processing of Food Materials	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING								
18BEAEOE01	Automobile Engineering	3	0	0	3	40	60	100
18BEAEOE02	Basics of Two and Three Wheelers	3	0	0	3	40	60	100
18BEAEOE03	Automobile Maintenance	3	0	0	3	40	60	100
18BEAEOE04	Introduction to Modern Vehicle Technology	3	0	0	3	40	60	100

PROGRAM OUTCOMES: On successful completion of the programme,

1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
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
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
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
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.
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
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
8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
10	**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
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
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

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	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
PEO2	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓

🟥	Skill Development
🟦	Employability Skill
🟩	Entrepreneurship Skill

SEMESTER I										
Course code	Course Title	Objectives & outcomes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT101	Mathematics-I	2,3	a, b, e, h,k	3	1	0	4	40	60	100
18BTFT102	Chemistry-I	2,3	a, b, c, e, f, h, k	3	1	3	6	40	60	100
18BTFT103	Basic Electrical Engineering	2,3	a, b, d,h, k	3	1	2	5	40	60	100
18BTFT111	Engineering Graphics and Design	1,2	a, h, i	1	0	4	3	40	60	100
			TOTAL	10	3	9	18	160	240	400

SEMESTER – II										
Course code	Course Title	Objectives & outcomes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT201	Mathematics-II	2,3	a, b, e, h,k	3	1	0	4	40	60	100
18BTFT202	Engineering Physics	2,3	a, c, e, h,k	3	1	3	5	40	60	100
18BTFT203	English	3	i, j, k	2	0	2	3	40	60	100
18BTFT204	Programming for problem Solving	1	a, b, c	3	0	4	5	40	60	100
18BTFT205	Food Chemistry	1,2	a, b, e, f, m	3	1	3	6	40	60	100
			TOTAL	14	3	12	23	200	300	500

SEMESTER - III										
Course code	Course Title	Objectives & outcomes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT301	Mathematical Transforms and Partial differential Equations	1,2	a, b	3	1	0	4	40	60	100
18BTFT302	Fluid Mechanics	1,2	a, b, c, d, e	3	0	0	3	40	60	100
18BTFT303	Food Microbiology	1,2	a, d, f, l, m, n	2	1	0	3	40	60	100
18BTFT304	Food Process Calculations	1,2,3	a, b, c, d ,e ,f, l, m, o	3	0	0	3	40	60	100
18BTFT305	Thermodynamics	1,2	a. b, c, d, o	3	0	0	3	40	60	100
18BTFT306	Food Biochemistry and Human Nutrition	1,2	a, b, h, l, m, n	3	0	0	3	40	60	100
18BTFT311	Food Microbiology Laboratory	1,2,3	a, d, e, f, i, l	0	0	4	2	40	60	100

Course code	Course Title	PEOs	POs	L	T	P	Credits	CIA	ESE	Total
18BTFT312	Food Biochemistry Laboratory	1,2,3	a, b, d, e, f, i, l	0	0	4	2	40	60	100
18BTFT351	Constitution of India	3	h, l	1	0	0	-	100	-	100
	TOTAL			18	2	8	23	420	480	900

SEMESTER – IV

Course code	Course Title	Objectives & outcomes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT401	Probability and Biostatistics	1,2	a, b	3	1	0	4	40	60	100
18BTFT402	Engineering properties of Food Materials	1,2	a, b, c, e	3	0	0	3	40	60	100
18BTFT403	Heat and Mass Transfer	1,2	a, b, d, e, n	3	0	0	3	40	60	100
18BTFT404	Food Analysis	1,2,3	a, b, c, d, e, g, l, n	3	0	0	3	40	60	100
18BTFT405	Unit Operations in Food Processing	1,2,3	a, b, c, d,m	3	0	0	3	40	60	100
18BTFT406	Environmental Studies	1,2,3	f, g, h, l	3	0	0	3	40	60	100
18BTFT411	Food Analysis Laboratory	1,2	a, b, c, d, e, g, i, l	0	0	4	2	40	60	100
18BTFT412	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	400	480	800

SEMESTER - V

Course code	Course Title	Objectives & outcomes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT501	Bakery and Confectionary Technology	1,2	b, d, e, g, l, m, o	3	0	0	3	40	60	100
18BTFT502	Refrigeration, Air conditioning and Cold Storage Construction	1,2	a, b, c, d, l, o	3	0	0	3	40	60	100
18BTFT503	Cereals and Pulses Technology	1,2	a, b, c, d, l, m, n	3	0	0	3	40	60	100
18BTFT504	Meat, Poultry and Fish Processing	1,2	a, b, d, e, f, g, n, o	3	0	0	3	40	60	100
18BTFT505	Fruits and Vegetable Processing Technology	1,2	a, b, c, d, e, f, g, l, n	3	0	0	3	40	60	100
18BTFT5E-	Professional Elective – I	-	-	3	0	0	3	40	60	100
18BTFT511	Food Enzymology Laboratory	1,2	a, b, d, i, l, o	0	0	4	2	40	60	100
18BTFT512	Food Product Laboratory - I	1,2	a, b, c, d, e, i, m, n , o	0	0	4	2	40	60	100
18BTFT551	Food Industry Waste Management / Byproduct Utilization	1,2,3	a-o	0	0	1	-	100	-	100
	TOTAL			18	0	9	22	420	480	900

		SEMESTER – VI								

Course code	Course Title	Objectives & out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT601	Food Additives	1,2	a, b, c, i, k, m, n	3	0	0	3	40	60	100
18BTFT602	Food Safety Regulations	1,2	b, c, d, e, f, g, o	3	0	0	3	40	60	100
18BTFT603	Dairy Technology	1,2	a, b, c, d, e, f, g, l, n, o	3	0	0	3	40	60	100
18____OE-	Open Elective – I	-	-	3	0	0	3	40	60	100
18BTFT6E-	Professional Elective – II	-	-	3	0	0	3	40	60	100
18BTFT6E-	Professional Elective – III	-	-	3	0	0	3	40	60	100
18BTFT611	Food Product Laboratory-II	1,2	a , b, c, d, e, I, n, o	0	0	4	2	40	60	100
18BTFT612	Food Additives and Quality Control Laboratory	1,2	b, c, e, f, i, m, o	0	0	4	2	40	60	100
18BTFT651	Technical Presentation and Seminar	1,2,3	i, j	0	0	1	-	100	-	100
			TOTAL	18	0	9	22	420	480	900

Summer Internship / Mini Project– During Summer Vacation – Non credit course

		SEMESTER - VII								

Course code	Course Title	ctives & out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT701	Professional Ethics, Principles of Management and Entrepreneurship Development	1,2	f, g, h, o	3	0	0	3	40	60	100
18BTFT702	Process Economics and Plant Layout Design	1,2	a, f, g, k, l, m, o	3	0	0	3	40	60	100
18BTFT703	Food Packaging Technology	1,2	a, b, c, d, e, h, l, o	3	0	0	3	40	60	100
18____OE-	Open Elective-II	-	-	3	0	0	3	40	60	100
18BTFT7E-	Professional Elective – IV	-	-	3	0	0	3	40	60	100
18BTFT711	Food Packaging Laboratory	1,2	a, b, c, d, h, i, l	0	0	4	2	40	60	100
			TOTAL	15	0	8	19	280	420	700

		SEMESTER –VIII								

Course code	Course Title	ctives & out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
18BTFT8E-	Professional Elective – V	-	-	3	0	0	3	40	60	100
18BTFT8E-	Professional Elective – VI	-	-	3	0	0	3	40	60	100
			TOTAL	6	0	18	15	200	300	500

TOTAL CREDITS	165

Professional Elective - I

Course code	Course Title	Objectives & out comes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - V										
18BTFT5E01	Food Preservation Principles	1,2,3	a, c, d, l,m,n	3	0	0	3	40	60	100
18BTFT5E02	Beverage Processing Technology	2,3	a, b, d, f, g,m,o	3	0	0	3	40	60	100
18BTFT5E03	Nonthermal Techniques in Food Processing	1,2	a, c, d, l,n	3	0	0	3	40	60	100
18BTFT5E04	Instrumental Analysis of Foods	1,2	a, b, d, e,n,o	3	0	0	3	40	60	100
18BTFT5E05	Production Technology of Fruit Crops	1,2	e, g, i, j, l,n,o	3	0	0	3	40	60	100
18BTFT5E06	Production Technology of Vegetable Crops	1,2	e, g, i, j, l,n,o	3	0	0	3	40	60	100

Professional Elective – II & III

Course code	Course Title	Objectives & outcomes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER - VI										
18BTFT6E01	Radiation Preservation and Processing of Food Products	1,3	a, c, d, l,m,o	3	0	0	3	40	60	100
18BTFT6E02	Plantation Products and Spice Processing Technology	2,3	a, b, d, l,m,o	3	0	0	3	40	60	100
18BTFT6E03	Sanitation in Food Industries	2,3	b, d, g, i, j, l,o	3	0	0	3	40	60	100
18BTFT6E04	Industrial Safety and Hazard Analysis	2,3	b, d, g, i, j, l,n,o	3	0	0	3	40	60	100
18BTFT6E05	Milling Technology	2,3	a, c, e, f, l,m,n	3	0	0	3	40	60	100
18BTFT6E06	Technology of Legumes and Oilseed Processing	1,3	a, b, c, d, l,m,n,o	3	0	0	3	40	60	100
18BTFT6E07	Milk and Milk Products Technology	2	a,c, f, i, k, l,m,n,o	3	0	0	3	40	60	100
18BTFT6E08	Design and Formulation of Foods	1	a,b, c, e,l,n,o	3	0	0	3	40	60	100
18BTFT6E09	Design of Food Process Equipment	1,2 ,3	a, b, c, d, e, g, l, o	3	0	0	3	40	60	100
18BTFT6E10	Food Colorants and Flavorants	1	a, g, l, n	3	0	0	3	40	60	100
18BTFT6E11	Process Control for Food Engineers	1,2	a, b, d, e ,n ,o	3	0	0	3	40	60	100
18BTFT6E12	Postharvest Technology	1,2	a, b, c, d, e, f, g, l, n, o	3	0	0	3	40	60	100
18BTFT6E13	Crop Processing Technology	2, 3	a, e, l, m, o	3	0	0	3	40	60	100

Professional Elective - IV

Course code	Course Title	Objectives & out comes		Instruction hours /week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
	SEMESTER –VII									
18BTFT7E01	Lipid Processing Technology	1, 3	a, b, c, d, l. n, o	3	0	0	3	40	60	100
18BTFT7E02	Role of Nanotechnology in Food Processing	1, 3	a, b, d, g, i, o	3	0	0	3	40	60	100
18BTFT7E03	New Product Development and Sensory Science	2	a, b, d, f, l, m, o	3	0	0	3	40	60	100
18BTFT7E04	Marketing Management and International Trade	1, 2, 3	b, h, i, j, l, o	3	0	0	3	40	60	100
18BTFT7E05	Supply Chain Management	1,3	a, d, f, g, h, i, j, o	3	0	0	3	40	60	100

Professional Elective – V & VI

Course code	Course Title	Objectives & outcomes		Instruction hours / week			Credits	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
	SEMESTER –VIII									
18BTFT8E01	Functional Foods and Nutraceuticals	1,2	a, b, d, f, l, o	3	0	0	3	40	60	100
18BTFT8E02	Food Biotechnology	1,3	a, b, e, f, m	3	0	0	3	40	60	100
18BTFT8E03	Protein Chemistry and Technology	1,2	a, b, d, e, i, l, n, o	3	0	0	3	40	60	100
18BTFT8E04	Advanced Drying Technology	1, 3	a, b, c, e, l, n, o	3	0	0	3	40	60	100
18BTFT8E05	Food Fermentation Technology	1,3	a, b, d, g, m, n, o	3	0	0	3	40	60	100
18BTFT8E06	Extrusion Technology	1,2	a, c, e, f, l, m	3	0	0	3	40	60	100
18BTFT8E07	Sugar Technology	1,3	a, b, c, f, m, n	3	0	0	3	40	60	100
18BTFT8E08	Food Allergy and Toxicology	2	a, b, f, g, m	3	0	0	3	40	60	100
18BTFT8E09	Waste Management in Food Industries	1,2,3	a, b, f, l, m, n	3	0	0	3	40	60	100
18BTFT8E10	Total Quality Management	2,3	a, b, d, g, f, i, l, n, o	3	0	0	3	40	60	100
18BTFT8E011	Food Storage and Logistic Management	1,2 ,3	a, b, c, d, e, g, l, m, n	3	0	0	3	40	60	100

Open Electives I & II (offered by Food Technology)

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
FOOD TECHNOLOGY										
18BTFTOE01	Processing of Food Materials	1,3	a,b,c,m,n,o	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,m,n,o	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	1,3	a,b,c,m,n,o	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	1,3	a,b,c,d,g,m,n,o	3	0	0	3	40	60	100

OPEN ELECTIVES
COURSES OFFERED BY OTHER DEPARTMENTS

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
SCIENCE AND HUMANITIES										
18BTSHOE01	Solid Waste Management	1,2	a,b,c,d,f,m	3	0	0	3	40	60	100
18BTSHOE02	Green Chemistry	1,2,3	a,b,c,d,e,f, g,o	3	0	0	3	40	60	100
18BTSHOE03	Applied Electrochemistry	2,3	a,b,c,d,e,f	3	0	0	3	40	60	100
18BTSHOE04	Industrial Chemistry	2,3	a,b,c,d,f,g, i	3	0	0	3	40	60	100
18BTSHOE05	Technical Writing	2,3	a,h,i,j,l	3	0	0	3	40	60	100
18BTSHOE06	Geophysics	2,3	a,b,c,e, k,	3	0	0	3	40	60	100
18BTSHOE07	Engineering Acoustics	2,3	a,b,c,d,	3	0	0	3	40	60	100
18BTSHOE08	Industrial Mathematics – I	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
18BTSHOE09	Industrial Mathematics – Ii	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
18BTSHOE10	Fuzzy Mathematics	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
18BTSHOE11	Mathematical Physics	2,3	a,b,e,h,i	3	0	0	3	40	60	100
18BTSHOE12	Linear Algebra	2,3	a,b	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
18BECSOE01	Internet Programming	2,3	a,b,c,d,e	3	0	0	3	40	60	100
18BECSOE02	Multimedia and Animation	2,3	a,b,c,d,e,	3	0	0	3	40	60	100
18BECSOE03	PC Hardware and Trouble shooting	2,3	a,b,c,d,e,	3	0	0	3	40	60	100
18BECSOE04	Java Programming	2,3	a,b,c,d,e,	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
18BEEEOE01	Electric Hybrid Vehicle	2	a,b,	3	0	0	3	40	60	100
18BEEEOE02	Energy Management & Energy Auditing	2	a,b,f,g,	3	0	0	3	40	60	100
18BEEEOE03	Programmable Logic Controller	2	a,b,f	3	0	0	3	40	60	100
18BEEEOE04	Renewable Energy Resources	1,2	a,b,c,e,f,g, m	3	0	0	3	40	60	100
ELECTRONICS AND COMMUNICATION ENGINEERING										
18BEECOE01	Real Time Embedded Systems	1	a,b	3	0	0	3	40	60	100
18BEECOE02	Consumer Electronics	1	a,b	3	0	0	3	40	60	100
18BEECOE03	Neural Networks and its Applications	1	a,b,	3	0	0	3	40	60	100
18BEECOE04	Fuzzy Logic and its Applications	1	a,b	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING										
18BEAEOE01	Automobile Engineering	1	a,b	3	0	0	3	40	60	100
18BEAEOE02	Two And Three Wheeler Technology	1	a,b	3	0	0	3	40	60	100
18BEAEOE03	Vehicle Maintenance	1	a,b	3	0	0	3	40	60	100
18BEAEOE04	Modern Vehicle Technology	1	a,b	3	0	0	3	40	60	100
CIVIL ENGINEERING										
18BECEOE01	Housing Plan And Management	1	a,b,c,m	3	0	0	3	40	60	100
18BECEOE02	Building Services	1	a,b	3	0	0	3	40	60	100
18BECEOE03	Repair And Rehabilitation Of Structures	1	a,b	3	0	0	3	40	60	100

Code	Course	Sem	Attributes	L	T	P	C	CA	SE	Total
18BECEOE04	Computer Aided Civil Engineering Drawing	1,3	a,b,e,m,o	3	0	0	3	40	60	100
MECHANICAL ENGINEERING										
18BEMEOE01	Computer Aided Design	1,3	a,b,d, e,m,o	3	0	0	3	40	60	100
18BEMEOE02	Industrial Safety and Environment	1,3	a,b,c,f,g,m	3	0	0	3	40	60	100
18BEMEOE03	Transport Phenomena	1	a,b	3	0	0	3	40	60	100
18BEMEOE04	Introduction to Biomechanics	1,3	a,b,c,e,m	3	0	0	3	40	60	100
CHEMICAL ENGINEERING										
18BTCEOE01	Energy management in chemical industries	1,3	a,b,c,d,f,m	3	0	0	3	40	60	100
18BTCEOE02	Fertilizer technology	1,3	a,b,c,d,f,m	3	0	0	3	40	60	100
18BTCEOE03	Industrial wastewater treatment	1,2,3	a,b,c,d,f,g, m,o	3	0	0	3	40	60	100
18BTCEOE04	Solid and hazardous waste management	1,2,3	a,b,c,d,f,g, m,o	3	0	0	3	40	60	100
BIOMEDICAL ENGINEERING										
18BEBMEOE01	Robotics In Medicine	1	a,b,c,e,	3	0	0	3	40	60	100
18BEBMEOE02	Virtual Reality And Augmented Reality	1	a,b,c,e,	3	0	0	3	40	60	100
18BEBMEOE03	Artificial Organs And Implants	1,3	a,b,c,e,h	3	0	0	3	40	60	100
BIOTECHNOLOGY										
18BTBTOE01	Bioreactor Design	1,2,3	a,b,c,d,m	3	0	0	3	40	60	100
18BTBTOE02	Food Processing and Preservation	1	a,b,c,g,m, n, o	3	0	0	3	40	60	100
18BTBTOE03	Basic Bioinformatics	1,3	a,b,c,d,e,o	3	0	0	3	40	60	100
18BTBTOE04	Fundamentals of Nanobiotechnology	1,3	a,b,m	3	0	0	3	40	60	100
FOOD TECHNOLOGY										
18BTFTOE01	Processing of Food Materials	1,3	a,b,c,m,n, o	3	0	0	3	40	60	100
18BTFTOE02	Nutrition and Dietetics	1,3	a,b,c,m,n, o	3	0	0	3	40	60	100
18BTFTOE03	Ready to Eat Foods	1,3	a,b,c,m,n, o	3	0	0	3	40	60	100
18BTFTOE04	Agricultural Waste and Byproducts Utilization	1,3	a,b,c,d,g, m,n,o	3	0	0	3	40	60	100

Note:
- **Blue font** represents Employability courses
- **Green font** represents Entrepreneurship courses
- **Red font** represents Skill development courses

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.

Food Technology (PEO-PO / PSO mapping)

PEO	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
1	✓		✓	✓	✓					✓			✓	✓	✓
2		✓	✓	✓	✓	✓	✓						✓	✓	✓
3				✓				✓		✓		✓	✓		✓

FACULTY OF ARCHITECTURE

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 analysetheoretical knowledge and to apply the principles,elements and construction details and techniquesin 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 thesociety 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
I				√	√	√	√	√	√
II	√		√					√	√
III		√	√					√	√
IV					√	√		√	√
V				√		√	√	√	√

B.ARCH - CURRICULUM
2018-2019 batch
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 /Studio   C- 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	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P/S		CIA	ESE	Total
								40	60	100
SEMESTER - I										
18ART101	Theory of Architecture -I	III	2,8,9	2	-	-	2	40	60	100
18ART102	History of Architecture – I	III	3,8,9	3	-	-	3	40	60	100
18ART103	Mathematics in Architecture	III	1, 8,9	2	-		2	40	60	100
18ARP111	Art,model making and presentation	II,III	2,6,78,9	1	-	4	3	60	90	150
18ARS121	Architectural Design -I	I,II,III,IV	2,6,78,9	2	-	10	7	140	210	350
18ARS122	Building Materials and construction – I	I,IV,V	2,4 8,9	2	-	5	4	80	120	200
18ARS123	Architectural Graphics I	I,II	1,2 8,9	2	-	5	4	80	120	200
Semester Total				**14**	**-**	**24**	**25**	**480**	**720**	**1200**
SEMESTER – II										
18ART201	Theory of Architecture- II	III	2,8,9	2	-	-	2	40	60	100
18ART202	History of Architecture – II	III	3,8,9	3	-	-	3	40	60	100
18ART203	Mechanics of Structures- I	II,III	2 ,8,9	3	-		3	40	60	100
18ARP211	Computer Application – I	I,II,IV	2,5,8,9	-	-	4	2	60	90	150
18ARS221	Architectural design –II	I,II,III,IV	2,6,7 8,9	2	-	10	7	140	210	350
18ARS222	Building Materials and construction - II	I,IV,V	2,4 8,9	2	-	5	4	80	120	200
18ARS223	Architectural Graphics II	I,II	1,2,8,9	2	-	5	4	80	120	200
Semester Total				**14**	**-**	**24**	**25**	**480**	**720**	**1200**
Course	**Name of the course**	**Objectives and**		**Instruction**			**C r**	**Maximum Marks**		

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code		out comes		hours / week				CIA	ESE	Total
		PEOs	POs	L	T	P/S		40	60	100
SEMESTER - III										
18ART301	History of Architecture – III	III	3,8,9	2	-	-	2	40	60	100
18ART302	Mechanics of Structures - II	II,III	2,8,9	3	-	-	3	40	60	100
18ARP311	Computer Application – II	I,II,IV	2,5 8,9	-	-	4	2	60	90	150
18ARP312	Surveying, levelling and Site Planning	II,III	2,8,9	-	-	4	2	60	90	150
18ARS321	Architectural design -III	I,II,III, IV	2,6,78 ,9	2	-	10	7	140	210	350
18ARS322	Building Materials and construction - III	I,IV,V	2,48,9	2	-	5	4	80	120	200
18ARS323	Building Services- I	III,IV	2,58,9	2	-	5	4	60	90	150
Semester Total				**14**	**-**	**24**	**25**	**480**	**720**	**1200**
SEMESTER – IV										
18ART401	Climate Responsive Architecture	III,IV	2,8,9	2	-	-	2	40	60	100
18ART402	Contemporary Architecture – I	III,IV	2,3 8,9	3	-	-	3	40	60	100
18ART403	Design of Structures - I	II,III	2,8,9	3	-	-	3	40	60	100
18ARP411	Computer Application -III	I,II,IV	2,58,9	-	-	4	2	60	90	150
18ARS421	Architectural design –IV	I,II,III, IV	2,6,78 ,9	2	-	10	7	140	210	350
18ARS422	Building Materials and construction - IV	I,IV,V	2,48,9	2	-	5	4	80	120	200
18ARS423	Building Services - II	III,IV	2,58,9	2	-	5	4	80	120	200
Semester Total				**14**	**-**	**24**	**25**	**480**	**720**	**1200**
SEMESTER –V										
18ART501	Contemporary Architecture - II	III,IV	2,38,9	3	-	-	3	40	60	100
18ART502	Design of Structures - II	II,III	2,8,9	3	-	-	3	40	60	100
18ARP511	Computer Application IV	I,II,IV	2,58,9	-	-	4	2	60	90	150
18ARS521	Architectural design -V	I,II,III, IV	2,6,78 ,9	2	-	10	7	140	210	350
18ARS522	Building Materials and construction -V	I,IV,V	2,48,9	2	-	5	4	80	120	200
18ARET***	Elective 1	I,IV	5,6,7 8,9	2	-	-	2	40	60	100
18ARES***	Elective 2	I,IV	5,6,78 ,9	1	-	6	4	80	120	200
Semester Total				**13**	**-**	**24**	**25**	**480**	**720**	**1200**

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Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P/S		CIA	ESE	Total
								40	60	100
SEMESTER VI										
18ART601	Building Codes and Regulations	I,IV, V	4,6 8,9	2	-	-	2	40	60	100
18ART602	Physical planning	III,IV	2,5,6 8,9	3	-	-	3	40	60	100
18ARS621	Architectural design –VI	I,II,II I,IV	2,6,7 8,9	2	-	10	7	140	210	350
18ARS622	Architectural detailing &Working drawing	I,IV, V	1,5,6 8,9	2	-	5	4	80	120	200
18ARS623	Sustainable Architecture	II,III	1,3,5 8,9	1	-	5	3	60	90	150
18ARET***	Elective 3	I,IV	5,6,7 8,9	2	-	-	2	40	60	100
18ARES***	Elective 4	I,IV	5,6,7 8,9	1	-	5	4	80	120	200
Semester Total				13	-	25	25	480	720	1200

Course code	Name of the course	PEOs	POs	L	T	P/S	Credit(s)	CIA	ESE	Total
SEMESTER VII										
18ART701	Housing	III,I V	2,3,68, 9	2	-	-	2	40	60	100
18ART702	Urban Design	III,I V	2,3,6 8,9	3	-	-	3	40	60	100
18ARS721	Architectural design –VII	I,II,I II,IV	2,6,7 8,9	2	-	10	7	140	210	350
18ARS722	Estimation and Specification	I	5,8,9	2	-	5	4	80	120	200
18ARET***	Elective 5	I,IV	5,6,78, 9	2	-	-	2	40	60	100
18ARES***	Elective 6	I,IV	5,6,78, 9	2	-	5	4	80	120	200
Semester Total				13	-	20	22	420	630	1050

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Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P/S		CIA	ESE	Total
								40	60	100
SEMESTER VIII										
18ARP811	**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	-	-	-	14	400	600	1000
Semester Total				-	-	-	14	400	600	1000
SEMESTER IX										
18ART901	Professional Practice -I	I,V	4,5,6,7	2	-	-	2	40	60	100
18ART902	Research Methods and Field studies	III,IV	2,5	3	-	-	3	40	60	100
18ARS921	Dissertation	III,IV	2,5,7	2		5	4	80	120	200
18ARS922	Architectural Design -VIII	I,II,III,IV	2,6,7	2	-	11	7	140	210	350
18ARET***	Elective 7	I,IV	5,6,7	2	-	-	2	40	60	100
18ARES***	Elective 8	I,IV	5,6,7	2	-	5	4	80	120	200
Semester Total				13	-	20	22	420	630	1050

Course code	Name of the course	PEOs	POs	L	T	P/S	Credit(s)	CIA	ESE	Total
SEMESTER X										
18ART1001	Professional practice II	I,V	2	2	-	-	2	40	60	100
18ARS1021	Architectural Thesis	I,II,III,IV,V	4,5,6,7	4	-	27	18	400	600	1000
Semester Total				6	-	27	20	440	660	1100

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Credits

Course	Credits
Theory	**51**
Practical	**13**
Studio	**104**
Elective	**24**
Practical Training	**14**
Dissertation	**04**
Architectural thesis	**18**
Total	**228**

Total Marks :

Semester	Total Credits	Marks
Semester- I	25	1200
Semester- II	25	1200
Semester- III	25	1200
Semester- IV	25	1200
Semester- V	25	1200
Semester- VI	25	1200
Semester- VII	22	1050
Semester- VIII	14	1000
Semester- IX	22	1050
Semester- X	20	1050
Total	**228**	**11350**

Entrepreneur Oriented Courses -Green
Employability Oriented Courses -Blue
Skill Development Oriented Courses -Red

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	PO1	PO2	PO3	PO4	PO5	PSO6	PSO7
1				√	√	√	√
2	√		√				
3		√	√				
4					√	√	
5				√		√	√

B.DES – CURRICULUM
2018 - 2019 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
2018-2019 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	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – I										
18IDT101	Theory of Interiors	III	1,6	2	0	0	2	40	60	100
18IDT102	History of Interiors - I	II	1,6	3	0	0	2	40	60	100
18IDP111	Space planning &Ergonomics	II	2,6,4	2	0	2	3	60	90	150
18IDP112	Art and craft	II	1,4,6	1	0	5	3	40	60	100
18IDS121	Basic Interior Design I	III	2,4,5	0	0	12	8	160	240	400
18IDS122	Interior Materials & Construction I	III	1,6,7	2	0	5	4	80	120	200
18IDS123	Interior Graphics I	I	1,6,7	1	0	5	3	60	90	150
Semester Total				11	0	29	25	480	720	1200
SEMESTER – II										
18IDT201	Psychology of Interiors	III	1.4,7	2	0	0	2	40	60	100
18IDT202	History of Interiors. II	II	1,4,7	3	0	0	2	40	60	100
18IDP211	Computer applications I	I	3,6,7	1	0	4	3	60	90	150
18IDP212	Model Making	II	3,6,7	1	0	4	3	60	90	150
18IDS221	Interior Design II	III	3,6,7	0	0	12	8	160	240	400
18IDS222	Interior Materials & Construction II	III	1,6,7	3	0	5	4	80	120	200
18IDS223	Interior Graphics II	I	1,6,7	1	0	4	3	60	90	150
Semester Total				11	0	29	25	500	750	1200

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER – III										
18IDT301	Furniture Design	III	2,4,7	2	0	0	2	40	60	100
18IDT302	Interior Services I – Plumbing and water supply	II	1,5,7	3	0	0	2	40	60	100
18IDP311	Computer Applications II	I	2,6,7	4	0	0	3	60	90	150
18IDP312	Workshop (Wood, cane& bamboo engineered wood, glass, stone)	II	1,6,7	0	0	6	3	60	90	150
18IDS321	Interior Design III	V	3,4,7	0	0	12	8	160	240	400
18IDS322	Advanced materials & applications	IV	3,4,7	1	0	6	4	80	120	200
18IDS323	Interior Landscape	V	1,2,7	0	0	6	3	60	90	150
	Semester Total			10	0	30	25	500	750	1250
SEMESTER – IV										
18IDT401	Light and Color	III	1,3,4	2	-	-	2	40	60	100
18IDT402	Interior Services II– Electrical wiring, lighting and air conditioning	II	1,5,7	3	-	-	2	40	60	100
18IDP411	Computer Applications III	I	2,5,6	4	-	-	3	60	90	150
18IDP412	Workshop	II	1,3,6	-	-	6	3	60	90	150
18IDS421	Interior Design IV	V	3,6,7	-	-	12	8	160	240	400
18IDS422	Furniture Construction detailing &Modular /custom made	IV	1,3,4	1	-	6	3	60	90	150
18IDS423	Lifestyle accessories design	IV	1,4,7	-	-	6	6	80	120	200
	Semester Total			10	0	30	27	500	750	1250

Course code	Name of the course	Objectives and outcomes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – V										
18IDT501	Contemporary Interiors	II	1,4,6	3	0	0	2	40	60	100
18IDT502	Interior Services III– Acoustics and climate response	II	1,5,6	3	0	0	2	40	60	100
18IDP511	Computer Graphics	I	2,3,6	4	0	0	3	60	90	150
18IDP512	Working drawings and detailing	V	1,3,4	1	0	5	3	60	90	150
18IDS521	Interior Design V	V	3,6,7	0	0	12	8	160	240	400
18IDS524	Estimation Costing	IV	5,6,7	1	0	5	3	60	90	150
18IDES531	Elective – 2	IV	1,6,7	1	0	5	3	60	90	150
Semester Total				13	0	27	24	480	720	1150

Electives

1. 18IDES531A – Signage and graphics
2. 18IDES531B – Product design
3. 18IDES531C - Set Design

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
SEMESTER – VI										
18IDP611	Practical Training: Client Meeting/Interaction site Visits, Verification and Measurement concept and Scheme Development Construction Documents/ Drawings Training Portfolio I	V	6,7	0	0	0	16	320	480	800
18IDS621	Field study and documentation	IV	1,6,7	0	0	6	3	60	90	150
Semester Total				0	0	6	19	380	570	950

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								40	60	100
SEMESTER – VII										
18IDT701	Professional Practice	IV	6,7	3	0	0	2	40	60	100
18IDT702	Project management	V	6,7	3	0	0	2	40	60	100
18IDP711	Interior Photography and Journalism	V	2,3,5	1	0	4	3	60	90	150
18IDP712	Advanced Workshop	II	1,3,7	1	0	6	4	80	120	200
18IDS721	Interior Design VI	V	3,6,7	2	0	10	8	160	240	400
18IDS722	Integrated Project Work	V	1,6,7	0	0	6	3	60	90	150
18IDP731	Elective	IV	1,6,7	0	0	4	3	60	90	150
Semester Total				10	0	30	25	500	750	1250

18IDPE731A Interior Website and Blogging   18IDPE731B Marketing Techniques

18IDPE731C Creative Art & Craft   18IDP731D Presentation Techniques

18IDPE731E Adaptive reuse and Recycling   18IDP731F Textile Design

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
SEMESTER – VIII										
18IDS821	Design Thesis: Independent work of large interior project comprising study, analysis and design. Project Report , Drawing and Model	V	5,6,7	2	0	28	16	320	480	800
18IDS831	Dissertation	IV	2,6,7	1	0	6	4	80	120	200
Semester Total				3	0	34	20	400	600	1000

Design Contexual Studies   Interior Photography

Digital InteriorsBranding in Interiors

Interior materials research   Vernacular Interiors.

Adaptive reuse   Interior blogging and website creation..

Total Credits:

Theory Courses	-	33	credits
Practical Courses	-	51	credits
Studio Courses	-	99	credits
Elective Courses	-	5	credits
Total	**-**	**188**	**credits**

		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
YEAR - I	**SEMESTER- I**	Theory of Interiors		#					
		History of Interiors - I			#				
		Space planning &Ergonomics	#		#				
		Art and craft		#				#	#
		Basic Interior Design I		#				#	#
		Interior Materials & Construction I		#					
		Interior Graphics I	#						
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
YEAR - I	**SEMESTER- II**	Psychology of Interiors		#					
		History of Interiors. II			#				
		Computer applications I		#	#				
		Model Making		#			#		
		Interior Design II		#				#	#
		Interior Materials & Construction II		#					
		Interior Graphics II	#						
		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
YEAR - II	**SEMESTER- III**	Furniture Design			#				
		Interior Services – Plumbing and water supply		#					
		Computer Applications II		#			#		
		Workshop (Wood, cane& bamboo engineered wood, glass, stone)		#					
		Interior Design III		#				#	#
		Advanced materials & applications		#					
		Interior Landscape		#			#		

		Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7
YEAR - II	**SEMESTER- IV**	Light and Color	#					#	
		Interior Services – electrical wiring, lighting and air conditioning		#					
		Computer Applications III		#					
		Workshop (elective)		#			#		
		Interior Design IV		#				#	#
		Furniture Construction detailing &Modular /custom made.		#					
		Lifestyle accessories design		#			#		
		Course Title	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
YEAR - III	**SEMESTER- V**	Contemporary Interiors		#					
		Interior Services – acoustics and climate response		#					
		Computer Graphics		#			#		
		Working drawings and detailing		#				#	#
		Interior Design IV		#					
		Estimation Costing	#		#				
		Elective - 2	#		#				
		Course Title	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
YEAR - III	**SEMESTER- VI**	<u>Practical Training</u>: Client Meeting/Interaction site Visits, Verification and Measurement concept and Scheme Development Construction Documents/ Drawings Training Portfolio I	#	#		#		#	#
		Field study and documentation		#				#	

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

Entrepreneur Oriented Courses -Green
Employability Oriented Courses -Blue
Skill Development Oriented Courses -Red

M.ARCH (Advance Design) - CURRICULUM
2018-2019 batch

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
I			√	√	√
II	√		√		√
III	√	√			√
IV	√	√			√
V	√				√

KARPAGAM
ACADEMY OF HIGHER EDUCATION
Enable | Enlighten | Enrich
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

M.ARCH (ADVANCE DESIGN) - CURRICULUM
2018-2019 batch
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 /Studio   C- 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	Objectives and out comes PEOs	POs	L	T	P/S	Credit(s)	CIA	ESE	Total
								40	60	100
SEMESTER - I										
18MARS111	Research Methodology I	I,II,III	2,4,5	1	-	2	**2**	40	60	100
18MARS112	Design Systems	II,III	1,3,5	2	-	4	**4**	80	120	200
18MARS113	Design Research & Field Studies	I,IV	2,4,5	1	-	2	**2**	40	60	100
18MARS114	Advanced Design Studio I	I,IV,V	3,4,5	3	-	9	**8**	160	240	400
18MARES*	Advanced Elective I	II,III,V	2,3,4,5	2	-	4	**4**	80	120	200
	Semester Total			**08**	**-**	**22**	**20**	**460**	**540**	**1000**

*18MARESS1   - Introduction to Sustainable Architecture
18MARESH1   - Introduction to Housing Design

Course code	Name of the course	PEOs	POs	L	T	P/S	Credit(s)	CIA	ESE	Total
SEMESTER – II										
18MARS211	Research Methodology II	I,II,III	2,4,5	1	-	2	**2**	40	60	100
18MARS212	Documentation & Presentation	I,IV	2,4,5	1	-	2	**2**	40	60	100
18MARS213	Advanced Design Studio II	I,IV,V	3,4,5	3	-	9	**7**	160	240	400
18MARES*	Advanced Elective II	II,III,V	2,3,4,5	2	-	4	**4**	80	120	200
18MARES**	Advanced Elective III	II,III,V	2,3,4,5	2	-	4	**4**	80	120	200
	Semester Total			**08**	**-**	**22**	**19**	**460**	**540**	**1000**

*18MARESS2   - Building Performance Analysis   **18MARESS3 - Sustainable Design Strategies
18MARESH2   - Housing Policies and Schemes   18MARESH3 - Sustainable Housing

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P/S		CIA	ESE	Total
								40	60	100
SEMESTER - III										
18MARS311	Dissertation I	I,III,IV,V	1,2,3,4	2	-	10	7	160	240	400
18MARES*	Advanced Elective IV	II,III,V	2,3,4	2	-	4	4	80	120	200
18MARES**	Advanced Elective V	II,III,V	2,3,4	2	-	4	4	80	120	200
Semester Total				**06**	**-**	**18**	**15**	**320**	**480**	**800**
*18MARESS4 - Sustainable Building Systems **18MARESS5- Sustainable Trends and Theories 18MARESH4 - Community Participation in Housing 18MARESH5 - Special Types of Housing										
SEMESTER – IV										
18MARS411	Dissertation II	I,II,III,IV,V	1,2,3,4	16	-	20	16	320	480	800
Semester Total				**16**	**-**	**20**	**16**	**320**	**480**	**800**

Credit Details :

Studio / Dissertation Courses -	46 credits
Elective Courses -	20 credits
Value Add Courses -	04 credits
Total -	**70 credits**

Entrepreneur Oriented Courses -Green
Employability Oriented Courses -Blue
Skill Development Oriented Courses -Red

M.PLAN (TOWN AND COUNTRY PLANNING) CURRICULUM
2018 - 2019 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	√	√	√	√	√	√	√	√	√
2			√	√		√			
3	√	√	√	√	√		√		
4			√			√	√		
5		√	√			√		√	
6				√				√	√
7	√		√		√				
8									√

M. PLAN (TOWN AND COUNTRY PLANNING)

MASTER OF TOWN AND COUNTRY PLANNING
Curriculum – Full Time (4 Semesters)
2018 - 2019 Batch (**CBCS**)

Semester I

Sub. Code	Course Title	Program Outcome	Program Educational objectives	EM / EN / SD	Instruction Hrs / Week			Marks			C	E H
					L	T	P	CIA	ESE	Total		
18MPN101	Planning Theory and Practice	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
18MPN102	Socio – Economic and Spatial aspects of Human Settlements and Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
18MPN103	Traffic and Transportation Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
18MPN121	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
18MPNE**	Elective I				2	0	8	120	180	300	6	6
	Report Writing			SD								
	Sub Total				**14**	**0**	**18**	**400**	**600**	**1000**	**23**	
Elective I												
Sub. Code	Course Title	Program Outcome	Program Educational objectives	EM/ EN/ SD	Instruction Hrs / Week			Marks			C	E H
					L	T	P	CIA	ESE	Total		
18MPNE1A	Public Transport Planning	PO1, PO2, PO5	III,	EM	2	0	8	120	180	300	6	6
18MPNE1B	Transport Economics	PO1, PO2, PO5, PO7	I, III	EM	2	0	8	120	180	300	6	6
18MPNE1C	Disaster Management	PO1, PO2, PO5	III,	EM	2	0	8	120	180	300	6	6
18MPNE1D	Real Estate And Housing Markets	PO1, PO2, PO5, PO7	I, III	EN	2	0	8	120	180	300	6	6
18MPNE1E	Materials, Technology and Infrastructure	PO1, PO2, PO5, PO7	I, III	EN	2	0	8	120	180	300	6	6

Semester II

Sub. Code	Course Title	Program Outcome	Program Educational objectives	EM / EN / SD	Instruction Hrs / Week			Marks			C	E H
					L	T	P	CIA	ESE	Total		
18MPN201	City Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
18MPN202	Regional Planning	PO1, PO3, PO5	III, VII	EM	3	0	0	40	60	100	3	3
18MPN203	Research Methodology	PO1, PO3, PO5	III, VII	EM/ SD	3	0	0	40	60	100	3	3
18MPN221	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
18MPNE**	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 objectives	EM/ EN / SD	Instruction Hrs / Week			Marks			C	E H
					L	T	P	CIA	ESE	Total		
18MPNE2A	Rural and Urban Housing	PO1, PO2, PO5	I, III, VII		2	0	8	120	180	300	6	6
18MPNE2B	Planning Legislation and Professional Practice	PO1, PO2, PO5, PSO9	I, VII	EN	2	0	8	120	180	300	6	6
18MPNE2C	GIS Modeling in Urban and Regional Planning	PO1, PO2, PO5, PO7	I, III, IV	EM/ SD	2	0	8	120	180	300	6	6
18MPNE2D	Urban Development And Management	PO1, PO2, PO5, PO7	I, III, IV	EN	2	0	8	120	180	300	6	6
18MPNE2E	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 Educational objectives	EM/ EN / SD	Instruction Hrs / Week			Marks			C	E H
					L	T		CIA	ESE	Total		
18MPN301	Environmental Planning		PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3
18MPN302	Project Formulation and Implementation		PO1, PO3	I,III, VII	EN	3	0	0	40	60	100	3	3
18MPN321	Planning Studio III		PO1, PO2, PO4, PO5, PO6, PSO8	I, II, III IV,V,VI, VII, VIII	EM/ EN/ SD	3	0	10	160	240	400	8	6
18MPN322	Dissertation		PO1, PO2, PO3, PO5, PO6, PO7	I, II, IV,V,VI, VIII	EM/ EN/ SD	3	0	6	120	180	300	6	6
18MPNE**	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 Educational objectives**	**EM/ EN / SD**	**Instruction Hrs / Week**			**Marks**			**C**	**E H**
					L	T	P	CIA	ESE	Total		
18MPNE3A	Environmental Design		PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3
18MPNE3B	Environmental Impact Assessment		PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3
18MPNE3C	Environmental Legislation, Evaluation and Practices		PO1, PO3, PSO9	I,VI,VIII	EN	3	0	0	40	60	100	3	3
18MPNE3D	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
18MPNE3E	Planning for tourism		PO1, PO3	I,III, VII	EM	3	0	0	40	60	100	3	3

Semester IV

Sub. Code	Course Title		Program Educational objectives	EM/ EN / SD	Instruction Hrs / Week			Marks			C	EH
					L	T	P	CIA	ESE	Total		
18MPN401	Urban Governance and institutional Management	PO1, PO3, PO4, PSO9	I,II, III	EM	3	0	0	40	60	100	3	3
18MPN421	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				**7**	**0**	**28**	**360**	**540**	**900**	**21**	
	Grand Total				**50**	**0**	**80**	**1560**	**2340**	**3900**	**90**	

L – Lecture, T – Tutorial, P – Practical, CIA – Continuous Internal Assessment, ESE – End semester Examination, C – Credits, EH – Exam hours

Entrepreneur Oriented Courses -Green

Employability Oriented Courses -Blue

Skill Development Oriented Courses -Red

FACULTY OF PHARMACY

FACULTY OF PHARMACY
UG PROGRAM (CBCS) – B.PHARM
(2018–2019 Batch and onwards)
CURRICULUM

Course code	Name of the course	Objectives and out comes PEOs	POs	Instruction hours / week L	T	P	Credit(s)	Maximum Marks CIA 25/15/10	ESE 75/35/15	Total 100/50/25
SEMESTER - I										
18BP101T	Human Anatomy and Physiology - I Theory	5	k	3	1	-	4	25	75	100
18BP102T	Pharmaceutical Analysis - Theory	1	c	3	1	-	4	25	75	100
18BP103T	Pharmaceutics–Theory	1	a	3	1	-	4	25	75	100
18BP104T	Pharmaceutical Inorganic Chemistry– Theory	5	a	3	1	-	4	25	75	100
18BP105T	Communication skills–Theory*	3	h	2	-	-	2	15	35	50
18BP106RBT 18BP106RMT	Remedial Biology/ Remedial Mathematics –Theory*	5	a	2	-	-	2	15	35	50
18BP107P	Human Anatomy and Physiology I – Practical	5	b	-	-	4	2	15	35	50
18BP108P	Pharmaceutical Analysis- Practical	1	b,c	-	-	4	2	15	35	50
18BP109P	Pharmaceutics-Practical	1	b	-	-	4	2	15	35	50
18BP110P	Pharmaceutical Inorganic Chemistry– Practical	5	b,j	-	-	4	2	15	35	50
18BP111P	Communication skills–Practical*	3	h	-	-	2	1	10	15	25
18BP112RBP	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*
SEMESTER – II										
18BP201T	Human Anatomy and Physiology II– Theory	5	k	3	1	-	4	25	75	100
18BP202T	Pharmaceutical Organic Chemistry -I Theory	5	a	3	1	-	4	25	75	100
18BP203T	Biochemistry– Theory	5	a,k	3	1	-	4	25	75	100
18BP204T	Pathophysiology– Theory	2,6	b,f,i	3	1	-	4	25	75	100
18BP205T	Computer Applications in Pharmacy– Theory*	4	d	3	-	-	3	25	50	75
18BP206T	Environmental sciences– Theory*	4	j	3	-	-	3	25	50	75
18BP207P	Human Anatomy and Physiology – II Practical	5	k	-	-	4	2	15	35	50
18BP208P	Pharmaceutical Organic Chemistry- I Practical	5	a,b,j	-	-	4	2	15	35	50
18BP209P	Biochemistry– Practical	5	a,b	-	-	4	2	15	35	50
18BP210P	Computer Applications in Pharmacy– 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)

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								25/15	75/35	100
SEMESTER - III										
18BP301T	Pharmaceutical Organic Chemistry – II Theory	5	a	3	1	-	4	25	75	100
18BP302T	Physical Pharmaceutics -I Theory	5	a	3	1	-	4	25	75	100
18BP303T	Pharmaceutical Microbiology– Theory	1	k	3	1	-	4	25	75	100
18BP304T	Pharmaceutical Engineering – Theory	1,5	a	3	1	-	4	25	75	100
18BP305P	Pharmaceutical Organic Chemistry -II Practical	5	a,b,j	-	-	4	2	15	35	50
18BP306P	Physical Pharmaceutics -I Practical	5	b	-	-	4	2	15	35	50
18BP307P	Pharmaceutical Microbiology– Practical	1	a,b	-	-	4	2	15	35	50
18BP308P	Pharmaceutical Engineering –Practical	1,5	a,c	-	-	4	2	15	35	50
Semester Total		**-**	**-**	**12**	**4**	**16**	**24**	**160**	**440**	**600**
SEMESTER – IV										
18BP401T	Pharmaceutical Organic Chemistry –III Theory	5	a	3	1	-	4	25	75	100
18BP402T	Medicinal Chemistry – I Theory	1	a,k	3	1	-	4	25	75	100
18BP403T	Physical Pharmaceutics –II Theory	5	a	3	1	-	4	25	75	100
18BP404T	Pharmacology -I Theory	5	a,d,k	3	1	-	4	25	75	100
18BP405T	Pharmacognosy and Phytochemistry –I Theory	1	a	3	1	-	4	25	75	100
18BP406P	Medicinal Chemistry –I Practical	1	a,b	-	-	4	2	15	35	50
18BP407P	Physical Pharmaceutics -II Practical	5	b	-	-	4	2	15	35	50
18BP408P	Pharmacology – I Practical	5	a,b,d	-	-	4	2	15	35	50
18BP409P	Pharmacognosy and Phytochemistry –I Practical	1	a,b	-	-	4	2	15	35	50
Semester Total		**-**	**-**	**15**	**5**	**16**	**28**	**185**	**515**	**700**

Course code	Name of the course	PEOs	POs	L	T	P	Credit(s)	CIA	ESE	Total
		Objectives and outcomes		Instruction hours / week				Maximum Marks		
								25/15	75/35	100
SEMESTER - V										
18BP501T	Medicinal Chemistry -II Theory	1	a,k	3	1	-	4	25	75	100
18BP502T	Industrial Pharmacy I–Theory	1,5	a,c,k	3	1	-	4	25	75	100
18BP503T	Pharmacology -II Theory	5	a,k	3	1	-	4	25	75	100
18BP504T	Pharmacognosy and Phytochemistry II–Theory	1	a,k	3	1	-	4	25	75	100
18BP505T	Pharmaceutical Jurisprudence – Theory	3,4	a,e,g	3	1	-	4	25	75	100
18BP506P	Industrial Pharmacy I –Practical	1	a,c	-	-	4	2	15	35	50
18BP507P	Pharmacology -II Practical	5	a,d	-	-	4	2	15	35	50
18BP508P	Pharmacognosy and Phytochemistry -II Practical	1	a,b	-	-	4	2	15	35	50
Semester Total		**-**	**-**	**15**	**5**	**12**	**26**	**170**	**480**	**650**
SEMESTER –VI										
18BP601T	Medicinal Chemistry -III Theory	1	a,k	3	1	-	4	25	75	100
18BP602T	Pharmacology - III Theory	5	a,k	3	1	-	4	25	75	100
18BP603T	Herbal Drug Technology– Theory	1,5	a,k	3	1	-	4	25	75	100
18BP604T	Biopharmaceutics and Pharmacokinetics – Theory	5	a,c,k	3	1	-	4	25	75	100
18BP605T	Pharmaceutical Biotechnology– Theory	1	k	3	1	-	4	25	75	100
18BP606T	Quality Assurance –Theory	1,4	a,c,k	3	1	-	4	25	75	100
18BP607P	Medicinal Chemistry -III Practical	1	a,b	-	-	4	2	15	35	50
18BP608P	Pharmacology -III Practical	5	a,d	-	-	4	2	15	35	50
18BP609P	Herbal Drug Technology– Practical	1,5	a,b	-	-	4	2	15	35	50
Semester Total		**-**	**-**	**18**	**6**	**12**	**30**	**195**	**555**	**750**

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Credit(s)	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	Total
								25/15	75/35	100
SEMESTER - VII										
18BP701T	Instrumental Methods of Analysis – Theory	1	c	3	1	-	4	25	75	100
18BP702T	Industrial Pharmacy II– Theory	1,5	a,c,k	3	1	-	4	25	75	100
18BP703T	Pharmacy Practice – Theory	2,6	a,f,i	3	1	-	4	25	75	100
18BP704T	Novel Drug Delivery System– Theory	1,5	a,k	3	1	-	4	25	75	100
18BP705P	Instrumental Methods of Analysis – Practical	1	a,c	-	-	4	2	15	35	50
18BP706PS	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**
SEMESTER –VIII										
18BP801T	Biostatistics and Research Methodology– Theory	4,5	B,c,d	3	1	-	4	25	75	100
18BP802T	Social and Preventive Pharmacy– Theory	3,6	f,g,h,j	3	1	-	4	25	75	100
18BP803ET	Pharma Marketing Management– Theory	1,3	f			-				
18BP804ET	Pharmaceutical Regulatory Science– Theory	3,4	c,k			-				
18BP805ET	Pharmacovigilance– Theory	2,5	a,h,i			-				
18BP806ET	Quality Control and Standardizations of Herbals– Theory	1	b			-				
18BP807ET	Computer Aided Drug Design– Theory	1,5	d	3+3	1+1	-	8	25+25	75+75	100+100
18BP808ET	Cell and Molecular Biology– Theory	4,5	j.k			-				
18BP809ET	Cosmetic Science– Theory	1	a			-				
18BP810ET	Pharmacological Screening Methods– Theory	5	a,i			-				
18BP811ET	Advanced Instrumentation Techniques– Theory	1,5	c			-				
18BP812ET	Dietary supplements and nutraceuticals	1	a,h							
18BP813ET	Pharmaceutical Product Development (Theory)	1	a							
18BP814PW	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 pharmacy-related computing tools with an understanding of the limitations.

e. 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. 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. 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 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO l: 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	c	d	e	f	g	h	i	j	k	PSO l	PSO m	PSO n	PSO o	PSO p
PEO 1	X	X	X	X		X					X	X	X	X		
PEO 2	X					X		X	X		X	X				X
PEO 3		X	X		X	X	X	X			X	X			X	X
PEO 4		X	X	X	X	X		X		X	X			X	X	
PEO 5	X	X	X	X	X		X	X		X	X	X	X	X	X	
PEO 6	X					X	X	X	X	X	X	X				X