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

KARPAGAM ACADEMY OF HIGHER EDUCATION

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

This is to certify that the enclosed pages (2 to 308) consists of the Curriculum followed for various programmes offered between the academic years 2016-2017.

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.

KARPAGAM ACADEMY OF HIGHER EDUCATION
OBE-21

Common Colour Coding For the Courses In The Curriculum

Colour	Particular
Blue	Employability
Green	Entrepreneurship
Red	Skill Development

KARPAGAM ACADEMY OF HIGHER EDUCATION

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

M.Sc.APPLIED ASTROLOGY COURSE (2016-2017)

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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	Objectives & Out Comes		Instruction hours / week			Credit(s)	Mamimum Marks		
		PEOs	POs	L	T	P		CIA	ESE	TOTAL
SEMESTER - I										
16ASP101	அடிப்படை ஜோதிடவியல் - I Fundamentals of Astrology-I	**1**	**1**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP102	ஜோதிடவியலில் கோள்கள் - I Planets in Astrology-I	**1**	**1,8**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP103	பிரஸன்ன ஜோதிட முறைகள் - I Horary Astrological methods I	**3**	**5**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP104	ராசிகள் பாவகங்கள் நட்சத்திரங்கள்-I Rasi – Bhava – Star Constelations -I	**1**	**2**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP105B	அடிப்படை வாஸ்து – 1 Fundamental Vasthu -I	**2**	**4**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP111	பலன் சொல்லும் முறைகள் - I Predictive methods in Astrology-I	**1,2**	**4,10**	**0**	**0**	**4**	**2**	**40**	**60**	**100**
16ASP112	Practical - I	**1,2**	**11**	**0**	**0**	**4**	**2**	**40**	**60**	**100**
	Total						**24**	**280**	**420**	**700**
SEMESTER II										
16ASP201	அடிப்படை ஜோதிடவியல் -II Fundamentals of Astrology-II	**1**	**1**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP202	ஜோதிடவியலில் கோள்கள் -II Planets in Astrology-II	**1**	**1**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP203	பிரஸன்ன ஜோதிட முறைகள் - II Horary Astrological methods-II	**2**	**5**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP204	ராசிகள் பாவகங்கள் நட்சத்திரங்கள்II Rasi – Bhava – Star Constelations-II	**1**	**2**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP205B	Modern vasthu II	**2**	**4**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP211	பலன் சொல்லும் முறைகள் - II Predictive methods in Astrology-II	**2**	**2,6**	**0**	**0**	**4**	**2**	**40**	**60**	**100**
16ASP212	Prediction - II	**3**	**6,11**	**4**	**0**	**4**	**2**	**40**	**60**	**100**
	Total						**24**	**280**	**420**	**700**

SEMESTER III										
16ASP301	புதிய ஜோதிட முறைகள் Modern Astrological Methods	**2**	**3,6**	**4**	**0**	**0**	**4**	**40**	**60**	
16ASP302	ஜோதிடவிதிகளில் முகூர்த்தங்கள் - Muhurtha in Astrology	**3**	**7**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP303	மருத்துவ ஜோதிடம் Medical Astrology	**3**	**8**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP304	ஜோதிட கணித முறைகள் Casting Horoscope	**1**	**9**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP305	Dasabukthi Predictions	**1**	**11**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP306B	Ashtavargam	**2**	**10**	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16ASP312	Practical - III	**1,8**	**11**	**0**	**0**	**4**	**4**	**40**	**60**	**100**
							28	**280**	**420**	**700**
SEMESTER IV										
16ASP491	Project	**2.3**	**2,1 1**	**0**	**0**	**0**	**15**	**80**	**120**	**200**

The following are the Elective papers

List of Elective Papers		
S.No	Course Code	Subjects
1.	16ASP105(A)	எண்கணிதம் (Numerology)
2.	16ASP105(B)	ஆடிப்படை வாஸ்த்து – I (Fundamentals of Vasthu – I)
3.	16ASP105(C)	அங்கலட்சனம் மற்றும் மச்சங்கள் (Samuthrika Lakshanam)
4.	16ASP205(A)	நவரத்தினங்கள் (Gemology)
5.	16ASP205(B)	நவீன வாஸ்த்து – II (Modern Vasthu – II)
6.	16ASP205(C)	கைரேகை சாஸ்திரம் (Palmistry)
7.	16ASP306(A)	தாஜிகம் (Thajigam)
8.	16ASP306(B)	அஷ்டவர்க்கம் (Astavargam)
9.	16ASP306(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
(Scheme of Examination for 2016- 2017 onwards)
B.Sc., BIOCHEMISTRY CURRICULUM

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										
16LSU 101	Language -I	I	a	4	-	-	4	40	60	100
16ENU101	English	I	a	4	-	-	4	40	60	100
16BCU101	Molecules of Life	I	b, k	3	1	-	4	40	60	100
16BCU102	Cell Biology	I	d, k	4	-	-	4	40	60	100
16BCU103	Membrane Biology and Bioenergetics	I	f	3	1	-	4	40	60	100
16BCU111	Molecules of Life- Practical	III	d	-	-	3	2	40	60	100
16BCU112	Cell biology - Practical	III	d	-	-	3	2	40	60	100
16BCU113	Membrane Biology and Bioenergetics – Practical	III	c, f	-	-	4	2	40	60	100
Semester Total				**19**	**1**	**10**	**26**	**320**	**480**	**800**
SEMESTER – II										
16LSU 201	Language – II	I	a	4	-	-	4	40	60	100
16BCU201	Proteins	III	e, k	4	-	-	4	40	60	100
16BCU202	Enzymes	III	e	4	1	-	4	40	60	100
16BCU203	Human Physiology	I	e	4	-	-	4	40	60	100
16BCU211	Proteins – Practical	III	e	-	-	3	2	40	60	100
16BCU212	Enzymes- Practical	III	e	-	-	3	2	40	60	100
16BCU213	Human Physiology - Practical	III	e	-	-	4	2	40	60	100
16AEC 201	Environmental Studies	IV	h	3	-	-	4	40	60	100
Semester Total				**19**	**1**	**10**	**26**	**320**	**480**	**800**
SEMESTER – III										
16BCU301	Metabolism of Carbohydrates and Lipids	I	f	4			4	40	60	100
16BCU302	Metabolism of Amino acids and Nucleic acids	I	f	4			4	40	60	100
16BCU303	Hormone: Biochemistry and Functions	V	d, e, k	3	1	-	4	40	60	100
16BCU311	Metabolism of Carbohydrates and Lipids – Practical	III	c, f	-	-	4	2	40	60	100
16BCU312	Metabolism of Amino acids and Nucleic acids- Practical	III	c, f	-	-	4	2	40	60	100
16BCU313	Hormone: Biochemistry and Functions – Practical	III	j	-	-	4	2	40	60	100
16BCU304A	Tools and Techniques in Biochemistry	II	c, f	3	-	-	3	40	60	100
16BCU304B	Concepts in Genetics	I	c, f							
16BCU314	A-Tools and Techniques in Biochemistry – Practical	III	c, f	-	-	3	1	40	60	100
16BCU314	B-Concepts in Genetics - Practical	III	c, f							
Semester Total				**14**	**1**	**15**	**22**	**320**	**480**	**800**
SEMESTER – IV										
16BCU401	Gene Organization, Replication and Repair	I, II	g	4	-		4	40	60	100
16BCU402	Gene Expression and Regulation	I, II	g	4	-		4	40	60	100
16BCU403	Immunology	V	i, j	3	1	-	4	40	60	100
16BCU411	Gene Organisation, Replication and Repair- Practical	III	c, g	-	-	4	2	40	60	100
16BCU412	Gene Expression and Regulation- Practical	III	c, g	-	-	4	2	40	60	100

16BCU413	Immunology Practical	III	i, j	-	-	4	2	40	60	100
16BCU404A	Bioinformatics	III	c, g	3	-	-	3	40	60	100
16BCU404B	Protein Purification Techniques		c, g							
16BCU414A	Bioinformatics - Practical	III	c, g	-	-	3	1	40	60	100
16BCU414B	Protein Purification Techniques - Practical		c, g							
Semester Total				**14**	**1**	**15**	**22**	**320**	**480**	**800**
SEMESTER – V										
16BCU501A	Clinical Biochemistry	II, III	d, e	3	-	-	3	40	60	100
16BCU501B	Biochemical Correlation of Diseases	II, III	d, e							
16BCU511A	Clinical Biochemistry	III	j	-	-	4	1	40	60	100
16BCU511B	Biochemical Correlation of Diseases	III	j							
16BCU502A	Basic Microbiology	I	d, e,	4	-	-	4	40	60	100
16BCU502B	Nutritional Biochemistry	I	i, l							
16BCU503A	Plant Biochemistry	V	D	4	-	-	4	40	60	100
16BCU503B	Advanced cell biology	I	d, k							
16BCU504A	Molecular Basis of Non-Infectious diseases	V	d, e	4	-	-	4	40	60	100
16BCU504B	Molecular Basis of Infectious diseases	V	d, e							
16BCU512A	Basic Microbiology- Practical	III	j	-	-	4	2	40	60	100
16BCU512B	Nutritional Biochemistry- Practical	III	j							
16BCU513A	Plant Biochemistry-- Practical	III	j	-	-	4	2	40	60	100
16BCU513B	Advanced Cell Biology- Practical	III	j							
16BCU514A	Molecular Basis of Non-Infectious Diseases-Practical	III	j	-	-	4	2	40	60	100
16BCU514B	Molecular Basis of Infectious Diseases-Practical	III	j							
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – VI										
17BCU601A	Genetic Engineering and Biotechnology	I	g, n, l	3	-	-	3	40	60	100
17BCU601B	Recombinant DNA Technology	I	g, n, l							
16BCU611A	Genetic Engineering and Biotechnology-Practical	III	e	-	-	3	1	40	60	100
16BCU611B	Recombinant DNA Technology-Practical	III	e							
16BCU602A	Biostatistics	III	e, l	4			4	40	60	100
16BCU602B	Fundamentals of nanotechnology	III	e, l							
16BCU603A	A- Drug Biochemistry	II	i, j, l	4			4	40	60	100
16BCU603B	B-Food Preservation Technology	II	i, j, l							
16BCU612A	A-Biostatistics- Practical	III	e			4	2	40	60	100
16BCU612B	B-Fundamentals of nanotechnology- Practical	III	e							
16BCU613A	A- Drug Biochemistry- Practical	III	e			4	2	40	60	100
16BCU613B	B-Food Preservation Technology- Practical	III	e							
17BCU691	Project work	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

Code: 16BCU101

16 -Academic Year

BC -Biochemistry

U - Bachelor'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…)

SKILL ENHANCEMENT COURSE

Semester	Subject Code	Skill Enhancement Course
III	16BCU304A	Tools and Techniques in Biochemistry
	16BCU304B	Concepts in Genetics
	16BCU314A	Tools and Techniques in Biochemistry - Practical
	16BCU314B	Concepts in Genetics - Practical
IV	16BCU404A	Bioinformatics
	16BCU404B	Protein Purification Techniques
	16BCU414A	Bioinformatics- Practical
	16BCU414B	Protein Purification Techniques- Practical
V	16BCU501A	Clinical Biochemistry
	16BCU501B	Biochemical Correlations and Diseases
	16BCU511A	Clinical Biochemistry- Practical
	16BCU511B	Biochemical Correlations and Diseases- Practical
VI	16BCU601A	Genetic Engineering and Biotechnology
	16BCU601B	Recombinant DNA Technology
	16BCU611A	Genetic Engineering and Biotechnology- Practical
	16BCU611B	Recombinant DNA Technology- Practical

DISCIPLINE SPECIFIC ELECTIVE

Semester	Subject Code	Discipline Specific Elective
V	16BCU502A	Basic Microbiology
	16BCU502B	Nutritional Biochemistry
	16BCU512A	Basic Microbiology- Practical
	16BCU512B	Nutritional Biochemistry- Practical
V	16BCU503A	Plant Biochemistry
	16BCU503B	Advanced Cell Biology
	16BCU513A	Plant Biochemistry- Practical
	16BCU513B	Advanced Cell Biology- Practical
V	16BCU504A	Molecular basis of non-infectious human diseases
	16BCU504B	Molecular basis of infectious diseases
	16BCU514A	Molecular basis of non-infectious human diseases- Practical
	16BCU514B	Molecular basis of infectious diseases- Practical
VI	16BCU602A	Biostatistics
	16BCU602B	Fundamentals of nanotechnology
	16BCU612A	Biostatistics- Practical
	16BCU612B	Fundamentals of nanotechnology- Practical
VI	16BCU603A	Drug Biochemistry
	16BCU603B	Food Preservation Technology
	16BCU613A	Drug Biochemistry- Practical
	16BCU613B	Food Preservation Technology- Practical
VI	16BCU691	**Project**

CORE COURSE

CC-1: Molecules of Life
CC-2: Cell Biology
CC-3: Membrane Biology and Bioenergetics
CC-4: Proteins
CC-5: Enzymes
CC-6: Human Physiology
CC-7: Metabolism of Carbohydrates and Lipids
CC-8: Metabolism of Amino Acids and Nucleotides
CC-9: Hormone: Biochemistry and Function
CC-10: Gene Organization, Replication and Repair
CC-11: Gene Expression and Regulation
CC-12: Immunology

SKILL ENHANCEMENT COURSE

SEC-1: Tools and Techniques in Biochemistry
SEC-2: Protein Purification Techniques
SEC-3: Clinical Biochemistry
SEC-4: Bioinformatics
SEC-5: Recombinant DNA Technology
SEC-6: Concepts in Genetics
SEC-7: Genetic Engineering and Biotechnology

SEC-8: Biochemical Correlations and Diseases

DISCIPLINE SPECIFIC ELECTIVE

DSE-1: Nutritional Biochemistry
DSE-2: Basic Microbiology
DSE-3: Molecular basis of non-infectious human diseases
DSE-4: Molecular basis of infectious diseases
DSE-5: Research Project
DSE-6: Advanced cell biology
DSE-7: Plant Biochemistry
DSE-8: Research Methodology
DSE-9 : Biostatistics
DSE-10: Fundamentals of nanotechnology
DSE-11: Food Preservation Technology
DSE-12: Drug Biochemistry

ABILITY ENHANCEMENT COMPULSORY COURSE

AECC-1: English communication

AECC-2: Environmental Studies

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
M.Sc., CURRICULUM (2016 – 2017 Batch)
(Scheme of Examination for 2016 – 2017 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										
16BCP101	Chemistry of Biopolymers	I	a	4	-	-	4	40	60	100
16BCP102	Enzymes and Microbial Technology	II	d	4	-	-	4	40	60	100
16BCP103	Bioinstrumentation and Good Laboratory Practices	II	d, e	4	-	-	4	40	60	100
16BCP104	Cellular Biochemistry	III	a	4	-	-	4	40	60	100
16BCP105 A	Plant Biochemistry	III	a	4	-	-	4	40	60	100
16BCP105 B	Plant tissue culture	I	c, f							
16BCP105 C	Biopharmacy	I	d							
16BCP111	Practical – I Quantitative Estimation and Separation Techniques	II	a	-	-	4	2	40	60	100
16BCP112	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										
16BCP201	Regulation of Metabolic Pathways	II	a	4	-	-	4	40	60	100
16BCP202	Molecular Biology	II	a, b	4	-	-	4	40	60	100
16BCP203	Endocrinology	II	a, d	4	-	-	4	40	60	100
16BCP204	Bioinformatics	III	d	4	-	-	4	40	60	100
16BCP205 A	Recombinant DNA Technology	I	d	4	-	-	4	40	60	100
16BCP205 B	Animal Tissue Culture	III	d, e							
16BCP205 C	Genomics and Proteomics	III	d							

16BCP211	Practical – III Molecular Biology and Animal Biotechnology	II	d, g	-	-	4	2	40	60	100
16BCP212	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										
16BCP301	Immunology	I	a	4	-	-	4	40	60	100
16BCP302	Clinical Biochemistry	I, III	a, d	4	-	-	4	40	60	100
16BCP303	Chemistry of Natural Products			4	-	-	4	40	60	100
16BCP304	Drug Biochemistry and Neurochemistry	III	a, d	4	-	-	4	40	60	100
16BCP305 A	Biostatistics and Research Methodology	III	e, g	4	-	-	4	40	60	100
16BCP305 B	Clinical Research and IPR	III	d, e, i							
16BCP305 C	Dietetic Management of Disease	I	d, i							
16BCP311	Practical – V Clinical Enzymes And Immunology	I, II	d, e, h	-	-	4	2	40	60	100
16BCP312	Practical – VI Clinical Biochemistry and Animal Studies	I	d, e, h	-	-	4	2	40	60	100
	Journal paper analysis and Presentation	I-III	d, e	2	-	-	-	-	-	-
Semester Total				**22**	**-**	**8**	**24**	**280**	**420**	**700**
SEMESTER – IV										
16BCP491	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**

Core Elective – 1* (Theory)		**Core Elective – 2 (Theory)***		**Core Elective – 3(Theory)***	
16BCP105-A	Plant Biochemistry	16BCP205-A	Recombinant DNA Technology	16BCP305-A	Biostatistics and Research Methodolology
16BCP105-B	Plant tissue culture	16BCP205-B	Animal Tissue Culture	16BCP305-B	Clinical Research and IPR
16BCP105-C	Biopharmacy	16BCP205-C	Genomics and	16BCP305-C	Dietetic

			Proteomics		Management of Disease

Blue – Employability
Green – Entrepreneurship
Red – Skill Development

Code: 16BCP101

16	- Academic Year
BC	- Biochemistry
P	- Masters 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…)
*****	The candidate has to select any one elective course from three options in each semester

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 **b**iochemist 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

KARPAGAM ACADEMY OF HIGHER EDUCATION
Department of Biotechnology
(Scheme of examination for 2016-2017 onwards)
B.Sc., Biotechnology Curriculum

Course code	Name of the course	Objectives and Outcomes		Hrs / week	Marks			Exam (h)	Credit
		PEO´s	PO´s & PSO´s		CIA	ESE	Total		
SEMESTER – I									
16LSU101	Language -1	-	-	04	40	60	100	3	4
16ENU101	English	-	-	04	40	60	100	3	4
16BTU101	Biochemistry and Metabolism	I	a, b	04	40	60	100	3	4
16BTU102	Cell Biology	I	a, b	04	40	60	100	3	4
16BTU103	Chemistry -1	I	a	04	40	60	100	3	4
16BTU111	Biochemistry & Metabolism Practical	I	a, b	04	40	60	100	3	2
16BTU112	Cell Biology Practical	I	a, b	03	40	60	100	3	2
16BTU113	Chemistry -1 Practical	I	a	03	40	60	100	3	2
	Semester total			**30**	**320**	**480**	**800**	**–**	**26**
SEMESTER – II									
16LSU201	Language -1	-	-	04	40	60	100	3	4
16BTU201	Genetics	II	e	04	40	60	100	3	4
16BTU202	Chemistry -2	I	a	04	40	60	100	3	4
16BTU203	General Microbiology	I	c	04	40	60	100	3	4
16BTU211	Genetics Practical	II	e	03	40	60	100	3	2
16BTU212	Chemistry- 2 Practical	I	a	03	40	60	100	3	2
16BTU213	General Microbiology Practical	I	c	04	40	60	100	3	2
16AEC201	Environmental Studies	I, IV	d, o	04	40	60	100	3	4
	Semester total			**30**	**320**	**480**	**800**	**–**	**26**
SEMESTER – III									
16BTU301	Plant Physiology	II	e	04	40	60	100	3	4
16BTU302	Molecular Biology	II	e	04	40	60	100	3	4
16BTU303	Immunology	II	f	04	40	60	100	3	4
16BTU304A / 16BTU304B	Molecular Diagnostics	III, IV	k, l, o	03	40	60	100	3	3
	Biotechnology and Human Welfare	I, III	d, l						
16BTU311	Plant Physiology Practical	II, IV	e, n	04	40	60	100	3	2
16BTU312	Molecular Biology -Practical	II, IV	e, n	04	40	60	100	3	2
16BTU313	Immunology Practical	II	f, n	04	40	60	100	3	2
16BTU314A	Molecular Diagnostics Practical	III, IV	k, l, o, n	03	40	60	100	3	1
16BTU314B	Biotechnology and Human Welfare Practical	III, IV	d, l, n						
	Semester total			**30**	**320**	**480**	**800**	**–**	**22**
SEMESTER – IV									
16BTU401	Bioprocess Technology	II	g, h	04	40	60	100	3	4
16BTU402	Recombinant DNA Technology	II	e, g	04	40	60	100	3	4
16BTU403	Genomics and Proteomics	II, III	e, h, g, j, l	04	40	60	100	3	4
16BTU404A	Industrial Fermentation	II	g, h	03	40	60	100	3	3
16BTU404B	Enzymology	II	e, g, h						
16BTU412	Recombinant DNA Technology Practical	II, IV	e, g, n	04	40	60	100	3	2
16BTU413	Genomics and Proteomics	II, III,	e, h, g, j,	04	40	60	100	3	2

	Practical	IV	l, n						
16BTU414A	Industrial Fermentation Practical	II, IV	g, h, n	03	40	60	100	3	1
16BTU414B	Enzymology Practical	II, IV	e, g, h, n						
	Semester total			**30**	**320**	**480**	**800**	**–**	**22**
			SEMESTER – V						
16BTU501A	Plant Diversity I	I	a	03	40	60	100	3	3
16BTU501B	Basics of Forensic Science	IV	l						
16BTU502A	Bioinformatics	III, IV	j, l	04	40	60	100	3	4
16BTU502B	Plant Diversity II	I	a						
16BTU503A	Plant Biotechnology	II, III	i, g	04	40	60	100	3	4
16BTU503B	Evolutionary Biology	I, III	b, i						
16BTU504A	Animal Biotechnology	III	i	04	40	60	100	3	4
16BTU504B	Animal diversity-I	I	a						
16BTU511A	Plant Diversity I Practical	I, IV	a, n	03	40	60	00	3	1
16BTU511B	Basics of Forensic Science Practical	III, IV	l, n						
16BTU512A	Bioinformatics Practical	III, IV	j, l, n	04	40	60	100	3	2
16BTU512B	Plant Diversity –II Practical	I, IV	a, n						
16BTU513A	Plant Biotechnology Practical	II, III, IV	g, i, n	04	40	60	100	3	2
16BTU513B	Evolutionary Biology Practical	I, III, IV	b, i, n						
16BTU514A	Animal Biotechnology Practical	III, IV	i, n	04	40	60	100	3	2
16BTU514B	Animal Diversity-I Practical	I	a, n						
	Semester total			**30**	**320**	**480**	**800**	**–**	**22**
			SEMESTER – VI						
16BTU601A	I.P.R. Entrepreneurship, Bioethics & Biosafety	III, IV	k, l, o	03	40	60	100	3	3
16BTU601B	Bio- analytical Tool	I, III	d, l						
16BTU602A	Medical Microbiology	I, III	c, k	04	40	60	100	3	4
16BTU602B	Environmental Biotechnology	III, IV	d, k, l						
16BTU603A	Biostatistics	III, IV	l, o	04	40	60	100	3	4
16BTU603B	Environment Management	III, IV	d, k, l						
16BTU611A	I.P.R. Entrepreneurship, Bioethics & Biosafety Practical	III, IV	k, l, o, n	03	40	60	100	3	1
16BTU611B	Bio-analytical Tool Practical	III, IV	d, l, n						
16BTU612A	Medical Microbiology Practical	III, IV	c, k, n	04	40	60	100	3	2
16BTU612B	Environmental Biotechnology Practical	I, III, IV	d, k, l, n						
16BTU613A	Biostatistics Practical	III	l, o, n	04	40	60	100	3	2
16BTU613B	Environment Management Practical	I, III, IV	d, k, l, n						
16BTU691	DSE – 6 Project	III	l	08	40	60	100	3	6
ECA / NCC / NSS / Sports / General interest etc.,									Good

Semester total			**30**	**280**	**420**	**700**	**–**	**22**
Grand Total			**180**	**1880**	**2820**	**4700**	**–**	**140**

LS: Language course; EN: English course; SEC: Skill-enhancement course; DEC: Discipline -specific elective

Blue – Employability **Green – Entrepreneurship** **Red- Skill Development**

Skill Enhancement Elective Courses – Theory		
Semester	**Subject code**	**Subject**
III	16BTU304A	Molecular Diagnostics
	16BTU304B	Biotechnology and Human Welfare
IV	16BTU404A	Industrial Fermentation
	16BTU404B	Enzymology
V	16BTU501A	Plant Diversity I
	16BTU501B	Basics of Forensic Science
VI	16BTU601A	I.P.R. Entrepreneurship, Bioethics & Biosafety
	16BTU601B	Bio- analytical Tool

Skill Enhancement Elective Courses - Practicals		
Semester	**Subject code**	**Subject**
III	16BTU314A	Molecular Diagnostics Practical
	16BTU314B	Biotechnology and Human Welfare Practical
IV	16BTU414A	Industrial Fermentation Practical
	16BTU414B	Enzymology Practical
V	16BTU511A	Plant Diversity I Practical
	16BTU511B	Basics of Forensic Science Practical
VI	16BTU611A	I.P.R. Entrepreneurship, Bioethics & Biosafety Practical
	16BTU611B	Bio-analytical Tool Practical

Discipline Specific Elective Courses-Theory		
Semester	**Subject code**	**Subject**
V	16BTU502A	Bioinformatics
	16BTU502B	Plant Diversity II
	16BTU503A	Plant Biotechnology
	16BTU503B	Evolutionary Biology
	16BTU504A	Animal Biotechnology
	16BTU504B	Animal Diversity-I
VI	16BTU602A	Medical Microbiology
	16BTU602B	Environmental Biotechnology
	16BTU603A	Biostatistics
	16BTU603B	Environment Management

Discipline Specific Elective Courses –Practical		
Semester	**Subject Code**	**Subject**
V	16BTU512A	Bioinformatics Practical
	16BTU512B	Plant Diversity –II Practical
	16BTU513A	Plant Biotechnology Practical
	16BTU513B	Evolutionary Biology Practical
	16BTU514A	Animal Biotechnology Practical
	16BTU514B	Animal Diversity-I Practical
VI	16BTU612A	Medical Microbiology Practical
	16BTU612B	Environmental Biotechnology Practical
	16BTU613A	Biostatistics Practical
	16BTU613B	Environment Management Practical
	16BTU691	Project Work

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											×	×	×	×	×

KARPAGAM ACADEMY OF HIGHER EDUCATION
M.Sc., Biotechnology Curriculum (CBCS)
(2016 – 2017 Batch)

Course code	Name of the course	Objectives and Outcomes		Hrs / Week	Marks			Exam Hrs	Credit (s)
		PEO´s	PO´s & PSO´s		CIA	ESE	Total		
SEMESTER – I									
16BTP101	Biochemistry	I	a, b	4	40	60	100	3	4
16BTP102	Microbiology	I, II	a, b, c, d	4	40	60	100	3	4
16BTP103	Cell Biology and Molecular Genetics	I, II	a, d	4	40	60	100	3	4
16BTP104	Food Biotechnology	I, II	a, d	4	40	60	100	3	4
16BTP105A	Bioinstrumentation and Biostatistics	II, III	d, e, f	4	40	60	100	3	4
16BTP105B	Nano-Biotechnology	II	d						
16BTP105C	Bio-energy Technology	II	d						
16BTP111	Biochemistry, Cell Biology and Molecular Genetics - Practical – I	I, II, III	a, b, d, f	4	40	60	100	3	2
16BTP112	Microbiology, Food Biotechnology - Practical – II	I, II, III	a, b, c, d, f	4	40	60	100	3	2
Journal Paper Analysis & Presentation				2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**
SEMESTER – II									
16BTP201	Recombinant DNA technology	II, III	d, e	4	40	60	100	3	4
16BTP202	Fermentation Technology	II, III	d, e	4	40	60	100	3	4
16BTP203	Environmental Biotechnology	II, III	d, e	4	40	60	100	3	4
16BTP204	Immunotechnology	II, III	d, e	4	40	60	100	3	4
16BTP205A	Pharmaceutical Biotechnology	II, III	d, e, f	4	40	60	100	3	4
16BTP205B	Biosafety and IPR	IV	g, h						
16BTP205C	Tissue Engineering	IV	g						
16BTP211	Recombinant DNA technology, Immunology -Practical – III	II, III	d, e, f	4	40	60	100	3	2
16BTP212	Fermentation Technology, Environmental Biotechnology - Practical – IV	II, III	d, e, f	4	40	60	100	3	2
Journal Paper Analysis & Presentation				2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**
SEMESTER – III									
16BTP301	Plant Biotechnology	II, III, IV	d, g, h	4	40	60	100	3	4
16BTP302	Animal Biotechnology	II, III, IV	d, g, h	4	40	60	100	3	4
16BTP303	Bioinformatics	IV	g	4	40	60	100	3	4
16BTP304	Genomics and Proteomics	II, III, IV	d, e, f, g	4	40	60	100	3	4
16BTP305A	Medicinal Plant Biotechnology	IV	g	4	40	60	100	3	4
16BTP305B	Industrial Toxicology	IV	g						
16BTP305C	System Biology	IV	g						
16BTP311	Plant and Animal Biotechnology- Practical – V	II, III, IV	d, g, h, f	4	40	60	100	3	2
16BTP312	Bioinformatics -Practical – VI	II, III, IV	d, g, h, f	4	40	60	100	3	2
Journal Paper Analysis & Presentation				2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**

Course code	Name of the course	Objectives and Outcomes		Hrs / Week	Marks			Exam Hrs	Credit (s)
		PEO´s	PO´s & PSO´s		CIA	ESE	Total		
SEMESTER – IV									
16BTP491	Project and *Viva Voce*	III, IV	f, g, h, i	-	80	120	200	-	15
Semester total				**-**	**80**	**120**	**200**	**-**	**15**
				90	**640**	**1380**	**2300**		**87**

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)**
16BTP105A	Bioinstrumentation and Biostatistics	16BTP205A	Pharmaceutical Biotechnology	16BTP305A	Medicinal plant Biotechnology
16BTP105B	Nano-Biotechnology	16BTP205B	Bio-safety and IPR	16BTP305B	Industrial Toxicology
16BTP105C	Bio-energy Technology	16BTP205C	Tissue Engineering	16BTP305C	System Biology

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

Blue – Employability **Green – Entrepreneurship** **Red-** **Skill** **Development**

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
2016-2017

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

Preamble

Karpagam University 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 Discipline Specific Elective (DSE) Course: Elective courses offered by the main discipline/subject of study is referred to as Discipline Specific Elective.

2.2 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.

Objectives of the Programme

To provide a broad foundation in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective. The student will learn the laboratory skills needed to design, safely conduct and interpret chemical research. The student will acquire a foundation of chemistry of sufficient breadth and depth to enable them to understand and critically interpret the primary chemical literature. The student will learn professionalism, including the ability to work in teams and apply basic ethical principles. The course also prepares the graduates for employment as chemists.

KARPAGAM ACADEMY OF HIGHER EDUCATION
UG PROGRAM (CBCS)
(2016 – 2017 Batch)

B.Sc., Chemistry program

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										
16LSU101	Language –I	4	7	04	0	0	4	40	60	100
16ENU 101	English	4	7	04	0	0	4	40	60	100
16CHU101	Inorganic Chemistry I:Atomic structure and Chemical Bonding	1	1,3	05	0	0	5	40	60	100
16CHU102	Physical Chemistry I: States of Matter and Ionic Equilibrium	1,2,3	2,3,4, 5,7	05	0	0	5	40	60	100
16CHU103	Organic Chemistry I: Basics and Hydrocarbons	1	1,3	04	0	0	4	40	60	100
16CHU111	Atomic structure and Chemical Bonding- Practical	1	1,4,1 0	0	0	02	1	40	60	100
16CHU112	States of Matter and Ionic Equilibrium- Practical	1,2	2,3,4, 9	0	0	02	1	40	60	100
16CHU113	Basics and Hydrocarbons- Practical	1	1,4,1 0	0	0	04	2	40	60	100
	Semester total						26	320	480	800
16LSU201	Language –II			04	0	0	4	40	60	100
16CHU201	Physical Chemistry II:Chemical Thermodynamics and its Application	1,2	2,5,1 0	05	0	0	5	40	60	100
16CHU202	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
16CHU203	Organic Chemistry II: Oxygen Containing Functional Groups	1,2	2,5	05	0	0	5	40	60	100
16CHU211	Chemical Thermodynamics and its Application- Practical	1,2,3	2,3,4, 9	0	0	02	1	40	60	100
16CHU212	s-block and p-block Elements- Practical	1,2,3	2,3,4, 9	0	0	04	2	40	60	100
16CHU213	Oxygen Containing Functional Groups- Practical	1,2,3	2,3,4, 9	0	0	02	1	40	60	100
16AEC201	Environmental Studies	2	-	04	0	0	4	40	60	100
	Semester total						**26**	**320**	**480**	**800**
16CHU301	Physical Chemistry III: Phase Equilibria and Chemical Kinetics	1,2,3	2,3,4, 10	04	0	0	4	40	60	100
16CHU302	Inorganic Chemistry III: Coordination Chemistry	1	1,3	04	0	0	4	40	60	100
16CHU303	Organic Chemistry III :Nitrogen containing functional groups,	1,2,3, 4	2,3,5, 7,8	04	0	0	4	40	60	100

	Heterocyclic Chemistry and Natural products)									
16CHU311	Phase Equilibria and Chemical Kinetics- Practical	1,2	2,3,4, 9	04	0	04	2	40	60	100
16CHU312	Coordination Chemistry- Practical	1,2	2,3,4, 9	04	0	04	2	40	60	100
16CHU313	Nitrogen containing functional groups, Heterocyclic Chemistry and Natural products - Practical			04	0	04	2	40	60	100
16CHU304A	Pharmaceutical chemistry	1,2,3	2,3,6, 10	03	0	0	3	40	60	100
16CHU304B	IT skills for chemists									
16CHU314A	Pharmaceutical chemistry- Practical	1,2,3	2,3,6, 10	03	0	**03**	1	40	60	100
16CHU314B	IT skills for chemists- Practical									
16CHU305	Introduction to Water Management – self study	1,2,3, 4	2,3,4, 9	0	0	0	4	-	100	100
	Semester total						**26**	**320**	**580**	**900**
16CHU401	Physical Chemistry IV: Electrochemistry	1,2,3	1,2,4, 5,9	04	0	0	4	40	60	100
16CHU402	Inorganic Chemistry IV: Organometallic Chemistry	1,2,3	2,3,4, 5,6	04	0	0	4	40	60	100
16CHU403	Organic Chemistry IV : Organic Spectroscopy	1,2,3	2,3,4, 6	04	0	0	4	40	60	100
16CHU411	Electrochemistry- Practical	1,2,3	2,3,4, 5,6	0	0	04	2	40	60	100
16CHU412	Organometallic Chemistry- Practical	1,2	2,3,4, 9	0	0	04	2	40	60	100
16CHU413	Organic Spectroscopy- Practical	1,2,3	2,4,6, 7,8	0	0	04	2	40	60	100
16CHU404A	Green Methods in Chemistry	1,2,3	1,3,6, 8,9	03	0	0	3	40	60	100
16CHU404B	Analytical clinical Biochemistry	1,2,3	1,2,3, 10							
16CHU414A	Green Methods in Chemistry- Practical	1,2,3	1,3,6, 8,9	0	0	03	1	40	60	100
16CHU414B	Analytical clinical Biochemistry- Practical	1,2,3	1,2,3							
	Semester total						**22**	**320**	**480**	**800**
16CHU501A	Cheminformatics	1,4	1,4,5, 10	03	0	0	3	40	60	100
16CHU501B	Chemistry of Cosmetics and perfumes	1,2,3	2,3,4, 10							
16CHU511A	Cheminformatics- Practical	1,2,3	2,3,4, 7,8	0	0	03	1	40	60	100
16CHU511B	Chemistry of Cosmetics and perfumes- Practical	1, 2	3,4,7							
16CHU502A	Polymer Chemistry	2,3	2,5,9	04	0	04	4	40	60	100
16CHU502B	Applications of computers in Chemistry	2,5	2,3,4							

16CHU503A	Inorganic Materials of industrial Importance	1,2,3	2,3,4, 5,6	04	0	0	4	40	60	100
16CHU503B	Analytical Methods in Chemistry	2,3	3,4,7, 9							
16CHU504A	Instrumental methods of chemical analysis	1,2,3	1,2,5, 8,10	04	0	0	4	40	60	100
16CHU504B	Novel inorganic Solids	1,23,	2,3,7							
16CHU512A	Polymer Chemistry- Practical	2,3	1,2,5, 8	0	0	04	2	40	60	100
16CHU512B	Applications of computers in Chemistry- Practical	2,3	2,3,7, 9							
16CHU513A	Inorganic Materials of industrial Importance- Practical	1,2,3	2,3,4, 5,6	0	0	**04**	2	40	60	100
16CHU513B	Analytical Methods in Chemistry- Practical	2,3	3,4,7, 9							
16CHU514A	Instrumental methods of chemical analysis- Practical	1,2,3	1,2,5, 8,10	0	0	**04**	2	40	60	100
16CHU514B	Novel inorganic Solids- Practical	1,23,	2,3,7							
	Semester total						**22**	**320**	**480**	**800**
16CHU601A	Basic Analytical Chemistry	1,2,3	2,4,5	03	0	0	3	40	60	100
16CHU601B	Pesticide Chemistry	1,2,3	3,6,7							
16CHU611A	Basic Analytical Chemistry-Practical	1,2,3	2,4,5	0	0	03	1	40	60	100
16CHU611B	Pesticide Chemistry- Practical	1,2,3	3,6,7							
16CHU602A	Molecular modeling and drug design	1,2,3	1,3,6, 8	04	0	**0**	4	40	60	100
16CHU602B	Industrial Chemicals and Environment	1,2,3	1,3,6, 8							
16CHU603A	Green Chemistry	1,2,3, 4	1,2,3, 5,6,8	04	0	**0**	4	40	60	100
16CHU603B	Molecules of life	1,2,3, 4	1,2,3, 5,6,8							
16CHU612A	Molecular modelling and drug design	1,2,3	2,3,6	04	0	**0**	2	40	60	100
16CHU612B	Industrial Chemicals and Environment-Practical	1,2,3	1,3,6, 8							
16CHU613A	Green Chemistry - Practical	1,2,3, 4	1,2,3, 5,6,8	0	0	04	2	40	60	100
16CHU613B	Molecules of life-Practical	1,2,3, 4	1,2,3, 5,6,8							
16CHU691	Project work	1,2,3, 4,5	1,2,3, 5,6,8, 10	0	0	08	6	40	60	100
ECA / NCC / NSS / Sports / General interest etc										Good
G. Total						**144**		**1880**	**2920**	**4800**

Programme Outcome

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 Outcome

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 -28

Entrepreneurship-Green-3

Skill development – Red-35

DEPARTMENT OF CHEMISTRY
M.Sc. CHEMISTRY
(Scheme of Examination for 2016-2017 onwards)

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

Code	Course(s)	Objectives & Outcomes		Ins *	Marks			Exam Hrs	Credit
		PEO's	PO's		CIA	ESE	Total		
	SEMESTER – I								
16CHP101	Organic Chemistry – I (Reaction Mechanisms)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP102	Inorganic Chemistry –I (Nuclear Chemistry and Metallic Clusters)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP103	Physical Chemistry- I (Quantum Chemistry and Group Theory)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP104	Organic and Inorganic Spectroscopy	1,2,3,4	1,2,3,8,9	4	40	60	100	3	4
16CHP105A 16CHP105B 16CHP105C	Elective I	1,2,3	1,3,5	4	40	60	100	3	4
16CHP111	Organic Chemistry Practical-I (Qualitative Analysis and Single Stage Preparations)	3,4	2,8,9	4	40	60	100	6	2
16CHP112	Organic Chemistry Practical-II (Quantitative Analysis and Double Stage Preparations)	3,4	2,8,9	4	40	60	100	6	2
	Journal Paper Analysis & Presentation	1,2,3	1,2,3,4,5,8,9	2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**		**24**
SEMESTER – II									
16CHP201	Organic Chemistry-II (Rearrangements, Reactions, Photochemistry and Pericyclic Reactions)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP202	Inorganic Chemistry-II (Co-ordination Chemistry)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP203	Physical Chemistry II (Chemical Kinetics and Electrochemistry)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP204	Industrial chemicals and environment	3,4	6,8	4	40	60	100	3	4
16CHP205A 16CHP205B 16CHP205C	Elective – 2 (CBCS)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP211	Inorganic Chemistry	3,4	2,8,9	4	40	60	100	6	2

	Practical-I (Qualitative Analysis and Preparations)								
16CHP212	Inorganic Chemistry Practical-II (Quantitative Analysis and Complex Preparations)	3,4	2,8,9	4	40	60	100	6	2
	Journal Paper Analysis & Presentation	1,2,3	1,2,3, 4,5,8, 9	2	-	-	-	-	-
Semester total					**280**	**420**	**700**		**24**
SEMESTER – III									
16CHP301	Organic Chemistry-III (Natural Products)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP302	Physical Chemistry –III (Thermodynamics)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP303	Physical Methods in Chemistry (Instrumentation)	1,2,3	1,3,5, 9,10	4	40	60	100	3	4
16CHP304	Nanochemistry	1,2,3	1,3,5, 9	4	40	60	100	3	4
16CHP305A 16CHP305B 16CHP305C	Elective –3 (CBCS)	1,2,3	1,3,5	4	40	60	100	3	4
16CHP311	Physical Chemistry Practical I (Molecular Weight Determination and Conductometric Titrations)	3,4	2.8,9	4	40	60	100	6	2
16CHP312	Physical Chemistry Practical II (Chemical Kinetics and Potentiometric Titrations)	3,4	2,8,9	4	40	60	100	6	2
	Journal Paper Analysis & Presentation	1,2,3	1,2,3, 4,5,8, 9	2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**		**24**
SEMESTER – IV									
	Project and Viva Voce	2,3,4	2,3,4, 8,9,10	-	80	120	200	-	15
Semester total				-	80	120	**200**	-	**15**

Grand Total			**90**	**920**	**1380**	**2300**		**87**

List of Core Course Elective					
Elective-I		**Elective-II**		**Elective-III**	
Code	**Course**	**Code**	**Course**	**Code**	**Course**
16CHP105A	Green Chemistry	16CHP205A	Research methodology for chemistry	16CHP305A	Polymer Chemistry
16CHP105B	Medicinal Chemistry	16CHP205B	Analytical Chemistry	16CHP305B	Textile Chemistry
16CHP105C	Molecular Modelling & Drug Design	16CHP205C	Organometallic Chemistry	16CHP305C	Industrial Chemistry

Employability- Blue -14
Entrepreneurship-Green-1
Skill development – Red-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 2016 – 2019 Batch onwards)
Scheme of Examination

Course Code	Name of the Course	Objectives and Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEOs	Pos	L	T	P		CIA	ESE	Total
								40	60	100
Semester 1										
16LAU101	Language - I	II	b,e,f,	6	-	-	6	40	60	100
16ENU101	English – I	I, IV	a,g,i	4	-	-	4	40	60	100
16CMU101	Financial Accounting	I, IV	a,g,i	5	-	-	5	40	60	100
16CMU102	Business organization and Management	I, IV	a,g,i	6	2	-	6	40	60	100
16CMU111	Financial Accounting (Practical)	II	b,e,f,	-	-	3	1	40	60	100
16AEC101	Business Communication	III	c,d,h	4	-	-	4	40	60	100
				25	2	3	**26**	240	360	600
Semester II										
16LAU201	Language – II	II	b,e,f,	6	-	-	6	40	60	100
16ENU201	English – II	I, IV	a,g,i	4	-	-	4	40	60	100
16CMU201	Business Law	III	c,d,h	5	-	-	5	40	60	100
16CMU202	Business Mathematics and Statistics	II	b,e,f,	6	2	-	6	40	60	100
16CMU211	Business Law (Practical)	III	c,d,h	-	-	3	1	40	60	100
16AEC 201	Environmental Studies	III	c,d,h	4	-	-	4	40	60	100
				25	2	3	**26**	**240**	**360**	**600**
Semester III										
16ENU301	English -III	I, IV	a,g,i	6	2	-	6	40	60	100
16CMU301	Company Law	III	c,d,h	6	2	-	6	40	60	100
16CMU302	Income Tax Law and Practice	II	b,e,f,	5	-	-	5	40	60	100
16CMU303 A	A. Financial Analysis and Reporting	I, IV	a,g,i	6	-	-	4	40	60	100
16CMU303 B	B. Stock Market Investment	II	b,e,f,	6	-	-				
16CMU311	Income Tax Law and Practice (Practical)	II	b,e,f,	-	-	3	1	40	60	100
				23	4	3	**22**	**200**	**300**	**500**
Semester IV										
16ENU401	English - IV	I, IV	a,g,i	6	2	-	6	40	60	100
16CMU401	Corporate Accounting	III	c,d,h	5	-	-	5	40	60	100
16CMU402	Cost Accounting	III	c,d,h	6	2	-	6	40	60	100
16CMU403A	A. International Business	III	c,d,h	6	-	-	4	40	60	100

16CMU403B	B. E-Commerce	III	c,d,h	6	-	-				
16CMU411	Corporate Accounting (Practical)	III	c,d,h	-	-	3	**1**	**40**	**60**	**100**
				23	4	3	**22**	**200**	**300**	**500**
Semester V										
16CMU501 A	A. Human Resource Management	I, IV	a,g,i	6	2	-	6	40	60	100
16CMU501B	B. Indirect tax Law	II	b,e,f,	6	2	-				
16CMU502A	A. Principles of Marketing	III	c,d,h	5	-	-	5	40	60	100
16CMU502B	B. Banking and Insurance	I, IV	a,g,i	5	-	-				
16CMU503A	A. Entrepreneurship	III	c,d,h	6	-	-	4	40	60	100
16CMU503B	B. Advertising	III	c,d,h	6	-	-				
16CMU504A	A. Principles of Micro Economics	III	c,d,h	6	2		6	40	60	100
16CMU504B	B. Business Ethics	III	c,d,h	6	2	-				
16CMU511A	A. Principles of Marketing (Practical)	III	c,d,h	-	-	3	1	40	60	100
16CMU511B	B. Banking and Insurance (Practical)	I, IV	a,g,i	-	-	3				
				23	4	3	**22**	**200**	**300**	**500**
Semester VI										
16CMU601A	A. Management Accounting	III	c,d,h	5	-	-	5	40	60	100
16CMU601B	B. Computer Application in Business	II	b,e,f,	5	-	-				
16CMU602A	A. Office Management and Secretarial Practice	I, IV	a,g,i	6	2	-	6	40	60	100
16CMU602B	B. Fundamentals of Investment	II	b,e,f,	6	2	-				
16CMU603A	A. Personal Selling and Salesmanship	III	c,d,h	6	-	-	4	40	60	100
16CMU603B	B. Consumer Protection	III	c,d,h	6	-	-				
16CMU604A	A. Indian Economy	III	c,d,h	6	2	-	6	40	60	100
16CMU604B	B. Retail Management	III	c,d,h	6	2	-				
16CMU611A	A. Management Accounting (Practical)	III	c,d,h	-	-	3	1	40	60	100
16CMU611B	B. Computer Application in Business	II	b,e,f,	-	-	3	1	40	60	100
				23	4	3	22	**200**	**300**	**500**
ECA / NCC / NSS / Sports / General interest etc										**Good**
							140	**1280**	**1920**	**3200**

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.	✓		√	√			✓	√	✓

KARPAGAM ACADEMY OF HIGHER EDUCATION

DEPARTMENT OF COMMERCE

B.COM (Business Process Services)

(For the students admitted during the year 2016-2019 Batch onwards)

Scheme of Examination

Course Code	Name of the Course	Objectives and Outcomes		Instruction Hours/Week			Credit	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	TOTAL
								40	60	100
SEMESTER-I										
16LAU101	Language-I	I, II, III	a,b,c,d,e, f,g,h,i	6	0	0	6	40	60	100
16ENU101	English-I	II,IV	b,c,d,e,f, g,h,i	4	0	0	4	40	60	100
16BPU101	Financial Accounting	I,II	a,b,c,d,e, f,g,h,i	5	0	0	5	40	60	100
16BPU111	Financial Accounting (Practical)	I,II	a,b,c,d,e, f,g,h,i	0	0	3	1	40	60	100
16BPU102	Business Organization and Management	III,IV	b,c,d,e,f, g,h,i	6	2	0	6	40	60	100
16AEC101	Business Communication	II,IV	d,e,f,h	4	0	0	4	40	60	100
	Semester Total			25	2	3	26	240	360	600
Semester -II										
16LAU201	Language-II	I, II, III	a,b,c,d,e, f,g,h,i	6	0	0	6	40	60	100
16ENU201	English-II	II,IV	e,g,h	4	0	0	4	40	60	100
16BPU201	Business Law	I,II,IV	a,b,c,d,e, f,g,h,i	5	0	0	5	40	60	100
16BPU211	Ms- Office and Automation (Practical)	I,II,III	a,b,c,d,e, f,g,h,i	0	0	3	1	40	60	100
16BPU202	Business Mathematics and Statistics	I,II,III	a,b,c,d,e, f,g,h,i	6	2	0	6	40	60	100
16AEC201	Environmental Studies	III,IV	b,c,i	4	0	0	4	40	60	100
	Semester Total			25	2	3	26	240	360	600
SEMESTER-III										

16ENU301	English-III	II,IV	b,c,d,e,f,g,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16BPU301	Business process services in Finance and Accounting	II,III	b,c,d,e,f,g,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16BPU302	Corporate Law	II,IV	b,c,d,e,f,g,h,i	**5**	**0**	**0**	**5**	**40**	**60**	**100**
16BPU311	Corporate Law (Practical)	II,IV	b,c,d,e,f,g,h,i	**0**	**0**	**3**	**1**	**40**	**60**	**100**
16BPU303A	Business Process Services in Insurance	I,II,III	a,b,c,d,e,f,g,h,i	**6**	**0**	**0**	**4**	**40**	**60**	**100**
16BPU303B	Financial Analysis and Reporting	I,III	a,b,c,d,e,,h,i	**6**	**0**	**0**	**4**			
	Semester Total			**23**	**4**	**3**	**22**	**200**	**300**	**500**
SEMESTER-IV										
16ENU401	English-IV	II,IV	e,g,h	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16BPU401	Corporate Accounting	I,II,IV	a,b,c,d,e,f,g,h,i	**5**	**0**	**0**	**5**	**40**	**60**	**100**
16BPU411	Corporate Accounting (Practical)	I,II,IV	a,b,c,d,e,f,g,h,i	**0**	**0**	**3**	**1**	**40**	**60**	**100**
16BPU402	Business process services in Banking	I,II,III	a,b,c,d,e,f,g,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16BPU403 A	Retail Environment and Market Research	I,II,III	a,b,c,d,e,f,g,h,i	**6**	**0**	**0**	**4**	**40**	**60**	**100**
16BPU403 B	E-commerce	I,III	a,b,c,d,e,h,i	**6**	**0**	**0**	**4**			
	Semester Total			**23**	**4**	**3**	**22**	**200**	**300**	**500**
SEMESTER-V										
16BPU501A	Business Process Service in Capital Market	I,II,III	a,b,c,d,e,f,g,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16BPU501 B	Entrepreneurship	I,IV	b,c,d,e,f,h,i	**6**	**2**	**0**	**6**			
16BPU502A	Taxation	I,II,IV	a,b,c,d,e,f,g,h,i	**5**	**0**	**0**	**5**	**40**	**60**	**100**
16BPU502B	Auditing	I,III,IV	a,b,c,d,e,f,g,h,i	**5**	**0**	**0**	**5**			
16BPU511A	Taxation (Practical)	I,II,IV	a,b,c,d,e,f,g,h,i	**0**	**0**	**3**	**1**	**40**	**60**	**100**
16BPU511B	Auditing (Practical)	I,III,IV	a,b,c,d,e,f,g,h,i	**0**	**0**	**3**	**1**			

16BPU503A	Managing Business Processes-I	I,II,IV	a,b,c,d,e, f,g,h,i	**6**	**0**	**0**	**4**	**40**	**60**	**100**
16BPU503B	Advertising	I,II,III	a,b,c,d,e, f,g,h,i	**6**	**0**	**0**	**4**			
16BPU504 A	Campus to Corporate Transition	II,III,IV	a,b,c,d,e, f,g,h,i	**6**	**2**	**0**	**6**	**100**	**0**	**100**
16BPU504B	Business Ethics	II,IV	b,c,d,e,f, g,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
	Semester Total			**23**	**4**	**6**	**27**	**260/200**	**240/300**	**500**
SEMESTER-VI										
16BPU601A	Financial Management	I,III	a,b,c,d,e, h,	**5**	**0**	**0**	**5**	**40**	**60**	**100**
16BPU601B	Human Resource Management	I,III	a,b,c,d,e, h,	**5**	**0**	**0**	**5**			
16BPU611A	Financial Management (Practical)	I,III	a,b,c,d,e, ,h,i	**0**	**0**	**3**	**1**	**40**	**60**	**100**
16BPU611B	Human Resource Management (Practical)	I,III	a,b,c,d,e, h,i	**0**	**0**	**3**	**1**			
16BPU602A	Cost and Management Accounting	I,II	a,b,c,d,e, f,g,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16BPU602B	Office Management and Secretarial Practice	I,III,IV	a,b,c,d,e, f,h,i	**6**	**2**	**0**	**6**			
16BPU603A	Managing Business Processes-II	I,II,IV	a,b,c,d,e, f,g,h,i	**6**	**0**	**0**	**4**	**40**	**60**	**100**
16BPU603B	Personal Selling and Salesmanship	II,III,IV	b,c,d,e,f, g,h,i	**6**	**0**	**0**	**4**			
16BPU604A	Managerial Economics	I,III,IV	a,b,c,d,e, f,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16BPU604B	Retail Management	I,II,III	a,b,c,d,e, f,g,h,i	**6**	**2**	**0**	**6**			
ECA/NCC/NSS/Sports/ General interest etc										**Good**
	Semester Total							**200**	**300**	**500**
	Grand total							**1280**	**1920**	**3200**

Program Educational Objective (PEO)

I. Graduate will familiarize oneself with knowledge and application skills in the domain of accounting, finance, insurance, taxation, and business process service

II. Graduates will acquire skills which would equip one to face the modern-day challenges and become job ready in various sectors and in particular to ITeS and BPS industry.

III. Graduates will develop a progressive learning approach in various domains of commerce and BPS industry and continue to excel in their career.

IV. Graduates will develop and exhibit a high standard of moral conduct and grow into socially responsible citizens contributing to the growth of the profession and the society.

Program Outcomes (PO)

a. Graduates will have a strong understanding of basic and advanced levels of commerce, accounting, and business process services.

b. Graduates will acquire skill in the BPS specific domains in accounting, insurance, retail management and improve decision-making skills to solve problems in day to day business activities for sustainable development.

c. Graduates will develop the ability to examine and apply in-depth domain knowledge to analyze and solve complex business problems analytically and technologically.

d. Graduates will understand the day to day issues in the business process domain and solve problems by exhibiting critical thinking skills.

e. Graduates will acquire effective and interactive communication skills to attain goals as a team by exchanging ideas.

f. Graduates will be able to integrate the skills and knowledge to provide innovative solutions.

g. Graduates will exhibit leadership to empower business organizations by working together with the team members.

PROGRAM SPECIFIC OUTCOMES (PSO)

h. Graduates will be able to do understand and learn changes in the fields relating to all domains specific to ITeS and BPS sector.

i. Graduates will be able to understand and apply the attained thoughts in securing employment in various levels and or start up a business in the field of ITeS and BPS

Program Educational Objectives	Program Outcomes								
	a	b	c	d	e	f	g	h	I
Graduate will familiarize oneself with knowledge and application skills in the domain of accounting, finance, insurance, taxation, and business process service	✓	✓	✓		✓			✓	
Graduates will acquire skills which would equip one to face the modern-day challenges and become job ready in various sectors and in particular to ITeS and BPS industry.		✓	✓	✓	✓	✓	✓	✓	✓
Graduates will develop a progressive learning approach in various domains of commerce and BPS industry and continue to excel in their career.		✓	✓	✓				✓	
Graduates will develop and exhibit a high standard of moral conduct and grow into socially responsible citizens contributing to the growth of the profession and the society.			✓	✓	✓	✓		✓	✓

KARPAGAM UNIVERSITY
DEPARTMENT OF COMMERCE
Candidates Admitted for the Batch 2016 – 2019 & Onwards
UG Degree-B. Com CA

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.	√					√			√

KARPAGAM UNIVERSITY
DEPARTMENT OF COMMERCE
Candidates Admitted for the Batch 2016 – 2019 & Onwards
UG Degree-B. Com CA

Course Code	Name of the Course	Objectives and Outcomes		Instruction Hours/Week			Credit	Maximum Marks		
		PEOs	POs	L	T	P		CIA	ESE	TOTAL
								40	60	100
SEMESTER-I										
16LAU101	Language-I	I, III	b,c,d,e,g, h	6	0	0	6	40	60	100
16ENU101	English-I	I,III, IV	a,c,d,f,h,i	4	0	0	4	40	60	100
16CCU101	Financial Accounting	I, III	b,c,d,e,g, h	5	0	0	5	40	60	100
16CCU111	Financial Accounting (Practical)	II	b,e,g	0	0	3	1	40	60	100
16CCU102	Introduction to Information Technology	I, III	b,c,d,e,g, h	5	0	0	5	40	60	100
16CCU112	Introduction to Information Technology-Practical	I,III, IV	a,c,d,f,h,i	0	0	3	1	40	60	100
16AEC101	Business Communication	I, III	b,c,d,e,g, h	4	0	0	4	40	60	100
	Semester Total						**26**	**280**	**420**	**700**
Semester –II										
16LAU201	Language-II	I, III	b,c,d,e,g, h	**6**	**0**	**0**	**6**	**40**	**60**	**100**
16ENU201	English-II	I,III, IV	a,c,d,f,h,i	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16CCU201	Business Law	I, III	b,c,d,e,g, h	**5**	**0**	**0**	**5**	**40**	**60**	**100**
16CCU211	Business Law-Practical	II	b,e,g	**0**	**0**	**3**	**1**	**40**	**60**	**100**
16CCU202	Business Mathematics and Statistics	I,III, IV	a,c,d,f,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16AEC201	Environmental Studies	II	b,e,g	**4**	**0**	**0**	**4**	**40**	**60**	**100**
	Semester Total			**25**	**2**	**3**	**26**	**240**	**360**	**600**
SEMESTER-III										
16ENU301	English-III	I,III, IV	a,c,d,f,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**

16CCU301	Corporate Accounting	I, III	b,c,d,e,g, h	**5**	**0**	**0**	**5**	**40**	**60**	**100**
16CCU311	Corporate Accounting - Practical	I,III, IV	a,c,d,f,h,i	**0**	**0**	**3**	**1**	**40**	**60**	**100**
16CCU302	Object Oriented Programming C++	I, III	b,c,d,e,g, h	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16CCU312	Object Oriented Programming C++- Practical	I,III, IV	a,c,d,f,h,i	**0**	**0**	**4**	**2**	**40**	**60**	**100**
16CCU303A	A. Corporate Law	II	b,e,g	**6**	**0**	**0**	**4**	**40**	**60**	**100**
16CCU303B	B. Retail Management	II	b,e,g	**6**	**0**	**0**	**4**	**40**	**60**	**100**
	Semester Total			**26**	**2**	**7**	**22**	**240**	**360**	**600**
SEMESTER-IV										
16ENU401	English-IV	I,III, IV	a,c,d,f,h,i	6	2	0	6	40	60	100
16CCU401	Cost Accounting	I, III	b,c,d,e,g, h	5	0	0	5	40	60	100
16CCUU411	Cost Accounting (Practical)	I,III, IV	a,c,d,f,h,i	0	0	3	1	40	60	100
16CCU402	Data Base Management System	I, III	b,c,d,e,g, h	4	0	0	4	40	60	100
16CCU412	Data Base Management System-Practical.	I,III,IV	a,c,d,f,h,i	0	0	4	2	40	60	100
16CCU403 A	A. Income Tax	I, III	b,c,d,e,g, h							
16CCU403 B	B. Stock Market Investments	II	b,e,g	6	0	0	4	40	60	100
	Semester Total			**27**	**2**	**7**	**22**	**240**	**360**	**600**
SEMESTER-V										
16CCU501A	A. Software Development with Visual Basic	I,III,IV	a,c,d,f,h,i	4	0	0	4			
16CCU501 B	B. Principles of Marketing	I,III,IV	a,c,d,f,h,i	4	0	0	4	40	60	100
16CCU511A	A. Software Development with Visual Basic-Practical	II	b,e,g	0	0	4	2			
16CCU511B	B.Principles of Marketing- Practical	II	b,e,g	0	0	4	2	40	60	100
16CCU502A	A. Management Accounting	I, III	b,c,d,e,g, h	6	2	0	6	40	60	100
16CCU502B	B. Indirect Tax Law	I,III,IV	a,c,d,f,h,i	6	2	0	6			
16CCU503A	A.Entrepreneurship	II	b,e,g	6	0	0	4	40	60	100
16CCU 503B	B. Advertising	II	b,e,g	6	0	0	4			
16CCU504A	A. Principles of Economics	I, III	b,c,d,e,g, h	6	2	0	6	40	60	100

16CCU504B	B. Business Ethics	II	b,e,g	6	2	0	6			
	Semester Total			**22**	**6**	**4**	**27**	**260/200**	**240/300**	**500**
SEMESTER-VI										
16CCU601A	**A. Internet and web Design**	I, III	b,c,d,e,g, h	**4**	**0**	**0**	**4**	**40**	**60**	**100**
16CCU601B	**B. International Business**	II	b,e,g	**4**	**0**	**0**	**4**			
16CCU611A	**Internet and web Design (Practical)**	I, III	b,c,d,e,g, h	**0**	**0**	**4**	**2**	**40**	**60**	**100**
16CCU611B	**A. International Business (Practical)**	II	b,e,g	**0**	**0**	**4**	**2**			
16CCU602A	**A. Office Management and Secretarial Practice**	I,III,IV	a,c,d,f,h,i	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16CCU602B	**B. Banking and Insurance**	I,III,IV	a,c,d,f,h,i	**6**	**2**	**0**	**6**			
16CCU603A	**A. Fundamentals of Financial Management**	I, III	b,c,d,e,g, h	**6**	**0**	**0**	**4**	**40**	**60**	**100**
16CCU603B	**B. Personal Selling and Salesmanship**	I,III,IV	a,c,d,f,h,i	**6**	**0**	**0**	**4**			
16CCU604A	**A. Indian Economy**	II	b,e,g	**6**	**2**	**0**	**6**	**40**	**60**	**100**
16CCU604B	**B. Cyber Crimes and Laws**	I,III,IV	a,c,d,f,h,i	**6**	**2**	**0**	**6**			
ECA/NCC/NSS/Sports/ General interest etc										**Good**
	Semester Total							**200**	**300**	**500**
	Grand total							**1280**	**1920**	**3200**

BACHELOR OF COMMERCE (PROFESSIONAL ACCOUNTING)

CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum

(2016 – 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- 641021, Tamil Nadu, India
Phone: 0422 – 2980011 –15 Fax No: 0422 – 2980022-23
Email: info@karpagam.com Web: www.kahedu.edu.in

DEPARTMENT OF COMMERCE
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.COM.(PA)
(2016–2017 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										
16LAU101	Language - I	I, II, III	a, e	6	0	0	6	40	60	100
16ENU101	English – I	I, II, III	a, e	4	0	0	4	40	60	100
16PAU101	Financial Accounting	I, II, III, IV	a, c, d,e, h,i	4	0	0	4	40	60	100
16PAU102	Business Law	I,III,IV	a,c,d,e,h,i	5	0	0	5	40	60	100
16PAU111	Accounting Package - Tally (Practical)	I, II, III, IV	a, c, d,e, h,i	4	0	0	2	40	60	100
16PAU112	Business Law (Practical)	I,III,IV	a,c,d,e,h,i	3	0	0	1	40	60	100
16AEC101	Business Communication	I, II, III	a, e, g, f	4	0	0	4	40	60	100
Semester Total				**30**	**0**	**0**	**26**	**280**	**420**	**700**
SEMESTER – II										
16LAU201	Language – II	I, II, III	a, e	6	0	0	6	40	60	100
16ENU201	English – II	I, II, III	a, e	4	0	0	4	40	60	100
16PAU201	Higher Financial Accounting	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
16PAU202	Business Statistics	I, II, III	a, c, d,e, h	5	0	0	5	40	60	100
16PAU211	Statistical Package Using SPSS (Practical)	I, II, III	a, c, d,e, h	3	0	0	1	40	60	100
16AEC201	Environmental Studies	I,III, IV	a, e,h, i	4	0	0	4	40	60	100
Semester Total				**28**	**2**	**0**	**26**	**240**	**360**	**600**
SEMESTER – III										
16ENU301	English – III	I, II, III	a, e	4	0	4	6	40	60	100
16PAU301	Corporate Accounting	I, II, III	a, c, e, d, h	6	2	0	6	40	60	100
16PAU302	Direct Taxation – I	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
16PAU303A	Principles of Auditing	I, II, III, IV	a, c, d,e, h,i	6	0	0	4	40	60	100
16PAU303B	Management Information System	I, II, III, IV	a, e, h,i							
Semester Total				**22**	**4**	**4**	**22**	**160**	**240**	**400**
SEMESTER – IV										
16ENU401	English – IV	I, II, III	a, e	4	0	4	6	40	60	100
16PAU401	Advanced Corporate Accounting	I, II, III, IV	a, c, d,e,h	6	2	0	6	40	60	100
16PAU402	Direct Taxation – II	I, II, III, IV	a, c, d,e, h,i	6	2	0	6	40	60	100
16PAU403A	Company Law and Secretarial Practice	I, II, III, IV	a, c, d,e, h,i	6	0	0	4	40	60	100
16PAU403B	Business Organization and Office Management	I, II, III	a, c, d,e,h							
Semester Total				**22**	**4**	**4**	**22**	**160**	**240**	**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 V										
16PAU501A	Research Methodology	I, II, III, IV	a, c, d,e,f,g, h,i	6	2	0	6	40	60	100
16PAU501B	Banking and Insurance	I, II, III	a, c, d,e, f,g,h							
16PAU502A	Financial Management	I, II, III	a, c, d,e, h	6	2	0	6	40	60	100
16PAU502B	Financial Markets, Institutions and Financial Services	I, II, III	a, c, d,e, h							
16PAU503A	Applied Cost Accounting	I, II, III	a, e,h	6	0	0	4	40	60	100
16PAU503B	Human Resource Management	I, II, III	a, e, h							
16PAU504A	Principles of Marketing	I, II, III	a, c,d, e,h	6	2	0	6	40	60	100
16PAU504B	Micro Economics	I, II, III	a, c,d, e,h							
Semester Total				**24**	**6**	**0**	**22**	**160**	**240**	**400**
SEMESTER – VI										
16PAU601A	Investment Management	I, II, III, IV	a,e,h,i	8	0	0	6	40	60	100
16PAU601B	Industrial Relations and Labour Laws	I, II, III, IV	a,e,h,i							
16PAU602A	Entrepreneurship and Project Management	I, II, III	a,e,h	8	0	0	6	40	60	100
16PAU602B	International Business	I, II, III	a,e,h							
16PAU603A	Management Accounting	I, II, III, IV	a,e,h,i	6	0	0	4	40	60	100
16PAU603B	Retail Business Management	I, II, III	a,c,d e,h							
16PAU691	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				**30**	**0**	**0**	**22**	**160**	**240**	**400**
Programme Total				**180**			**140**	**1160**	**1740**	**2900**

SKILL ENHANCEMENT COURSE

Semester	Course Code	Skill Enhancement Course	Semester	Course Code	Skill Enhancement Course
III	16PAU303A	Principles of Auditing	IV	16PAU403A	Company law and Secretarial Practice
	16PAU303B	Management Information System		16PAU403B	Business Organization and Office Management

Semester	Course Code	Skill Enhancement Course	Semester	Course Code	Skill Enhancement Course
V	16PAU503A	Applied Cost Accounting	VI	16PAU603A	Management Accounting
	16PAU503B	Human Resource Management		16PAU603B	Retail Business Management

DISCIPLINE SPECIFIC ELECTIVE

Semester	Course Code	Discipline Specific Elective	Semester	Course Code	Discipline Specific Elective
V	16PAU501A	Research Methodology	VI	16PAU601A	Investment Management
	16PAU501B	Banking and Insurance		16PAU601B	Industrials Relations and Labour Laws
	16PAU502A	Financial Management		16PAU602A	Entrepreneurship and Project Management
	16PAU502B	Financial Markets, Institutions and Financial Services		16PAU602B	International Business

GENERIC ELECTIVE

Semester	Course Code	Generic Elective	Semester	Course Code	Generic Elective
V	16PAU504A	Principles of Marketing	VI	16PAU691	Project
	16PAU503B	Micro Economics			

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.

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 2016 – 2018 Batch onwards)

Scheme of Examination

Course Code	Name of the Course	Objectives and Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEOs	Pos	L	T	P		CIA	ESE	Total
								40	60	100
Semester 1										
16CMP101	Corporate Finance	I,II	a,e,	4	-	-	4	40	60	100
16CMP102	Managerial Economics	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP103	Operations Research	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP104	Advanced Corporate Accounting	I,II, IV	a,e,b,g,h ,i	4	-	-	4	40	60	100
16CMP105A	Financial Markets and Institutions	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP105B	Marketing Management	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP105C	Human Resource Development	I,II	a,e,	4	-	-	4	40	60	100
16CMP106	Organizational Behavior	I,II	a,e,	-	-	4	2	40	60	100
16CMP111	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										
16CMP201	Applied Cost Accounting	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP202	Retail Management	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP203	Direct Taxation	III	c,d,f	4	-	-	4	40	60	100
16CMP204	Insurance and Risk Management	I,II	a,e,	4	-	-	4	40	60	100
16CMP205A	Advertisement and Sales Promotion	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP205B	Security Analysis & Portfolio Management	III	c,d,f	4	-	-	4	40	60	100
16CMP205C	Strategic Human Resource Management	I,II	a,e,	4	-	-	4	40	60	100
16CMP206	Human Resource Management	I,II	a,e,	-	-	4	2	40	60	100
16CMP211	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										
16CMP301	Management Accounting	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP302	Business Research Methods and Techniques	III	c,d,f	4	-	-	4	40	60	100
16CMP303	Indirect Taxation	III	c,d,f	4	-	-	4	40	60	100
16CMP304	Business Environment	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP305A	International Financial Management	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP305B	Consumer Behavior	IV	b,g,h,i	4	-	-	4	40	60	100
16CMP305C	Labour Legislation	I, II, III	a,e,c,d,f	4	-	-	4	40	60	100
16CMP306	Financial Services	I, II, III	a,e,c,d,f	-	-	4	2	40	60	100
16CMP311	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										
16CMP401	Corporate Administration and Secretarial Practice	IV	b,g,h,i	4	0	0	4	40	60	100
16CMP402	Entrepreneurship and Small Business Management	IV	b,g,h,i	3	0	0	3	40	60	100
16CMP491	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 2016 – 2018 Batch onwards)

Scheme of Examination

Course Code	Name of the Course	Objectives and Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEOs	Pos	L	T	P		CIA	ESE	Total
								40	60	100
Semester 1										
16CCP101	Corporate Finance	I,II	a,e	4	-	-	4	40	60	100
16CCP102	Managerial Economics	IV	b,g,h	4	-	-	4	40	60	100
16CCP103	Operations Research	IV	b,g,h	4	-	-	4	40	60	100
16CCP104	Object Oriented Programming with C++	I, II, III	a,e c,d,f,i,j	4	-	-	4	40	60	100
16CCP105A	Financial Markets and Institutions	IV	b,g,h	4	-	-	4	40	60	100
16CCP105B	Marketing Management	IV	b,g,h	4	-	-	4	40	60	100
16CCP105C	Human Resource Development	I,II	a,e	4	-	-	4	40	60	100
16CCP111	C++ (Practical)	I, II, III	a,e c,d,f,i,j	-	-	4	2	40	60	100
16CCP112	Computer Application in Business (Practical)	I, II, III	a,e c,d,f,i,j	-	-	4	2	40	60	100
	Journal Paper Analysis & Presentation	III	c,d,f,i,j	2	-	-	-	-	-	-
				22	**-**	**8**	**24**	**280**	**420**	**700**
Semester II										
16CCP201	Applied Cost Accounting	IV	b,g,h	4	-	-	4	40	60	100
16CCP202	Retail Management	IV	b,g,h	4	-	-	4	40	60	100
16CCP203	Direct Taxation	III	c,d,f,i,j	4	-	-	4	40	60	100
16CCP204	Visual Basic. Net	I, II, III	a,e c,d,f,i,j	4	-	-	4	40	60	100
16CCP205A	Advertisement and Sales Promotion	IV	b,g,h	4	-	-	4	40	60	100
16CCP205B	Security Analysis & Portfolio Management	III	c,d,f,i,j	4	-	-	4	40	60	100
16CCP205C	Strategic Human Resource Management	I,II	a,e	4	-	-	4	40	60	100
16CCP211	VB.Net (Practical)	I, II, III	a,e c,d,f,i,j	-	-	4	2	40	60	100
16CCP212	Tally (Practical)	I, II, III	a,e c,d,f,i,j	-	-	4	2	40	60	100
	Journal Paper Analysis & Presentation	III	c,d,f,i,j	2	-	-	-			
				22	**0**	**8**	**24**	**280**	**420**	**700**
Semester III										

16CCP301	Management Accounting	IV	b,g,h	4	-	-	4	40	60	100
16CCP302	Business Research Methods and Techniques	III	c,d,f,i,j	4	-	-	4	40	60	100
16CCP303	Indirect Taxation	III	c,d,f,i,j	4	-	-	4	40	60	100
16CCP304	Java	I, II, III	a,e c,d,f,i,j	4	-	-	4	40	60	100
16CCP305A	International Financial Management	IV	b,g,h	4	-	-	4	40	60	100
16CCP305B	Consumer Behavior	IV	b,g,h	4	-	-	4	40	60	100
16CCP305C	Labour Legislation	I, II, III	a,e c,d,f,i,j	4	-	-	4	40	60	100
16CCP311	JAVA (Practical)	I, II, III	a,e c,d,f,i,j	-	-	4	2	40	60	100
16CCP312	SPSS (Practical)	I, II, III	a,e c,d,f,i,j	-	-	4	2	40	60	100
	Journal Paper Analysis and Presentation	III	c,d,f,i,j	2			-	-	-	-
				22	**0**	**8**	**24**	**280**	**420**	**700**
Semester IV										
16CCP401	Corporate Administration and Secretarial Practice	IV	b,g,h	4	0	0	4	40	60	100
16CCP402	Entrepreneurship and Small Business Management	IV	b,g,h	3	0	0	3	40	60	100
16CCP491	Project and Viva Voce	III	c,d,f,i,j	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 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
(2016 – 2019)

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO I : To be a working Information Technology (IT) professional with core competencies that can be used on multi-disciplinary projects

PEO II : To understand the importance of relationship building within the IT industry

PEO III : To understand the need for lifelong learning in the exploration and journey in IT

PEO IV : To understand, evaluate and practice ethical behavior within the IT industry

PEO V : To be cognizant of security issues and their impacts on industry

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)
(2016–2017 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										
16LSU101	Language -I	V	d,e,f	04	-	-	4	40	60	100
16CAU101	Programming Fundamentals using C / C++	I	a,b,c,h	05	-	-	5	40	60	100
16CAU102	Computer System Architecture	I	a,b,g,k	04	-	-	4	40	60	100
16CAU103	Introduction to Information Technology	II	a,b,c,h	04	-	-	4	40	60	100
16CAU111	Programming Fundamentals using C / C++ (Practical)	I	a,b,c,h i,j	-	-	04	2	40	60	100
16CAU112	Computer System Architecture (Practical)	I	A,b,c, h,i,j,g, k	-	-	03	2	40	60	100
16CAU113	Introduction to Information Technology (Practical)	III	a,b,c,h ,i,j	-	-	03	2	40	60	100
16AEC101	Environmental Studies	IV	d,e	03	-	-	3	40	60	100
Semester Total				**20**	-	**10**	**26**	**320**	**480**	**800**
SEMESTER – II										
16LSU201	Language – II	V	d,e,f	04	-	-	4	40	60	100
16ENU201	English	II	d.e,f	04	-	-	4	40	60	100
16CAU201	Programming in JAVA	I	a,b,c,d	04	-	-	4	40	60	100
16CAU202	Discrete Structures	I,III	a,b	04	-	-	4	40	60	100
16CAU203	Script Language	I	g,k	04	-	-	4	40	60	100
16CAU211	Programming in JAVA - Practical	I	a,c,h,I ,j	-	-	04	2	40	60	100
16CAU212	Discrete Structures - Practical	I,III	a,b,i,j	-	-	03	2	40	60	100
16CAU213	Script Language (Practical)	I	g,k,i,j	-	-	03	2	40	60	100
Semester Total				**20**	-	**10**	**26**	**320**	**480**	**800**
SEMESTER – III										
16CAU301	Data Structures	I	a,b,c	04	-	-	4	40	60	100
16CAU302	Operating Systems	I	a,b,c	04	-	-	4	40	60	100
16CAU303	Computer Networks	III	a,b,c	04	-	-	4	40	60	100
16CAU304A / 16CAU304B	Android Programming / Struts Framework	I	g,k,i	03	-	-	3	40	60	100
16CAU311	Data Structures - Practical	I	a,b,c,i, j	-	-	04	2	40	60	100
16CAU312	Operating Systems - Practical	I	a,b,c,i,	-	-	04	2	40	60	100

			j							
16CAU313	Computer Networks (Practical)	III	a,b,c,,i ,j	-	-	04	2	40	60	100
16CAU314A / 16CAU314B	Android Programming - Practical / Struts Framework- Practical	I	g.k.i.j	-	-	03	1	40	60	100
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – IV										
16CAU401	Software Engineering	I,II	l,n,a,b	04	-	-	4	40	60	100
16CAU402	Database Management Systems	I	f,g,k	04	-	-	4	40	60	100
16CAU403	Web Programming	I	C,d,l, n	04	-	-	4	40	60	100
16CAU404A / 16CAU404B	R Programming / Software Testing	I,II	a,b,g.i	03	-	-	3	40	60	100
16CAU411	Software Engineering - Practical	I,II	b,l,n,I, j	-	-	04	2	40	60	100
16CAU412	Database Management Systems- Practical	I	b,c,k, g,I,j	-	-	04	2	40	60	100
16CAU413	Web Programming - Practical	I,II	b,l,n,I, j	-	-	04	2	40	60	100
16CAU414A / 16CAU414B	R Programming - Practical / Software Testing (Practical)	I,II	a,b,g,I ,j	-	-	03	1	40	60	100
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – V										
16CAU501A / 16CAU501B	Oracle (SQL/PL-SQL) / Programming in Python	I,II	a,b,h, g,k	03	-	-	3	40	60	100
16CAU502A / 16CAU502B	Information Security / Data Mining	I,V	a,b,h, g,k	04	-	-	4	40	60	100
16CAU503A / 16CAU503B	Microprocessor / PC Hardware & Trouble Shooting	I	A,l,n	04	-	-	4	40	60	100
16CAU504A / 16CAU504B	Digital Image Processing / Open Source Technologies	I	a,b,h	04	-	-	4	40	60	100
16CAU511A / 16CAU511B	Oracle (SQL/PL-SQL) (Practical) / Programming in Python (Practical)	I,II	a,b,h, g,k,I,j		-	03	1	40	60	100
16CAU512A / 16CAU512B	Information Security (Practical) / Data Mining (Practical)	I,II	a,b,h, g,k,I,j		-	04	2	40	60	100
16CAU513A / 16CAU513B	Microprocessor (Practical) / PC Hardware & Trouble Shooting (Practical)	I	a,l,n,I, j		-	04	2	40	60	100
16CAU514A / 16CAU514B	Digital Image Processing (Practical) / Open Source Technologies (Practical)	I	a,b,h,I ,j	-	-	04	2	40	60	100
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – VI										
16CAU601A / 16CAU601B	PHP Programming / Unix / Linux Programming	I	b,g,k	03	-	-	3	40	60	100
16CAU602A / 16CAU602B	Database Administration / Cloud Computing	I,II	b,g,k,i	04	-	-	4	40	60	100
16CAU603A / 16CAU603B	Big Data Analytics / System Programming	I	a,b,g,i	04	-	-	4	40	60	100
16CAU611A / 16CAU611B	PHP Programming - Practical/ Unix / Linux Programming - Practical	I	b,g,k,I ,j	-	-	03	`1	40	60	100
16CAU612A /	Database Administration - Practical/	I	b,g,k,I	-	-	04	2	40	60	100

16CAU612B	Cloud Computing- Practical		,j							
16CAU613A / 16CAU613B	Big Data Analytics - Practical/ System Programming - Practical	I	a,b,g,I ,j	-	-	03	2	40	60	100
16CAU691	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	16LSU101	Language –I
	16AEC101	Environmental Studies
II	16LSU201	Language –II
	16ENU201	English

Generic Elective Courses (GE) / Allied Courses		
Semester	**Course Code**	**Name of the Course**
I	16CAU102	Computer System Architecture
	16CAU112	Computer System Architecture - Practical
II	16CAU202	Discrete Structures
	16CAU212	Discrete Structures - Practical
V	16CAU503A	Microprocessor
	16CAU503B	PC Hardware & Trouble Shooting
	16CAU513A	Microprocessor (Practical)
	16CAU513B	PC Hardware & Trouble Shooting (Practical)

Core Courses (CC)		
Semester	**Course Code**	**Name of the Course**
I	16CAU101	Programming Fundamentals using C / C++
	16CAU103	Introduction to Information Technology
	16CAU111	Programming Fundamentals using C / C++ -Practical
	16CAU113	Introduction to Information Technology- Practical
II	16CAU201	Programming in JAVA
	16CAU203	Script Language
	16CAU211	Programming in JAVA - Practical
	16CAU213	Script Language -Practical
III	16CAU301	Data Structures
	16CAU302	Operating Systems
	16CAU303	Computer Networks
	16CAU311	Data Structures-Practical

	16CAU312	Operating Systems-Practical
	16CAU313	Computer Networks -Practical
IV	16CAU401	Software Engineering
	16CAU402	Database Management Systems
	16CAU403	Web Programming
	16CAU411	Software Engineering-Practical
	16CAU412	Database Management Systems-Practical
	16CAU413	Web Programming-Practical
V	16CAU501A	Oracle(SQL/PL-SQL)
	16CAU501B	Programming in Python
	16CAU502A	Information Security
	16CAU502B	Data Mining
	16CAU511A	Oracle (SQL/PL-SQL) (Practical)
	16CAU511B	Programming in Python (Practical)
	16CAU512A	Information Security (Practical)
	16CAU512B	Data Mining (Practical)
VI	16CAU601A	PHP Programming
	16CAU601B	Unix / Linux Programming
	16CAU611A	PHP Programming -Practical
	16CAU611B	Unix / Linux Programming -Practical
	16CAU691	Project and Viva Voce

Skill Enhancement Courses(SEC)		
Semester	**Course Code**	**Name of the Course**
III	16CAU304A	Android Programming
	16CAU304B	Struts Framework
	16CAU314A	Android Programming-Practical
	16CAU314B	Struts Framework-Practical
IV	16CAU404A	R Programming
	16CAU404B	Software Testing
	16CAU414A	R Programming-Practical
	16CAU414B	Software Testing-Practical
V	16CAU504A	Digital Image Processing
	16CAU504B	Open Source Technologies
	16CAU514A	Digital Image Processing-Practical
	16CAU514B	Open Source Technologies-Practical
VI	16CAU603A	Big Data Analytics
	16CAU603B	System Programming
	16CAU613A	Big Data Analytics -Practical
	16CAU613B	System Programming-Practical

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
VI	16CAU602A	Database Administration
	16CAU602B	Cloud Computing
	16CAU612A	Database Administration -Practical

	16CAU612B	Cloud Computing-Practical

MASTER OF COMPUTER APPLICATIONS (MCA)

CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum
(2016 – 2019)

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

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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Phone No. 0422-6471114, 6471115, 6453777
Fax No: 0422-2980022-3
E mail ID: info@karpagam.com
Web: www.kahedu.edu.in

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

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

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

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

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

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

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

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

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

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

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

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

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

DEPARTMENT OF COMPUTER APPLICATIONS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
PG PROGRAM (CBCS) - MCA
(2016 – 2017 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										
16CAP101	Information Technology	I,III	c,d,e	4	-	-	4	40	60	100
16CAP102	C Programming and Data Structures	I,IV	a,b,c	4	-	-	4	40	60	100
16CAP103	Computer Organization and Architecture	I ,II, IV	a,c,e, f	4	-	-	4	40	60	100
16CAP104	Mathematical Foundations	II	a,b,k	4	-	-	4	40	60	100
16CAP105	Introduction to Management Functions	I,II, III	h,i,j,k	4	-	-	4	40	60	100
16CAP111	Information Technology (Practical)	I,II, V	c,d,e	-	-	4	2	40	60	100
16CAP112	Programming in C (Practical)	I,III	a,b,c	-	-	5	2	40	60	100
16CAP113	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										
16CAP201	Object Oriented Programming with C++	I-III	b,c,d, e	4	-	-	4	40	60	100
16CAP202	Operating System	I-III	a,b,c, f	4	-	-	4	40	60	100
16CAP203	Information Systems Analysis , Design and Implementation	I-III	a,b,c d	4	-	-	4	40	60	100
16CAP204	Accounting and Management Control	I,IV	a,b,d, e	4	-	-	4	40	60	100
16CAP205	Probability and Combinations	I,II	a,b	4	-	-	4	40	60	100
16CAP211	Object Oriented Programming with C++ (Practical)	I,II, III	b,c,d, e,i,k	-	-	5	2	40	60	100
16CAP212	Operating System (Practical)	I-IV	a,b,c	-	-	4	2	40	60	100

16CAP213	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										
16CAP301	Database Management Systems	I-III	a,b,c d,e	4	-	-	4	40	60	100
16CAP302	Computer Networks	I-III	a,b,c, e,f,l	4	-	-	4	40	60	100
16CAP303	Advanced Java and Springs	I-III	b,c,e	4	-	-	4	40	60	100
16CAP304	Statistical Computing	II,II I	a,b,c, d,e	4	-	-	4	40	60	100
16CAP305	Management Support Systems	I-IV	h,i,j,k ,l	4	-	-	4	40	60	100
16CAP311	Database Management Systems (Practical)	I-III	a,b,c d,e	-	-	5	2	40	60	100
16CAP312	Computer Network (Practical)	I-III	a,b,c, e,f,j,l	-	-	4	2	40	60	100
16CAP313	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										
16CAP401	J2EE	I-III	a,b,c, d,e,i	4	-	-	4	40	60	100
16CAP402	Mobile Computing	I-III	a,b,c, d,e,f, g	4	-	-	4	40	60	100
16CAP403	Organizational Behavior	I-IV	a,f,g, h,i,j,k ,l	4	-	-	4	40	60	100
16CAP404D	Database Administration	I-III	a,b,c, e	4	-	-	4	40	60	100
16CAP404N	Cryptography And Network Security	I-III	a,b,c, f,g							
16CAP404S	Software Testing	I-III	a,b,c, d,e							
16CAP404W	XML	I-III	a,b,c, d,e							
16CAP404B	Managerial Economics	I-IV	f,g,h, i,j,k,l							
16CAP405D	Distributed DatabaseManagement System/	I-III	a,b,c, e,g,k	4	-	-	4	40	60	100

16CAP405N	TCP/IP	I-III	a,b,d c.d.e. f,j							
16CAP405S	Object Oriented Analysis and Design with UML	I-III	a,b,c, d,e							
16CAP405W	Web Services	I-III	a,b,c, e,j							
16CAP405B	Corporate Planning	I-IV	f,g,h, i,j,k,l							
16CAP411	J2EE - Practical	I-III	a,b,c, d,e,i, k,l	-	-	5	2	40	60	100
16CAP412	Mobile Computing - Practical	I-III	a,b,c, d,e,f, g,h	-	-	4	2	40	60	100
16CAP413D	DBA – Practical	I-III	a,b,c, e							
16CAP413N	Network security - Practical	I-III	a,b,c, f,g,h							
16CAP413S	Software Testing – Practical	I-IV	a,b,c, d,e	-	-	4	2	40	60	100
16CAP413W	XML – Practical	I-III	a,b,c, d,e							
16CAP413B	WAP - Practical	I-III	a,b,c, d,e							
	Journal Paper Analysis & Presentation	-	-	2	-	-	-	-	-	-
Semester Total		-	-	**22**	-	**13**	**26**	**320**	**480**	**800**
SEMESTER - V										
16CAP501	PHP5/ MySQL	I-III	a,b,c, e,f	4	-	-	4	40	60	100
16CAP502	.Net Programming	I-III	a,c,d, e	4	-	-	4	40	60	100
16CAP503	Optimization Techniques	II	a,b,d	4	-	-	4	40	60	100
16CAP504D	Data Mining and Data Warehousing	I-III	a,c,d, f,k							
16CAP504N	Network Architecture and Management	I-IV	b,c,e, l	4	-	-	4	40	60	100
16CAP504S	Software Project Management	I-IV	a,c,d, e,i,k							
16CAP504W	Ruby Programming	II	a,b							

16CAP504B	MIS Framework	I-III	a,c,d							
16CAP505D	Big Data Analytics	I-III	a,b,c,e	4	-	-	4	40	60	100
16CAP505N	Distributed Computing	I-III	a,c,d,e,f							
16CAP505S	Software Metrics	I-III	a,b,c,d,e,f,g							
16CAP505W	Semantic Web	II	a,b							
16CAP505B	Taxation Practices	I-III	a,c,d							
16CAP511	PHP5/ MySQL - Practical	I-III	a,b,c,e	-	-	5	2	40	60	100
16CAP512	.Net Programming - Practical	I-III	a,b,c,d,e	-	-	4	2	40	60	100
16CAP513D	Data Mining - Practical	I-III	a,c,e,f							
16CAP513N	Network Simulator -Practical	I-III	a,b,c,d,e							
16CAP513S	Software Development - Practical Using Moodle	I-IV	a,c,d,e,i,k	-	-	4	2	40	60	100
16CAP513W	Ruby on Rails -Practical	I-III	a,b,c,d,e							
16CAP513B	MIS -Practical	I-IV	a,b,c,d,h.i.j.k							
	Journal Paper Analysis & Presentation	-	-	2	-	-	-	-	-	-
Semester Total		-	-	**22**	**-**	**13**	**26**	**320**	**480**	**800**
SEMESTER – VI										
16CAP691	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**

Core Electives	Specialization	Course	
		Theory	Practical
I Sem 4	Database	16CAP404D Database Administration	16CAP413D DBA (Practical)
	Network	16CAP404N Cryptography And Network Security	16CAP413N Network security (Practical)
	Software Engineering	16CAP404S Software Testing	16CAP413S Software Testing (Practical)
	Web Designing	16CAP404W XML	16CAP413W XML (Practical)
	Business Management	16CAP404B Managerial Economics	16CAP413B WAP (PRACTICA
II Sem 4	Database	16CAP405D Distributed Database Management System	Nil
	Network	16CAP405N TCP/IP	
	Software Engineering	16CAP405S Object Oriented Analysis and Design with UML	
	Web Designing	16CAP405W Web Services	
	Business Management	16CAP405B Corporate Planning	
III Sem 5	Database	16CAP504D Data Mining and Data Warehousing	16CAP513D Data Mining (Practical)
	Network	16CAP504N Network Architecture and Management	16CAP513N Network Simulator (Pract
	Software Engineering	16CAP504S Software Project Management	16CAP513S Software Development (Practical) using Moodle
	Web Designing	16CAP504W Ruby Programming	16CAP513W Ruby on Rails (Practical)
	Business Management	16CAP504B MIS Framework	16CAP513B MIS (Practical)
IV Sem 5	Database	16CAP505D Big Data Analytics	Nil
	Network	16CAP505N Distributed Computing	
	Software Engineering	16CAP505S Software Metrics	
	Web Designing	16CAP505W Semantic Web	
	Business Management	16CAP505B Taxation Practices	

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
(2016–2017 Batch and onwards)
CURRICULUM

PROGRAM OUTCOMES (POs): 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		

KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
Established Under Section 3 of UGC Act, 1956)
Coimbatore - 641 021, India
FACULTY OF ARTS, SCIENCE AND HUMANITIES (FASH)
B.Sc Computer Science - Curriculum (CBCS)
(2016 – 2019 Batch)

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										
16LSU101	Language-I	IV	d,e	04	-	-	4	40	60	100
16CSU101	Programming Fundamentals using C / C++-	I	a,b,c	05	-	-	5	40	60	100
16CSU102	Computer System Architecture	I	b,c,g	04	-	-	4	40	60	100
16CSU103	Computer Fundamentals	III	h,j	04	-	-	4	40	60	100
16CSU111	Programming Fundamentals using C / C++ - Practical	I	a,b,c,g	-	-	04	2	40	60	100
16CSU112	Computer System Architecture – Practical	I	a,c,g	-	-	03	2	40	60	100
16CSU113	Computer Fundamentals – Practical	III	b,h,j	-	-	03	2	40	60	100
16AEC101	Environmental Studies	IV	d,e	03	-	-	3	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER – II										
16LSU201	Language – II	IV	d,e	04	-	-	4	40	60	100
16ENU201	English – I	II	d,f	04	-	-	4	40	60	100
16CSU201	Programming in JAVA	I	c,h,i	04	-	-	4	40	60	100
16CSU202	Discrete Structures	III	a,b	04	-	-	4	40	60	100
16CSU203	Multimedia and Applications	IV	e,i	04	-	-	4	40	60	100
16CSU211	Programming in JAVA – Practical	I	a,c,h,i	-	-	04	2	40	60	100
16CSU212	Discrete Structures – Practical	III	a,b,j	-	-	03	2	40	60	100
16CSU213	Multimedia and Applications - Practical	IV	c,e	-	-	03	2	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER - III										
16CSU301	Data Structures	I	a,b,g, h	04	-	-	4	40	60	100
16CSU302	Operating Systems	III	a,b,h, k	04	-	-	4	40	60	100
16CSU303	Computer Networks	III	a,b,j,k	04	-	-	4	40	60	100
16CSU304A	Android Programming	I	a,b,c,	03	-	-	3	40	60	100

			m							
16CSU304B	Programming in MATLAB	IV	c,d,e,i					40	60	100
16CSU311	Data Structures – Practical	I	a,b,g, h	-	-	04	2	40	60	100
16CSU312	Operating Systems – Practical	III	a,b,h, k	-	-	04	2	40	60	100
16CSU313	Computer Networks – Practical	III	a,b,j,k	-	-	04	2	40	60	100
16CSU314A	Android Programming – Practical	I	a,b,c, m	-	-	03	1	40	60	100
16CSU314B	Programming in MATLAB - Practical	IV	c,d,e,i	-	-	03		40	60	100
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – IV										
16CSU401	Design and Analysis of Algorithms	I	a,b,c, m	04	-	-	4	40	60	100
16CSU402	Software Engineering	IV	c,d,e,l	04	-	-	4	40	60	100
16CSU403	Database Management Systems	I	a,b,g, h	04	-	-	4	40	60	100
16CSU404A	HTML Programming	III	a,b,h,j ,k	03	-	-	3	40	60	100
16CSU404B	XML Programming	III	a,b,h,j ,k							
16CSU411	Design and Analysis of Algorithms – Practical	I	a,b,c, m	-	-	04	2	40	60	100
16CSU412	Software Engineering – Practical	IV	c,d,e,l	-	-	04	2	40	60	100
16CSU413	Database Management Systems – Practical	I	a,b,g, h	-	-	04	2	40	60	100
16CSU414A	HTML Programming – Practical	III	a,b,h,j ,k			03	1	40	60	100
16CSU414B	XML Programming – Practical	III	a,b,h,j ,k							
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER –V										
16CSU501A	Information Security	I	b,e,m	04	-	-	4	40	60	100
16CSU501B	Network Programming	I	c,g		-	-				
16CSU502A	Microprocessor	III	a,b,h,j	04	-	-	4	40	60	100
16CSU502B	Digital Image Processing	I	a,b,h							
16CSU503A	Machine Learning	III	A,b,h, k	04	-	-	4	40	60	100
16CSU503B	Introduction to Data Sciences	II	d,e,f		-	-				
16CSU504A	Oracle (SQL/PL-SQL)	IV	c,e,i,l	03	-	-	3	40	60	100
16CSU504B	Programming in Python	III	b,h,j,k							
16CSU511A	Information Security – Practical	I	b,e,m	-	-	04	2	40	60	100
16CSU511B	Network Programming – Practical	I	c,g	-	-					
16CSU512A	Microprocessor – Practical	III	a,b,h,j	-	-	04	2	40	60	100
16CSU512B	Digital Image Processing – Practical	I	a,b,h							
16CSU513A	Machine Learning – Practical	III	a,b,h,	-	-	04	2	40	60	100

			k							
16CSU513B	Introduction to Data Sciences – Practical	II	d,e,f	-	-					
16CSU514A	Oracle (SQL/PL-SQL) – Practical	IV	c,e,i,l	-	-	03	1	40	60	100
16CSU514B	Programming in Python – Practical	III	b,h,j,k							
	Semester Total			**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER –VI										
16CSU601A	Cloud Computing	V	e,j,l	04	-	-	4	40	60	100
16CSU601B	System Programming	I	a,b,h,i							
16CSU602A	Data Mining	I	a,d,g, m	04	-	-	4	40	60	100
16CSU602B	Computer Graphics	I	a,c,g, m							
16CSU603A	PHP Programming	III	a,b,h,j ,k	03	-	-	3	40	60	100
16CSU603B	Unix / Linux Programming	IV	c,d,e							
16CSU611A	Cloud Computing – Practical	V	e,j,l	-	-	04	2	40	60	100
16CSU611B	System Programming – Practical	I	a,b,h,i							
16CSU612A	Data Mining – Practical	I	a,d,g, m	-	-	04	2	40	60	100
16CSU612B	Computer Graphics – Practical	I	a,c,g, m	-	-					
16CSU613A	PHP Programming –Practical	III	a,b,h,j ,k	-	-	03	1	40	60	100
16CSU613B	Unix / Linux Programming – Practical	IV	c,d,e							
16CSU691	Project	II	d,e,f,n	08	-	-	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc	Good								
	Semester Total			**19**	**-**	**11**	**22**	**280**	**420**	**700**
	Grand Total			**104**	**-**	**76**	**140**	**1880**	**2820**	**4700**

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

Skill Enhancement Course (SEC)		
	Course Code	**Name of the Course**
SEM-III	16CSU304A /16CSU304B	Android Programming / Programming in MATLAB
	16CSU314A /16CSU314B	Android Programming – Practical / Programming in MATLAB – Practical
SEM-IV	16CSU404A / 16CSU404B	HTML Programming / XML Programming
	16CSU414A / 16CSU414B	HTML Programming - Practical / XML Programming – Practical
SEM-V	16CSU504A / 16CSU504B	Oracle (SQL/PL-SQL) / Programming in Python
	16CSU514A /16CSU514B	Oracle (SQL/PL-SQL) – Practical / Programming in Python – Practical
SEM-VI	16CSU603A/16CSU603B	PHP Programming / Unix / Linux Programming
	16CSU613A/16CSU613B	PHP Programming – Practical / Unix / Linux Programming - Practical

Discipline Specific Course (DSC)		
	Course Code	**Name of the Course**
SEM-V	16CSU501A/16CSU501B	Information Security / Network Programming
	16CSU511A/16CSU511B	Information Security – Practical / Network Programming – Practical
SEM-V	16CSU502A/16CSU502B	Microprocessor / Digital Image Processing
	16CSU512A/16CSU512B	Microprocessor- Practical / Digital Image Processing – Practical
SEM-V	16CSU503A/16CSU503B	Machine Learning / Introduction to Data Sciences
	16CSU513A/16CSU513B	Machine Learning -Practical / Introduction to Data Sciences – Practical
SEM-VI	16CSU601A/16CSU601B	Cloud Computing / System Programming
	16CSU611A/16CSU611B	Cloud Computing – Practical / System Programming - Practical
SEM-VI	16CSU602A/16CSU602B	Data Mining / Computer Graphics
	16CSU612A/16CSU612B	Data Mining - Practical / Computer Graphics – Practical
SEM-VI	16CSU691	Project

DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF ARTS, SCIENCE AND HUMANITIES
PG PROGRAM (CBCS) – M.Sc. Computer Science
(2016–2018 Batch and onwards)
CURRICULUM

PROGRAM OUTCOMES: Post Graduate student of Computer Science programme will be able to

a. Apply basic concepts of Computer Science to effectively involve in the research.
b. Design software to meet required needs with realistic constraints such as economical, environmental, social, ethical and sustainable in the field of Computer Science.
c. Design and conduct experiments as well as to analyze, interpret data on experiments relevant to Computer Science practice.
d. implement software designs to provide working solutions, including use of appropriate programming languages, web-based systems and tools, design methodologies, and database systems
e. To attain in depth knowledge and understanding the principles of programming for applying in broad range of languages and open source platforms.
f. use IT skills and display mature computer literacy
g. Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to computer science practice.
h. Communicate effectively on complex research issues with research community and society, such as, being able to comprehend, write effective reports, design documentation and make effective presentations with clear instructions.
i. Demonstrate knowledge and understanding of the computer science and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
j. Recognize the need for ability to engage in independent and life-long learning.

PROGRAM SPECIFIC OUTCOMES (PSOs)

k. Exhibit an outstanding association and active contribution in their professional including entrepreneurship using the information in Computer Science.

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

FACULTY OF ARTS, SCIENCE AND HUMANITIES (FASH)

M.Sc Computer Science - Curriculum (CBCS)

(2016 – 2018 Batch)

Course code	Name of the Course	Objectives and out comes		Hrs / Week	Marks			Exam Hrs	Credit (s)
		PEOs	POs		CIA	ESE	Total		
	SEMESTER – I								
16CSP101	Web Technology	I	c,d	4	40	60	100	3	4
16CSP102	Cryptography and Network Security	I	a,g	4	40	60	100	3	4
16CSP103	Data Mining and Warehousing	I	b,c	4	40	60	100	3	4
16CSP104	Cloud Computing	III	b,g	4	40	60	100	3	4
16CSP105A/ 16CSP105B/ 16CSP105C	Wireless and Mobile Computing / Software Testing / Soft Computing	I III II	b g c	4	40	60	100	3	4
16CSP111	Web Technology Lab	I	c,d	4	40	60	100	3	2
16CSP112	Data Mining Lab using MATLAB	I	b,c	4	40	60	100	3	2
Journal Paper Analysis & Presentation						-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**
	SEMESTER – II								
16CSP201	Internetworking with TCP/IP	I	c	4	40	60	100	3	4
16CSP202	Cyber Security	I	b,g	4	40	60	100	3	4
16CSP203	Oracle 10G Administration	II	d	4	40	60	100	3	4
16CSP204	Introduction to Software Architecture	I	b	4	40	60	100	3	4
16CSP205A/ 16CSP205B/ 16CSP205C	Object Oriented Analysis & Design with UML / Grid Computing/ Geographical Information System	III	b,g	4	40	60	100	3	4
16CSP211	Router Configuration - Practical	I	c	4	40	60	100	3	2
16CSP212	Oracle 10G Administration – Practical	II	d	4	40	60	100	3	2
	Journal Paper Analysis & Presentation					-	-	-	-
	Semester total			**30**	**280**	**420**	**700**	**-**	**24**

	SEMESTER – III								
16CSP301	J2EE	I	c,d	4	40	60	100	3	4
16CSP302	Open Source Technologies	I, II	dg	4	40	60	100	3	4
16CSP303	Digital Image Processing	I	c	4	40	60	100	3	4
16CSP304	Network Architecture and Management	I, III	d	4	40	60	100	3	4
16CSP305A/ 16CSP305B/ 16CSP305C	Distributed Operating System / Wireless Application Protocol / WAN Technologies	I,II III II	b d f	4	40	60	100	3	4
16CSP311	J2EE – Practical	I	c,d	4	40	60	100	3	2
16CSP312	Linux – Practical	I	dg	4	40	60	100	3	2
Journal Paper Analysis & Presentation				III	h	-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**
	SEMESTER – IV								
16CSP491	Project and Viva Voce	III	i j	-	80	120	200	-	15
Semester total				**-**	**80**	**120**	**200**	**-**	**15**
				90	**920**	**1380**	**2300**		**87**

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)**
16CSP105A	Wireless and Mobile Computing	16CSP205A	Object Oriented Analysis & Design with UML	16CSP305A	Distributed Operating System
16CSP105B	Software Testing	16CSP205B	Grid Computing	16CSP305B	Wireless Application Protocol
16CSP105C	Soft Computing	16CSP205C	Geographical Information System	16CSP305C	WAN Technologies

DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG Curriculum (CBCS)- (2016 – 2019) Batch
Program: B.Sc Electronics and Communication Systems
Curriculum

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

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

PROGRAM SPECIFIC OUTCOME (PSOs)

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

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO I : To impart students with strong fundamental knowledge in the field of Electronics and Communication Systems to meet the emerging industrial needs.

PEO II : To impart skill based training to apply engineering practices to design, implement model and analyze real time problems and interpret the result.

PEO III : To understand the need for lifelong learning, applying and adapting new ideas and technologies in the field of Electronics and communication Systems.

PEO IV : To recognize and apply the acquired knowledge in computer science and mathematics in solving electronics and communication system design issues.

PEO V : To inculcate a sense of ethics, professional and effective communication skill and to cultivate skills needed for a successful professional career.

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	X			
PEO II		X	X	X				X			X			
PEO III	X								X			X	X	
PEO IV		X	X	X							X			X
PEO V					X	X	X							X

DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG Curriculum (CBCS)- (2016 – 2019) Batch
Program: B.Sc Electronics and Communication Systems
Curriculum

Course Code	Name of the Course	Objectives and Outcomes		Hrs / week	Marks			Exam / Hrs	Credit
		PEOs	POs		CIA	ESE	Total		
SEMESTER – I									
16LSU101	Language-I	V	f,g	04	40	60	100	3	4
16ECU101	Basic Circuit Theory and Network Analysis	I	a,c,d	04	40	60	100	3	4
16ECU102	Mathematics Foundation for Electronics	IV	b,k	04	40	60	100	3	4
16ECU103	Semiconductor Devices	I	c,i,j	04	40	60	100	3	4
16ECU111	Basic Circuit Theory and Network Analysis - Practical		c,d	03	40	60	100	3	2
16ECU112	Mathematics Foundation for Electronics - Practical	IV	b,k	03	40	60	100	3	2
16ECU113	Semiconductor Devices - Practical	I	c,i,j	04	40	60	100	3	2
16AEC101	Environmental Studies	V	e,f,n	04	40	60	100	3	4
	Semester total			**30**	**320**	**480**	**800**	**-**	**26**
SEMESTER – II									
16LSU201	Language-II	V	f,g	04	40	60	100	3	4
16ENU201	English	V	e,f,g	04	40	60	100	3	4
16ECU201	Electronic Circuits	II	b,c,k	04	40	60	100	3	4
18ECU202	C Programming and Data Structures	IV	b,d,n	04	40	60	100	3	4
16ECU203	Communication Electronics	I	a,c,i,j	04	40	60	100	3	4
16ECU211	Electronic Circuits - Practical	II	b,c,k	03	40	60	100	3	2
16ECU212	C Programming and Data Structures - Practical	IV	b,d,n	03	40	60	100	3	2
16ECU213	Communication Electronics - Practical	I	c,i,j	04	40	60	100	3	2
	Semester total	**30**			**320**	**480**	**800**	**-**	**26**
SEMESTER – III									
16ECU301	Digital Electronics and VHDL	I	c,h,j	04	40	60	100	3	4
16ECU302	Digital and Cellular Communication	II	c,d,h,k	04	40	60	100	3	4
16ECU303	Internet and Java Programming	IV	b,d,k	04	40	60	100	3	4
16ECU304A/ 16ECU304B	Design and Fabrication of Printed Circuit Boards /	II	c,d,k	03	40	60	100	3	3

	Electronic Instrumentation								
16ECU311	Digital Electronics and VHDL - Practical	I	c,h,j	04	40	60	100	3	2
16ECU312	Digital and Cellular Communication - Practical	II	c,d,h,k	04	40	60	100	3	2
16ECU313	Internet and Java Programming - Practical	IV	b,d,k,	04	40	60	100	3	2
16ECU314A/ 16ECU314B	Design and Fabrication of Printed Circuit Boards - Practical / Electronic Instrumentation - Practical	II	c,d,k	03	40	60	100	3	1
	Semester total		**30**		**320**	**480**	**800**	**-**	**22**
SEMESTER – IV									
16ECU401	Operational Amplifier and It's Applications	II	b,c	04	40	60	100	3	4
16ECU402	Microprocessor and Microcontroller	III	a,l,m	04	40	60	100	3	4
16ECU403	Power Electronics	II	c,h,k	04	40	60	100	3	4
16ECU404A/ 16ECU404B	Electrical Circuits and Networ Digital System Design	I	i,j,k	03	40	60	100	3	3
16ECU411	Operational Amplifier - Practical	II	b,c	04	40	60	100	3	2
16ECU412	Microprocessor and Microcontroller - Practical	III	a,l,m	04	40	60	100	3	2
16ECU413	Power Electronics - Practical	II	c,h,k	04	40	60	100	3	2
16ECU414A/ 16ECU414B	Electrical Circuits and Networ - Practical / Digital System De - Practical	I	i,j,k	03	40	60	100	3	1
	Semester total		**30**		**320**	**480**	**800**	**-**	**22**
SEMESTER – V									
16ECU501A/ 16ECU501B	Programmable Logic Controller / Nano Electronics	III	a,i	04	40	60	100	3	4
16ECU502A/ 16ECU502B	Advanced Communication Systems / Control Systems	III	a,i,m	04	40	60	100	3	4
16ECU503A/ 16ECU503B	Biomedical Instrumentation / Signals and Systems	I	c,d,h	04	40	60	100	3	4
16ECU504A/ 16ECU504B	Robotics / Mobile Applications Development	III	i,l,m	03	40	60	100	3	3
16ECU511A/ 16ECU511B	Programmable Logic Controller - Practical / Nano Electronics - Practical	III	a,i	04	40	60	100	3	2
16ECU512A/ 16ECU512B	Advanced Communication Systems - Practical/ Control Systems - Practical	III	a,i,m	04	40	60	100	3	2
16ECU513A/	Biomedical Instrumentation	I	c,d,h	04	40	60	100	3	2

16ECU513B	- Practical / Signals and Systems - Practical								
16ECU514A/ 16ECU514B	Robotics - Practical/ Mobile Applications Development - Practical	III	i,l,m	03	40	60	100	3	1
	Semester total			**30**	**320**	**480**	**800**	**-**	**22**
SEMESTER – VI									
16ECU601A/ 16ECU601B	Embedded Systems / Basic VLSI Design	III	a.l.m	04	40	60	100	3	4
16ECU602A/ 16ECU602B	Digital Signal Processing / Virtual Instrumentation	II	d,h,k	04	40	60	100	3	4
16ECU603A/ 16ECU603B	Programming with LabView / Verilog and FPGA based System Design	III	,l,m	03	40	60	100	3	3
16ECU611A/ 16ECU611B	Embedded Systems - Practical / Basic VLSI Design - Practical	III	a.l.m	04	40	60	100	3	2
16ECU612A/ 16ECU612B	Digital Signal Processing - Practical / Virtual Instrumentation - Practical	II	d,h,k	04	40	60	100	3	2
16ECU613A/ 16ECU613 B	Programming with LabView - Practical /Verilog and FPGA System Design - Practical	III	,l,m	03	40	60	100	3	1
16ECU691	Project and Viva -Voce	1V	b,,j,m,n	08	40	60	100	3	6
ECA/NCC/NSS/Sports/General Interest etc.,				Good					
	Semester total			**30**	**280**	**420**	**700**	**-**	**22**
	G. Total			**180**	**1,880**	**2,820**	**4,700**		**140**

Skill Enhancement Course (SEC)		
Semester	**Course Code**	**Name of the Course**
III	16ECU304A/ 16ECU304B	Design and Fabrication of Printed Circuit Boards / Electronic Instrumentation
	16ECU314A/ 16ECU314B	Design and Fabrication of Printed Circuit Boards - Practical / Electronic Instrumentation - Practical
IV	16ECU404A/ 16ECU404B	Electrical Circuits and Network Skills / Digital System Design
	16ECU414A/ 16ECU414B	Electrical Circuits and Network Skills - Practical / Digital System Design- Practical
V	16ECU504A/16ECU504B	Robotics /Mobile Applications Development
	16ECU514A/16ECU514B	Robotics - Practical / Mobile Applications Development - Practical
VI	16ECU603A/16ECU603B	Programming with LabView / Verilog and FPGA based System Design
	16ECU613A/16ECU613 B	Programming with LabView - Practical / Verilog and FPGA based System Design - Practical

Discipline Specific Course (DSC)		
Semester	**Course Code**	**Name of the Course**
V	16ECU501A / 16ECU501B	Programmable Logic Controller / Nano Electronics
V	16ECU502A / 16ECU502B	Advanced Communication Systems / Control Systems
V	16ECU503A / 16ECU503B	Biomedical Instrumentation / Signals and Systems
V	16ELU511A / 16ELU511B	Programmable Logic Controller - Practical / Nano Electronics - Practical
V	16ECU512A / 16ECU512B	Advanced Communication Systems - Practical / Control Systems - Practical
V	16ECU513A / 16ECU513B	Biomedical Instrumentation - Practical / Signals and Systems - Practical
VI	16ECU601A / 16ECU601B	Embedded Systems / Basic VLSI Design
	16ECU602A / 16ECU602B	Digital Signal Processing / Virtual Instrumentation
VI	16ECU611A / 16ECU611B	Embedded Systems - Practical / Basic VLSI Design - Practical
VI	16ECU612A / 16ECU612B	Digital Signal Processing - Practical / Virtual Instrumentation - Practical

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO I : To be a working Information Technology (IT) professional with core competencies that can be used on multi-disciplinary projects

PEO II : To understand the importance of relationship building within the IT industry

PEO III : To understand the need for lifelong learning in the exploration and journey in IT

PEO IV : To understand, evaluate and practice ethical behavior within the IT industry

PEO V : To be cognizant of security issues and their impacts on industry

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, COMPUTER APPLICATIONS & INFORMATION TECHNOLOGY
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Information Technology
(2016–2017 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										
16LSU101	Language – I	IV	d,e	04	-	-	4	40	60	100
16AEC101	Environmental Studies	I	d,e	04	-	-	4	40	60	100
16ITU101	Programming Fundamentals using C / C++	I	b,c,a	04	-	-	4	40	60	100
16ITU102	Computer System Architecture	III	h,j	04	-	-	4	40	60	100
16ITU103	Developing Programming Logic and Techniques	I	a,b,c	04	-	-	4	40	60	100
16ITU111	Programming Fundamentals using C / C++ -Practical	I	a,c,g	-	-	03	2	40	60	100
16ITU112	Computer System Architecture - Practical	III	b,h,j	-	-	03	2	40	60	100
16ITU113	Office Automation - Practical	IV	d,e	-	-	04	2	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER – II										
16LSU201	Language – II	IV	d,e	04	-	-	4	40	60	100
16ITU201	Programming in JAVA	II	a,b,d,f	04	-	-	4	40	60	100
16ITU202	Discrete Structures	I	c,h,i	04	-	-	4	40	60	100
16ITU203	Fundamentals of Web Designing and Internet	III	a,b,g	04	-	-	4	40	60	100
16ITU211	Programming in JAVA - Practical	IV	a,b,e,i		-	03	2	40	60	100
16ITU212	Discrete Structures - Practical	I	a,c,h,i		-	03	2	40	60	100
16ITU213	Web Designing – Practical	III	a,b,j,l, m		-	04	2	40	60	100

16ENU201	English	IV	d,f	04	-	-	4	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER – III										
16ITU301	Data Structures	I	a,b,c	04	-	-	4	40	60	100
16ITU302	Operating Systems	II	a,b,c	04	-	-	4	40	60	100
16ITU303	Relational Database Management Systems	I	a,b,c	04	-	-	4	40	60	100
16ITU304A	Android Programming	I	a,b,c,g	03	-	-	3	40	60	100
16ITU304B	Programming in MATLAB	I	a,b,c,g							
16ITU311	Data Structures – Practical	I	a,b,c	-	-	04	2	40	60	100
16ITU312	Operating Systems – Practical	II	b,h,j	-	-	04	2	40	60	100
16ITU313	RDBMS – Practical	I	a,b,c	-	-	04	2	40	60	100
16ITU314A	Android Programming – Practical	I	a,b,c,g	-	-	03	1	40	60	100
16ITU314B	Programming in MATLAB – Practical	I	a,b,c,g							
Semester Total				**15**		**15**	**22**	**320**	**480**	**800**
SEMESTER – IV										
16ITU401	Computer Networks	V	b,c	04	-	-	4	40	60	100
16ITU402	Software Engineering	II	a,b,c,l,m	04	-	-	4	40	60	100
16ITU403	Programming with Visual Basic	I	a,b,c,l,m	04	-	-	4	40	60	100
16ITU404A	Internet Technologies	I	a,b,c,g	03	-	-	3	40	60	100
16ITU404B	XML Programming	I	a,b,c,g							
16ITU411	Computer Networks - Practical	V	a,b,c,g	-	-	04	2	40	60	100
16ITU412	Software Engineering - Practical	II	b,h,j,l,m	-	-	04	2	40	60	100
16ITU413	Programming with Visual Basic - Practical	I	b,h,j,l,m	--	-	04		40	60	100
16ITU414A	Internet Technologies _ Practical	I	a,c,h,i,g		-	03	1	40	60	100
16ITU414B	XML Programming - Practical	I	a,c,h,i,g							
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**

SEMESTER – V										
16ITU501A	Computer Graphics	V	a,b,c	04	-	-	4	40	60	100
16ITU501B	Software Testing	V	a,b,c,l,m							
16ITU502A	.NET Programming	I	a,b,c,l,m	04	-	-	4	40	60	100
16ITU502B	Network Programming	I	a,b,c							
16ITU503A	Machine Learning	III	a,b,c	04	-	-	4	40	60	100
16ITU503B	Data Mining	III	a,b,c							
16ITU504A	Digital Image Processing	I	a,b,c	03	-	-	3	40	60	100
16ITU504B	Multimedia and its Applications	I	a,b,c,l,m							
16ITU511A	Computer Graphics - Practical	V	a,b,c	-	-	04	2	40	60	100
16ITU511B	Software Testing - Practical	V	a,b,c,l,m							
16ITU512A	.NET Programming -Practical	I	a,b,c,l,m	-	-	04	2	40	60	100
16ITU512B	Network Programming -Practical	I	a,b,c,g							
16ITU513A	Machine Learning - Practical	III	a,b,c,g	-	-	04	2	40	60	100
16ITU513B	Data Mining - Practical	III	a,b,c,g							
16ITU514A	Digital Image Processing - Practical	I	a,b,c,g	-	-	03	1	40	60	100
16ITU514B	Multimedia and Applications - Practical	I	a,b,c,l,m							
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – VI										
16ITU601A	PHP Programming	I	b,c,g	04	-	-	4	40	60	100
16ITU601B	Unix / Linux Programming	I	a,b,c							
16ITU602A	E-Commerce Technologies	II	b,c,h,il,m	04	-	-	4	40	60	100
16ITU602B	Cloud Computing	II	b,c,g							
16ITU603A	Numerical Methods	III	b,c,g	03	-	-	3	40	60	100
16ITU603B	System Programming	III	b,c,h,i							
16ITU611A	PHP Programming - Practical	I	a,b,c,g	-	-	04	2	40	60	100

16ITU611B	Unix / Linux Programming - Practical	I	a,b,c							
16ITU612A	E-Commerce Technologies -Practical	II	a,b,c,g	-	-	04	2	40	60	100
16ITU612B	Cloud Computing – Practical	II	a,b,c,g							
16ITU613A	Numerical Methods - Practical	III	a,b,c	-	-	03	1	40	60	100
16ITU613B	System Programming - Practical	III	a,b,c							
16ITU691	Project	IV	i,j	-	-	08	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc									
Semester Total				**11**	**-**	**19**	**22**	**280**	**420**	**700**
Program Total				**96**	**-**	**84**	**140**	**1880**	**2820**	**4700**

** The colour 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	16LSU101	Language – I
	16AEC101	Environmental Studies
II	16LSU201	Language – II
	16ENU201	English

Generic Elective Courses (GE) /Allied Courses		
Semester	**Course Code**	**Name of the Course**
I	16ITU102	Computer System Architecture
	16ITU112	Computer System Architecture - Practical
II	16ITU202	Discrete Structures
	16ITU212	Discrete Structures - Practical

Core Courses (CC)		
Semester	**Course Code**	**Name of the Course**
I	16ITU101	Programming Fundamentals using C / C++
	16ITU111	Programming Fundamentals using C / C++ -Practical
II	16ITU201	Programming in JAVA
	16ITU211	Programming in JAVA - Practical
III	16ITU301	Data Structures
	16ITU302	Operating Systems
	16ITU303	Relational Database Management Systems
	16ITU311	Data Structures – Practical
	16ITU312	Operating Systems – Practical
	16ITU313	RDBMS – Practical
IV	16ITU401	Computer Networks
	16ITU402	Software Engineering
	16ITU403	Programming with Visual Basic
	16ITU411	Computer Networks - Practical
	16ITU412	Software Engineering - Practical
	16ITU413	Programming with Visual Basic - Practical

Skill Enhancement Courses(SEC)		
Semester	**Course Code**	**Name of the Course**
I	16ITU103	Developing Programming Logic and Techniques
	16ITU113	Office Automation - Practical
II	16ITU203	Fundamentals of Web Designing and Internet
	16ITU213	Web Designing – Practical
III	16ITU304A	Android Programming
	16ITU304B	Programming in MATLAB
	16ITU314A	Android Programming – Practical
	16ITU314B	Programming in MATLAB – Practical
IV	16ITU404A	Internet Technologies
	16ITU404B	XML Programming
	16ITU414A	Internet Technologies - Practical
	16ITU414B	XML Programming - Practical
V	16ITU504A	Digital Image Processing
	16ITU504B	Multimedia and its Applications
	16ITU514A	Digital Image Processing - Practical
	16ITU514B	Multimedia and Applications – Practical
VI	16ITU603A	Numerical Methods
	16ITU603B	System Programming
	16ITU613A	Numerical Methods - Practical
	16ITU613B	System Programming - Practical

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
V	16ITU501A	Computer Graphics
	16ITU501B	Software Testing
	16ITU502A	.NET Programming
	16ITU502B	Network Programming
	16ITU503A	Machine Learning
	16ITU503B	Data Mining
	16ITU511A	Computer Graphics - Practical
	16ITU511B	Software Testing - Practical
	16ITU512A	.NET Programming -Practical
	16ITU512B	Network Programming -Practical
	16ITU513A	Machine Learning - Practical
	16ITU513B	Data Mining - Practical
VI	16ITU601A	PHP Programming
	16ITU601B	Unix / Linux Programming
	16ITU602A	E-Commerce Technologies
	16ITU602B	Cloud Computing
	16ITU611A	PHP Programming - Practical
	16ITU611B	Unix / Linux Programming - Practical
	16ITU612A	E-Commerce Technologies -Practical
	16ITU612B	Cloud Computing – Practical
	16ITU691	Project

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO I : To be a working Information Technology (IT) professional with core competencies that can be used on multi-disciplinary projects

PEO II : To understand the importance of relationship building within the IT industry

PEO III : To understand the need for lifelong learning in the exploration and journey in IT

PEO IV : To understand, evaluate and practice ethical behavior within the IT industry

PEO V : To be cognizant of security issues and their impacts on industry

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, COMPUTER APPLICATIONS & INFORMATION TECHNOLOGY
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Computer Technology
(2016–2017 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										
16LSU101	Language – I	IV	d,e	04	-	-	4	40	60	100
16AEC101	Environmental Studies	I	d,e	04	-	-	4	40	60	100
16CTU101	Programming Fundamentals using C / C++	I	a,b,c	04	-	-	4	40	60	100
16CTU102	Computer System Architecture	III	h,j	04	-	-	4	40	60	100
16CTU103	Developing Programming Logic and Techniques	I	a,b,c	04	-	-	4	40	60	100
16CTU111	Programming Fundamentals using C / C++ -Practical	I	a,c,b	-	-	03	2	40	60	100
16CTU112	Computer System Architecture - Practical	III	b,h,j	-	-	03	2	40	60	100
16CTU113	Office Automation - Practical	IV	d,e	-	-	04	2	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER – II										
16LSU201	Language – II	IV	d,e	04	-	-	4	40	60	100
16CTU201	Programming in JAVA	II	d,f,a,b	04	-	-	4	40	60	100
16CTU202	Discrete Structures	I	c,h,i	04	-	-	4	40	60	100
16CTU203	Database Programming with Oracle(SQL and PL/SQL)	III	a,b,g	04	-	-	4	40	60	100
16CTU211	Programming in JAVA - Practical	IV	a,b,e,i		-	03	2	40	60	100
16CTU212	Discrete Structures - Practical	I	a,c,h,i		-	03	2	40	60	100
16CTU213	Database Programming with Oracle(SQL	III	a,b,j,g		-	04	2	40	60	100

	and PL/SQL) – Practical									
16ENU201	English	IV	d,f	04	-	-	4	40	60	100
Semester Total				**20**	**-**	**10**	**26**	**320**	**480**	**800**
SEMESTER – III										
16CTU301	Data Structures	I	a,b,c	04	-	-	4	40	60	100
16CTU302	Programming with Visual Basic	II	a,b,c,l, m	04	-	-	4	40	60	100
16CTU303	Computer Networks	I	a,b,c	04	-	-	4	40	60	100
16CTU304A	Android Programming	I	a,b,c,g	03	-	-	3	40	60	100
16CTU304B	Programming in MATLAB	I	a,b,c,g							
16CTU311	Data Structures– Practical	I	a,b,c	-	-	04	2	40	60	100
16CTU312	Programming with Visual Basic– Practical	II	b,h,j,l, m	-	-	04	2	40	60	100
16CTU313	Computer Networks – Practical	I	a,b,c,g	-	-	04	2	40	60	100
16CTU314A	Android Programming – Practical	I	a,b,c,g	-	-	03	1	40	60	100
16CTU314B	Programming in MATLAB – Practical	I	a,b,c,g							
Semester Total				**15**		**15**	**22**	**320**	**480**	**800**
SEMESTER – IV										
16CTU401	Operating Systems	V	b,h,c	04	-	-	4	40	60	100
16CTU402	Software Engineering	II	a,b,c,l, m	04	-	-	4	40	60	100
16CTU403	Internetworking with TCP/IP	I	a,b,c	04	-	-	4	40	60	100
16CTU404A	HTML Programming	I	a,b,c,g	03	-	-	3	40	60	100
16CTU404B	XML Programming	I	a,b,c,g							
16CTU411	Operating Systems - Pratical	V	a,b,c	-	-	04	2	40	60	100
16CTU412	Software Engineering - Practical	II	b,h,j,l, m	-	-	04	2	40	60	100
16CTU413	TCP/IP - Practical	I	b,h,j	--	-	04		40	60	100
16CTU414A	HTML Programming - Practical	I	a,c,h,i, g		-	03	1	40	60	100
16CTU414B	XML Programming - Practical	I	a,c,h,i, g							

Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – V										
16CTU501A	Cryptography and Network Security	V	a,b,c	04	-	-	4	40	60	100
16CTU501B	Software Testing	V	a,b,c,l,m							
16CTU502A	.NET Programming	I	a,b,c,l,m	04	-	-	4	40	60	100
16CTU502B	Network Programming	I	a,b,c							
16CTU503A	Introduction to Data Science	III	a,b,c	04	-	-	4	40	60	100
16CTU503B	Data Mining	III	a,b,c							
16CTU504A	Digital Image Processing	I	a,b,c	03	-	-	3	40	60	100
16CTU504B	Multimedia and its Applications	I	a,b,c,l,m							
16CTU511A	Cryptography and Network Security - Practical	V	a,b,c	-	-	04	2	40	60	100
16CTU511B	Software Testing - Practical	V	a,b,c,l,m							
16CTU512A	.NET Programming - Practical	I	a,b,c,l,m	-	-	04	2	40	60	100
16CTU512B	Network Programming - Practical	I	a,b,c,g							
16CTU513A	Introduction to Data Science - Practical	III	a,b,c,g	-	-	04	2	40	60	100
16CTU513B	Data Mining - Practical	III	a,b,c,g							
16CTU514A	Digital Image Processing - Practical	I	a,b,c,g	-	-	03	1	40	60	100
16CTU514B	Multimedia and its Applications - Practical	I	a,b,c,l,m							
Semester Total				**15**	**-**	**15**	**22**	**320**	**480**	**800**
SEMESTER – VI										
16CTU601A	PHP Programming	I	b,c,g	04	-	-	4	40	60	100
16CTU601B	Unix / Linux Programming	I	a,b,c							
16CTU602A	E-Commerce Technologies	II	b,c,h,il,m	04	-	-	4	40	60	100
16CTU602B	Cloud Computing	II	b,c,g							
16CTU603A	Soft Computing	III	b,c,g	03	-	-	3	40	60	100

16CTU603B	System Programming	III	b,c,h,i							
16CTU611A	PHP Programming - Practical	I	a,b,c,g	-	-	04	2	40	60	100
16CTU611B	Unix / Linux Programming - Practical	I	a,b,c							
16CTU612A	E-Commerce Technologies - Practical	II	a,b,c,g	-	-	04	2	40	60	100
16CTU612B	Cloud Computing - Practical	II	a,b,c,g							
16CTU613A	Soft Computing - Practical	III	a,b,c,g	-	-	03	1	40	60	100
16CTU613B	System Programming - Practical	III	a,b,c							
16CTU691	Project	IV	i,j	-	-	08	6	40	60	100
	ECA / NCC / NSS / Sports / General interest etc									
Semester Total				**11**	**-**	**19**	**22**	**280**	**420**	**700**
Program Total				**96**	**-**	**84**	**140**	**1880**	**2820**	**4700**

** The colour 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	16LSU101	Language – I
	16AEC101	Environmental Studies
II	16LSU201	Language – II
	16ENU201	English

Generic Elective Courses (GE) /Allied Courses		
Semester	**Course Code**	**Name of the Course**
I	16CTU102	Computer System Architecture
	16CTU112	Computer System Architecture - Practical
II	16CTU202	Discrete Structures
	16CTU212	Discrete Structures - Practical

Core Courses (CC)		
Semester	**Course Code**	**Name of the Course**
I	16CTU101	Programming Fundamentals using C / C++
	16CTU111	Programming Fundamentals using C / C++ -Practical
II	16CTU201	Programming in JAVA
	16CTU211	Programming in JAVA - Practical
III	16CTU301	Data Structures

	16CTU302	Programming with Visual Basic
	16CTU303	Computer Networks
	16CTU311	Data Structures– Practical
	16CTU312	Programming with Visual Basic– Practical
	16CTU313	Computer Networks – Practical
IV	16CTU401	Operating Systems
	16CTU402	Software Engineering
	16CTU403	Internetworking with TCP/IP
	16CTU411	Operating Systems - Pratical
	16CTU412	Software Engineering - Practical
	16CTU413	TCP/IP - Practical

Skill Enhancement Courses(SEC)		
Semester	**Course Code**	**Name of the Course**
I	16CTU103	Developing Programming Logic and Techniques
	16CTU113	Office Automation - Practical
II	16CTU203	Database Programming with Oracle(SQL and PL/SQL)
	16CTU213	Database Programming with Oracle(SQL and PL/SQL) – Practical
III	16CTU304A	Android Programming
	16CTU304B	Programming in MATLAB
	16CTU314A	Android Programming – Practical
	16CTU314B	Programming in MATLAB – Practical
IV	16CTU404A	HTML Programming
	16CTU404B	XML Programming
	16CTU414A	HTML Programming - Practical
	16CTU414B	XML Programming - Practical
V	16CTU504A	Digital Image Processing
	16CTU504B	Multimedia and its Applications
	16CTU514A	Digital Image Processing - Practical
	16CTU514B	Multimedia and Applications – Practical
VI	16CTU603A	Soft Computing
	16CTU603B	System Programming
	16CTU613A	Soft Computing - Practical
	16CTU613B	System Programming - Practical

Discipline Specific Elective Courses (DSE)		
Semester	**Course Code**	**Name of the Course**
V	16CTU501A	Cryptography and Network Security
	16CTU501B	Software Testing
	16CTU502A	.NET Programming
	16CTU502B	Network Programming
	16CTU503A	Introduction to Data Science
	16CTU503B	Data Mining
	16CTU511A	Cryptography and Network Security - Practical
	16CTU511B	Software Testing - Practical
	16CTU512A	.NET Programming - Practical
	16CTU512B	Network Programming - Practical
	16CTU513A	Introduction to Data Science - Practical
	16CTU513B	Data Mining - Practical
VI	16CTU601A	PHP Programming
	16CTU601B	Unix / Linux Programming
	16CTU602A	E-Commerce Technologies
	16CTU602B	Cloud Computing
	16CTU611A	PHP Programming - Practical
	16CTU611B	Unix / Linux Programming - Practical
	16CTU612A	E-Commerce Technologies -Practical
	16CTU612B	Cloud Computing – Practical
	16CTU691	Project

DEPARTMENT OF MANAGEMENT

FACULTY OF ARTS, SCIENCE AND HUMANITIES

UG PROGRAM (CBCS) – B.B.A. CURRICULUM

(2016–2019 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										
16LAU101	Language – I	I, III	a	6	0	0	6	40	60	100
16ENU101	English – I	I, III	a	4	0	0	4	40	60	100
16BAU101	Fundamentals of Management and Organizational Behaviour	I, II, III, IV	a,d,f,I,j	4	0	0	4	40	60	100
16BAU102	Statistics for Business Decisions	I, II, III	a,c,f,g,I,j	5	0	0	5	40	60	100
16BAU111	MS Office (Practical)	I, II, III	a,d,f,I,j	0	0	4	2	40	60	100
16BAU112	Statistical Package using SPSS (Practical)	I, II, III	a,c,f,g,I,j	0	0	3	1	40	60	100
16AEC101	Business Communication	I, II, III	a,c,f	4	0	0	4	40	60	100
Semester Total				**23**	**0**	**7**	**26**	**280**	**420**	**700**
SEMESTER –II										
16LAU201	Language – II	I.III	a	6	0	0	6	40	60	100
16ENU201	English – II	I.III	a	4	0	0	4	40	60	100
16BAU201	Managerial Economics	I, II, IV	a, c,d,f,I,j	6	2	0	6	40	60	100
16BAU202	Business Accounting	I, II, III	a,b,c,d,f,I, j	4	0	0	4	40	60	100
16BAU211	Tally (Practical)	I, II, III	a,b,c,d,f,I ,j	0	0	4	2	40	60	100
16AEC201	Environmental Studies	I, II. IV	a, c,f	4	0	0	4	40	60	100
Semester Total				**24**	**2**	**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										
16ENU301	English – III	I.III	a	4	4	0	6	40	60	100
16BAU301	Principles of Marketing	I, II. IV	a,c, e, f, I, j	6	2	0	6	40	60	100
16BAU302	Management Accounting	I, II, III	a,b,c,d,f,I, j	6	2	0	6	40	60	100
16BAU303A	Financial Management	I, II, III	a,b,c,d,f,I, j	5	1	0	4	40	60	100
16BAU303B	Management Information System	I, II IV	a,c,d,f,h,I ,j	5	1	0	4	40	60	100
Semester Total				**21**	**9**	**0**	**22**	**160**	**240**	**400**
SEMESTER – IV										
16ENU401	English – IV	I.III	a	4	4	0	6	40	60	100
16BAU401	Business Research	I, II, III	a,c,d,f,h,i ,j	6	2	0	6	40	60	100
16BAU402	Human Resource Management	I, II, IV	a,c,d,f,h,i ,j	6	2	0	6	40	60	100
16BAU403A	Insurance Principles and **Practice**	I, II. IV	a,c,d,f,h,i, j	**5**	1	0	4	40	60	100
16BAU403B	E – Commerce	I, II. IV	a,d,f,h,I,j	3	0	0	3	40	60	100
16BAU411	E – Commerce (Practical)	I, II, IV	a,d,f,h,I,j	0	0	3	1	40	60	100
Semester Total				18	9	3	22	200	300	500

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										
16BAU501A	Investment Analysis and Portfolio Management	I, III, IV	a.c.d.f.i.j	6	2	0	6	40	60	100
16BAU501B	Investment Banking and Financial Services	I, III, IV	a.c.d.f.i.j	6	2	0	6	40	60	100
16BAU502A	Advertising and Brand Management	I, II, III	a,c, e, f, I, j	6	2	0	6	40	60	100
16BAU502B	Retail Management	I, II, III	a,c, e, f, I, j	6	2	0	6	40	60	100
16BAU503A	Taxation - I	I, II, III, IV	a,b,c,d,I,j	5	1	0	4	40	60	100
16BAU503B	Company Law and Secretarial Practice	I, II, III, IV	a,b,c,d,I,j	5	1	0	4	40	60	100
16BAU504A	Entrepreneurship Development	I, II, III, IV	a,b,c,d,I,j	6	2	0	6	40	60	100
16BAU504B	Production and Operations Management	I, II, IV	a,b, c,d,g,I,j	6	2	0	6	40	60	100
Semester Total				23	7	0	22	160	240	400
SEMESTER – VI										
16BAU601A	HRD: Systems and Strategies	I,III, IV	a,c,d,f,h,i ,j	6	2	0	6	40	60	100
16BAU601B	Management of Industrial Relations	I, III, IV	a,c,d,f,h,i ,j	6	2	0	6	40	60	100
16BAU602A	Global Business Environment	I, II, III, IV	a,c,d,e,f,I ,j	6	2	0	6	40	60	100
16BAU602B	International Trade Policy and Strategy	I, II, III, IV	a,c,d,e,f,I, j	6	2	0	6	40	60	100
16BAU603A	Taxation - II	I, II, III, IV	a,b,c,d,I,j	5	1	0	4	40	60	100
16BAU603B	Strategic Management	I, II, IV	a,c,d,I,j	5	1	0	4	40	60	100
16BAU691	Project	I, II, III, IV	a,,b,c,d,e, f,I,j	0	0	8	6	40	60	100
ECA/NCC/NSS/Sports/General Interest etc										Good
Semester Total				**16**	**5**	**8**	**22**	**160**	**240**	**400**
Programme Total				**180**			**140**	**1200**	**1800**	**3000**

ELECTIVE COURSES

Skill Enhancement Elective Courses			
Elective	**Semester**	**Course Code**	**Name of the Course**
SEC - 1	III	16BAU303A	Financial Management
		16BAU303B	Management Information System
SEC - 2	IV	16BAU403A	Insurance Principles and Practice
		16BAU403B	E - Commerce
		16BAU411	Practical - E- Commerce
SEC - 3	V	16BAU503A	*Taxation - I
		16BAU503B	Company Law and Secretarial Practice
SEC - 4	VI	16BAU603A	*Taxation - II
		16BAU603B	Strategic Management

*** In V Semester, SEC – Taxation – I is selected as Elective, In VI Semester Compulsorily Taxation - II should be selected**

DISCIPLINE SPECIFIC ELECTIVE COURSES

Elective	Semester	Course Code	Name of the Course
DSE -I	V	16BAU501A	Investment Analysis and Portfolio Management
		16BAU501B	Investment Banking and Financial Services
DSE -2	V	16BAU502A	Advertising and Brand Management
		16BAU502B	Retail Management
DSE -3	VI	16BAU601A	HRD: Systems and Strategies
		16BAU601B	Management of Industrial Relations
DSE -4	VI	16BAU602A	Global Business Environment
		16BAU602B	International Trade Policy and Strategy

GENERIC ELECTIVE COURSES

Elective	Semester	Course Code	Name of the Course
GE -I	V	16BAU504A	Entrepreneurship Development
		16BAU504B	Production and Operation Management
GE -2	VI	16BAU691	Project

PROGRAMME OUTCOMES (POs)

a. Gear up with advanced business acuity that guide them to understand the key business functions and organizational resources for efficient business management
b. Acquire insight into accounting principles, accounting procedures, partnership accounts and taxation policy
c. Apply the ability to analyze complex, qualitative and quantitative problems by applying financial, mathematical, statistical tools, information and communication technologies to solve the complex business problem
d. Familiarize with the impact of micro and macroeconomic environment, globalization, liberalization and legal frame work in doing business
e. Acquire expertise in the functional areas of marketing and retailing
f. Acquire knowledge and skill in cost control and cost reduction, sources and sues of fund, inflow and outflow of cash
g. Demonstrate the production and operation process, materials management, quality management for growth and development
h. Familiarize the process of human resource planning, recruitment, selection, training and development, organizational behavior and industrial relation to improve the overall performance of the organization

PROGRAMME SPECIFIC OUTCOMES (PSO)

i. Demonstrate critical thinking in understanding managerial issue and problems related to the global economy and international business
j. Acquire entrepreneurial trait to commence and manage their innovative business successfully

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

I. Students will gain knowledge on theory and practical aspects of management oriented domains

II. To enrich the student with problem solving and decision making skills to handle business challenges using innovative research tools and technologies

III. To stimulate the knowledge and skill to take up entrepreneurial initiatives or managerial role in an organization

IV. To endow the students to be a responsible citizen and prepare them to take up leadership role to empower the business organization through their ethical, social and legal business solution.

Program Educational Objectives	Program Outcomes									
	a	b	c	d	e	f	g	h	i	j
Students will gain knowledge on theory and practical aspects of management-oriented domains	√	√	√						√	√
To enrich the student with problem solving and decision making skills to handle business challenges using innovative research tools and technologies	√	√	√	√				√	√	√
To stimulate the knowledge and skill to take up entrepreneurial initiatives or managerial role in an organization			√	√	√	√		√		√
To endow the students to be a responsible citizen and prepare them to take up leadership role to empower the business organization through their ethical, social and legal business solution.				√	√	√	√	√		√

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

Curriculum
2016 – 2017

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

DEPARTMENT OF MANAGEMENT FACULTY OF ARTS, SCIENCE AND HUMANITIES
PG PROGRAM (CBCS) – M.B.A. CURRICULUM
(2016–2018 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										
16MBAP101	Management Principles and Organizational Behavior	I	a/b/g	4	0	0	4	40	60	100
16MBAP102	Managerial Economics	V	c/e/h	4	0	0	4	40	60	100
16MBAP103	Legal Environment for Business	I	a/b/g	4	0	0	4	40	60	100
16MBAP104	Accounting for Managers	I	a/b/g	4	1	0	4	40	60	100
16MBAP105	Quantitative Methods for Management	I	a/b/g	4	1	0	4	40	60	100
16MBAP106	#Management Practice I	V	c/f/h	2	0	0	1	50	-	50
16MBAP107	#Communication Practice I	V	c/f/h	2	0	0	1	50	-	50
16MBAP111	Computer Lab I: MS Office & Tally	I	a/b/g	0	0	4	2	40	60	100
-	**Article Re-presentation	-	-	2	0	0	-	-	-	-
-	Library	-	-	3	0	0	-	-	-	-
Semester Total				**29**	**2**	**4**	**24**	**340**	**360**	**700**
SEMESTER – II										
16MBAP201	Operations Management	I	a/b/g	4	0	0	4	40	60	100
16MBAP202	Marketing Management	II	d/f/i	4	0	0	4	40	60	100
16MBAP203	Human Resource Management	V	c/e/h	4	0	0	4	40	60	100
16MBAP204	Financial Management	I	a/b/g	4	1	0	4	40	60	100
16MBAP205	Banking and Insurance Management	I	a/b/g	4	1	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
16MBAP206	Research Methods for Management	III	c/e/h	4	0	0	4	40	60	100
16MBAP207	#Management Practice II	V	c/e/h	2	0	0	1	50	-	50
16MBAP208	#Communication Practice II	V	c/e/h	2	0	0	1	50	-	50
16MBAP211	Computer Lab – II: SPSS	I	a/b/g	0	0	4	2	40	60	100
-	**Article Re-presentation	-	-	2	0	0	-	-	-	-
Semester Total				**30**	**1**	**4**	**28**	**380**	**420**	**800**
SEMESTER – III										
16MBAP301	Strategic Business Management	I	a/b/g	4	0	0	4	40	60	100
16MBAP302	Business Ethics, Corporate Governance & Social Responsibility	I	a/b/g	4	0	0	4	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
16MBAP321	Summer Internship and Viva Voce	V	c/e/h	4	0	0	4	40	60	100
16MBAP304	#Management Practice III	V	c/e/h	2	1	0	1	50	-	50
16MBAP305	#Communication Practice III	V	c/e/h	2	0	0	1	50	-	50
-	**Article Re-presentation	-	-	2	0	0	-	-	-	-
Semester Total				**34**	**1**	**0**	**30**	**380**	**420**	**800**
SEMESTER – IV										
	+Specialization I Elective 3	-	-	4	0	0	4	40	60	100
	+Specialization I Elective 4	-	-	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 3	-	-	4	0	0	4	40	60	100
	+Specialization II Elective 4	-	-	4	0	0	4	40	60	100
16MBAP491	Major Project and Viva Voce	II/IV	d/f/i	17	0	0	6	80	120	200
-	**Article Re-presentation	-	-	2	0	0	-	-	-	-
Semester Total				**35**	**0**	**0**	**22**	**240**	**360**	**600**
Programme Total				**-**	**-**	**-**	**104**	**1340**	**1560**	**2900**

ELECTIVE LIST - SEMESTER III

Semester	List of Specializations	Course Code	Name of the Elective Course	PEO	PO
III	**Finance**	16MBAPF303A	International Financial Management	I	a/b/g
		16MBAPF303B	Strategic Cost Management	I	a/b/g
		16MBAPF303C	Financial Service Management	I	a/b/g
	Marketing Management	16MBAPM303A	Services Marketing	II	d/f/i
		16MBAPM303B	Sales and Promotional Management	II	d/f/i
		16MBAPM303C	Marketing Research and Consumer behavior	II	d/f/i
	Human Resources Management	16MBAPH303A	Human Resource Development	V	c/e/h
		16MBAPH303B	Managing Interpersonal Effectiveness	V	c/e/h
		16MBAPH303C	Organizational Development	V	c/e/h
	Systems	16MBAPS303A	System Analysis & Design	V	c/e/h
		16MBAPS303B	Emerging Trends in Technology	V	c/e/h
		16MBAPS303C	Software Development	V	c/e/h
	Entrepreneurship	16MBAPE303A	Entrepreneurial Finance	IV	d/f/i
		16MBAPE303B	Entrepreneurship Development	IV	d/f/i
		16MBAPE303C	Project management	IV	d/f/i
	Banking Management	16MBAPB303A	Fundamentals of Commercial Bank Management	I	a/b/g
		16MBAPB303B	Resource Mobilization – Deposits	I	a/b/g
		16MBAPB303C	Resource Deployment – Small Loans	I	a/b/g
	Retail Management	16MBAPR303A	Retail Environment	II	d/f/i
		16MBAPR303B	Retail Operations, Systems and Inventory	II	d/f/i
		16MBAPR303C	Merchandising Management	II	d/f/i
		16MBAPI303A	International Marketing Management	IV	d/f/i

Semester	List of Specializations	Course Code	Name of the Elective Course	PEO	PO
	International Business	16MBAPI303B	International Logistics and Documentation	IV	d/f/i
		16MBAPI303C	International Business Negotiations	IV	d/f/i
	Production Management	16MBAPP303A	Business Process Reengineering	I	a/b/g
		16MBAPP303B	Advanced Maintenance Management	I	a/b/g
		16MBAPP303C	Lean Management	I	a/b/g
	Insurance Management	16MBAPN303A	General Insurance	I	a/b/g
		16MBAPN303B	Principles and Practice of Insurance	I	a/b/g
		16MBAPN303C	Actuarial Aspects of Product Development	I	a/b/g

ELECTIVE LIST - SEMESTER IV

Semester	List of Specializations	Course Code	Name of the Elective Course	PEO	PO
IV	**Finance**	16MBAPF401A	Working Capital Management	I	a/b/g
		16MBAPF401B	Security Analysis & Portfolio Management	I	a/b/g
		16MBAPF401C	Bonds, Derivatives & Commodity Market Management	I	a/b/g
	Marketing Management	16MBAPM401A	Brands and Business	II	d/f/i
		16MBAPM401B	Retail Marketing	II	d/f/i
		16MBAPM401C	Customer Relationship Management	II	d/f/i
	Human Resources Management	16MBAPH401A	Industrial Relations	V	c/e/h
		16MBAPH401B	Training and Development	V	c/e/h
		16MBAPH401C	Compensation Management	V	c/e/h
	Systems	16MBAPS401A	E-Commerce Technology & Management	V	c/e/h
		16MBAPS401B	Software Project Management	V	c/e/h
		16MBAPS401C	Enterprise Resource Planning	V	c/e/h
	Entrepreneurship	16MBAPE401A	Technology Innovation & Sustainable Enterprise for Management	IV	d/f/i
		16MBAPE401B	Business Plan &Ethics	IV	d/f/i
		16MBAPE401C	Managing Diversity	IV	d/f/i
	Banking Management	16MBAPB401A	Export and Import Financing	I	a/b/g
		16MBAPB401B	Management of Non-Performing Assets	I	a/b/g
		16MBAPB401C	Risk Management in Banks	I	a/b/g
	Retail Management	16MBAPR401A	International Retailing	II	d/f/i
		16MBAPR401B	Retail Planning	II	d/f/i
		16MBAPR401C	Retail Communication	II	d/f/i
	International Business	16MBAPI401A	Multilateral Trade Agreements and Regulations	IV	d/f/i
		16MBAPI401B	International Economics	IV	d/f/i
		16MBAPI401C	International Logistics Management	IV	d/f/i
	Production Management	16MBAPP401A	Purchasing and Materials Management	I	a/b/g
		16MBAPP401B	Supply Chain and Logistics Management	I	a/b/g
		16MBAPP401C	Total Quality Management	I	a/b/g
	Insurance Management	16MBAPN401A	Insurance Law and Regulation	I	a/b/g
		16MBAPN401B	Reinsurance	I	a/b/g
		16MBAPN401C	Risk Management	I	a/b/g

[*] The internal evaluation for Management Practice and Communication Practice shall be as follows:

- Attendance = 5 marks
- Activity/Seminar = 45 marks (15 marks for Unit I, 15 Marks for Unit II and 15 Marks for Unit III. Activity/seminar will be conducted at end of each Unit)

**The internal evaluation for Article Re-presentation (Total 15 marks for each course) shall be as follows:

- Subject matter = 05 marks
- Presentation = 04 marks
- Visual aids = 02 marks
- Question & Discussions = 04 marks

[+]**Electives:** Students can opt for two specializations out of ten specializations and two elective courses out of three elective courses in each specialization.

*The internal evaluation of **Summer Internship & Viva voce** shall be as follows:

- Model Viva-voce = 10 marks
- Project Record = 10 marks
- Viva voce Examination (internal examiner) = 20 marks

*The internal evaluation of **Major Project & Viva voce** shall be as follows:

- Review 1 (PPT Presentation) = 15 marks
- Review 2 (PPT Presentation) = 15 marks
- Model Viva-voce = 20 marks
- Project Record = 10 marks
- Viva voce Examination (internal examiner) = 20 marks

Programme Outcomes (POs)

Graduates of the MBA programme will be able to:

a. Understanding the management and domain concepts and apply them to achieve business environmental solutions.
b. Demonstrate the ability to apply multiple theoretical perspectives to address complex managerial issues required for effective problem solving and decision making in contemporary organizational environment.
c. Possess the skills required to work individually and lead effectively in a team-based environment.
d. Recognize the values and ways to identify and resolve ethical issues and apply them in organizational settings
e. Evaluate the implications of changing environmental factors on organizational choices within a global environment
f. Ability to effectively communicate, persuade and strategically engage diverse stakeholders within a business environment.

PROGRAMME SPECIFIC OUTCOMES (PSO)

g. Postgraduates will develop critical thinking and conceptualization of functional knowledge of management
h. Able to accept various responsibilities and exhibit high level of commitment to complete on time.
i. Ability to organize events individually / team and can show creativity and unique ideas in every business solutions

Programme Educational Objectives (PEOs)

I. To develop professional skills for life-long learning in areas of management and related fields.
II. To enable students to acquire proficiency, a sense of professionalism, integrity and team spirit to work in diverse environments.
III. To develop capabilities in students to independently conduct theoretical as well as applied research.
IV. To develop sound knowledge and skill to become an intrapreneur/entrepreneur and to inculcate creativity and innovation among students
V. To adapt to a rapidly changing environment with learned and applied new skills and become socially responsible and value driven citizens committed to sustainable development.

Program Educational Objectives	Program Outcomes								
	a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**
To develop professional skills for life-long learning in areas of management and related fields.	√	√					√		
To enable students to acquire proficiency, a sense of professionalism, integrity and team spirit to work in diverse environments.		√	√	√	√				√
To develop capabilities in students to independently conduct theoretical as well as applied research.			√		√	√		√	
To develop sound knowledge and skill to become an intrapreneur / entrepreneur and to inculcate creativity and innovation among students	√			√					√
To adapt to a rapidly changing environment with learned and applied new skills and become socially responsible and value driven citizens committed to sustainable development.			√			√		√	

DEPARTMENT OF MATHEMATICS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Mathematics
(2016–2017 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										
16LSU101	Language -I	III	n,o	4	0	0	4	40	60	100
16ENU101	English - I	II	n, p	4	0	0	4	40	60	100
16MMU101	Calculus	I	e, l	4	0	0	4	40	60	100
16MMU102	Algebra	II	m	6	1	0	6	40	60	100
16MMU103	Real Analysis	III	j	6	2	0	6	40	60	100
16MMU111	Calculus(Practical)	I	e	0	0	3	2	40	60	100
Semester Total				**24**	**3**	**3**	**26**	**240**	**360**	**600**
SEMESTER – II										
16LSU201	Language - II	III	n,o	4	0	0	4	40	60	100
16MMU201	Differential Equations	I	a, d, l	4	0	0	4	40	60	100
16MMU202	Theory of Real Functions	II	j	6	1	0	6	40	60	100
16MMU203	Group Theory I	III	d, f	6	2	0	6	40	60	100
16MMU211	Differential Equations (Practical)	I	k	0	0	3	2	40	60	100
16AEC201	Environmental Studies	I	n, o	4	0	0	4	40	60	100
Semester Total				**24**	**3**	**3**	**26**	**240**	**360**	**600**
SEMESTER – III										
16MMU301	Numerical Methods	I	h	4	0	0	4	40	60	100
16MMU302	Ring Theory and Linear Algebra I	**II**	**m**	6	2	0	6	40	60	100
16MMU303	Multivariate Calculus	**II**	**e,g**	6	2	0	6	40	60	100
16MMU304A	Logic and Sets	II	d,n	4	2	0	4	40	60	100
16MMU304B	Programming with C and C++	II	k							
16MMU311	Numerical Methods (Practical)	I	h,j	0	0	4	2	40	60	100
Semester Total				**20**	**6**	**4**	**24**	**200**	**300**	**500**
SEMESTER – IV										
16MMU401	Group Theory II	II	f	6	2	0	6	40	60	100
16MMU402	Metric Spaces and Complex	**II**	**d,m**	6	2	0	6	40	60	100
16MMU403	Ring Theory and Linear Algebra II	**II**	**m**	6	2	0	6	40	60	100
16MMU404A	Graph Theory	II	d,m	4	2	0	4	40	60	100

16MMU404B	Operating System : Linux	II	K							
Semester Total				**22**	**8**	**0**	**22**	**160**	**240**	**400**
SEMESTER – V										
16MMU501A	Portfolio Optimization	III	o	6	2	0	6	40	60	100
16MMU501B	Number Theory	**II**	**j**							
16MMU502A	Industrial Mathematics	III	o	6	2	0	6	40	60	100
16MMU502B	Boolean Algebra and Automata	I	k							
16MMU503A	Theory of Equations	III	d, f	6	2	0	6	40	60	100
16MMU503B	Computer Graphics	I	b,k							
16MMU504A	Analytical Geometry	II	d,m	4	2	0	4	40	60	100
16MMU504B	Linear Programming	II	i							
Semester Total				**22**	**8**		**22**	**160**	**240**	**400**
SEMESTER – VI										
16MMU601A	Mathematical Modeling	I	b,e,g	6	2	0	6	40	60	100
16MMU601B	Mechanics	I	c,g,q							
16MMU602A	Riemann Integration and Series of Functions	**I**	**c**	6	2	0	6	40	60	100
16MMU602B	PDE and Systems of ODE	I,II	a,l							
16MMU603A	Probability and Statistics	I	a	4	2	0	4	40	60	100
16MMU603B	Differential Geometry	I	a,s							
16MMU691	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				**180**			**140**	**1160**	**740**	**2900**

DISCIPLINE SPECIFIC ELECTIVE

Semester	Course Code	DSE	Semester	Course Code	DSE
V	**16MMU501A**	Portfolio Optimization	VI	**16MMU601A**	Mathematical Modeling
	16MMU501B	Number Theory		**16MMU601B**	Mechanics
	16MMU502A	Industrial Mathematics		**16MMU602A**	Riemann Integration and Series of Functions
	16MMU502B	Boolean Algebra and Automata Theory		**16MMU602B**	PDE and Systems of ODE
	16MMU503A	Theory of Equations			
	16MMU503B	Computer Graphics			

SKILL ENHANCEMENT COURSE

Semester	Course Code	SEC	Semester	Course Code	SEC
III	**16MMU304A**	Logic and Sets	IV	**16MMU404A**	Graph Theory
	16MMU304B	Programming with C and C++		**16MMU404B**	Operating System : Linux
V	**16MMU504A**	Analytical Geometry	VI	**16MMU603A**	Probability and Statistics
	16MMU504B	Linear Programming		**16MMU603B**	Differential Geometry

Employability → Blue

Skill development → Red

Entrepreneurship → Green

DEPARTMENT OF MATHEMATICS
FACULTY OF ARTS, SCIENCE AND HUMANITIES
UG PROGRAM (CBCS) – B.Sc. Mathematics
(2016–2017 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

Karpagam Academy Of Higher Education
Coimbatore-21
Faculty of Arts , Science and Humanities
Department of Mathematics
PG Program (CBCS)- (2016 – 2018) Batch

Program: 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										
16MMP101	Algebra	III	a, c, e	4	0	0	4	40	60	100
16MMP102	Real Analysis	I	a, g, e	4	0	0	4	40	60	100
16MMP103	Numerical Analysis	I	b, d, g	4	0	0	4	40	60	100
16MMP104	Ordinary Differential Equations	II	b, d, e	4	0	0	4	40	60	100
16MMP105A	Advanced Discrete Mathematics	III	e	4	0	0	4	40	60	100
16MMP105B	Neural networks and fuzzy logic	I	a, g							
16MMP105C	Magnetohydrodynamics	I	d,j							
16MMP106	Fuzzy logic	II	g	4	0	0	4	40	60	100
16MMP111	Numerical Analysis (Practical)	I	a	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2			-	-	-	-
				26	**0**	**4**	**26**	**280**	**420**	**700**
SEMESTER – II										
16MMP201	Complex Analysis	III	c, e	4	0	0	4	40	60	100
16MMP202	Topology	I	a, c	4	0	0	4	40	60	100
16MMP203	Optimization Techniques	III	f	4	0	0	4	40	60	100
16MMP204	Partial Differential Equations	II	d, e	4	0	0	4	40	60	100
16MMP205A	Graph theory and its applications	I	a	4	0	0	4	40	60	100
16MMP205B	Theory of Elasticity	I	d,j							
16MMP205C	Fundamentals of Actuarial Mathematics	III	b, g							
16MMP206	Mechanics	I	a,d,j	4	0	0	4	40	60	100
16MMP211	Optimization Techniques (Practical)	II	g	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2			-	-	-	-
				26	**0**	**4**	**26**	**280**	**420**	**700**
SEMESTER – III										
16MMP301	Functional Analysis	III	c,e	4	0	0	4	40	60	100
16MMP302	Fluid dynamics	I	d,j	4	0	0	4	40	60	100
16MMP303	Mathematical Modeling	II	d,e	4	0	0	4	40	60	100
16MMP304	Mathematical Statistics	I	i,j	4	0	0	4	40	60	100

16MMP305A	Formal Languages & Automata Theory	I	e,i	4	0	0	4	40	60	100
16MMP305B	Combinatorics	III	b,h							
16MMP305C	Fuzzy Topology	III	c,e							
16MMP306	Integral equations and transforms	II	j,g	4	0	0	4	40	60	100
16MMP311	Mathematical Statistics(Practical)	I	a	0	0	4	2	40	60	100
Journal Paper analysis & Presentation				2	-	-	-	-	-	-
				26	**0**	**4**	**26**	**280**	**420**	**700**
16MMP401	Measure theory	III	f,g	4	0	0	4	40	60	100
16MMP402	Stochastic Processes	I	g,e,j	**3**	**0**	**0**	3	40	60	100
16MMP491	Project	III	e	**0**	**0**	**0**	8	80	120	200
Semester Total				**7**	**0**	**0**	**15**	**160**	**240**	**400**
Grand Total				**85**	**0**	**12**	**93**	**1000**	**1500**	**2500**

Electives Courses*

Elective I		**Elective II**		**Elective III**	
Course code	**Name of the course**	**Course code**	**Name of the course**	**Course code**	**Name of the course**
16MMP105A	Advanced Discrete Mathematics	**16MMP205A**	Graph theory and its applications	**16MMP305A**	Formal Languages & Automata Theory
16MMP105B	Neural networks and fuzzy logic	**16MMP205B**	Theory of Elasticity	**16MMP305B**	Combinatorics
16MMP105C	Magnetohydrodynamics	**16MMP205C**	Fundamentals of Actuarial Mathematics	**16MMP305C**	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 and applied mathematics.

PEO II : To assimilate complicated mathematical concepts and arguments.

PEO III : To enhance your own learning and create mathematical thinking

MAPPING OF POs AND PEOs

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

DEPARTMENT OF MICROBIOLOGY
FACULTY OF ARTS, SCIENCE AND HUMANITIES (FASH)
KARPAGAM ACADEMY OF HIGHER EDUCATION
UG PROGRAM (CBCS) – Microbiology (2016–2017 Batch)

Course code	Name of the course	Objective & outcomes		Hrs / week	Marks			Exam (h)	Credit
		PEOs	POs		CIA	ESE	Total		
16LSU101	Language – I	VII	e	04	40	60	100	3	4
16ENU101	English	VII	e	04	40	60	100	3	4
16MBU101	Introduction to Microbiology and Microbial Diversity	I I	a	04	40	60	100	3	4
16MBU102	Bacteriology	I	g	04	40	60	100	3	4
16MBU103	Biochemistry	VI	g	04	40	60	100	3	4
16MBU111	Basic Microbiology- Practical	VI	b	03	40	60	100	3	2
16MBU112	Bacteriology - Practical	VI	b	03	40	60	100	3	2
16MBU113	Basic Biochemistry- Practical	VI	b	04	40	60	100	3	2
	Semester total			**30**	**320**	**480**	**800**	–	**26**
16LSU201	Language –II	VII	e	04	40	60	100	3	4
16MBU201	Virology	I	g	04	40	60	100	3	4
16MBU202	Microbial Physiology and Metabolism	II	g	04	40	60	100	3	4
16MBU203	Microbial genetics	IV	g	04	40	60	100	3	4
16MBU211	Virology - Practical	VI	b	03	40	60	100	6	2
16MBU212	Microbial Physiology and Metabolism - Practical	VI	b	03	40	60	100	6	2
16MBU213	Microbial Genetics - Practical	VI	b	04	40	60	100	6	2
16AEC201	Environmental Studies	IV	f	04	40	60	100	3	4
	Semester total			**30**	**320**	**480**	**800**	–	**26**
16MBU301	Environmental Microbiology	IV	h	04	40	60	100	3	4
16MBU302	Food and Dairy Microbiology	IV	h	04	40	60	100	3	4
16MBU303	Industrial Microbiology	IV	g	04	40	60	100	3	4
16MBU304A	Microbial Quality Control in Food and Pharmaceutical Industries	IV	h	03	40	60	100	3	3
16MBU304B	Microbial Diagnosis in Health Clinic								
16MBU311	Environmental Microbiology - Practical	IV	h	04	40	60	100	9	2
16MBU312	Food and Dairy Microbiology- Practical	VI	b	04	40	60	100	9	2
16MBU313	Industrial Microbiology - Practical	IV	g	04	40	60	100	9	2
16MBU314A	Microbial Quality Control in Food and Pharmaceutical Industries - Practical	III	b,h	03	40	60	100	3	1
16MBU314B	Microbial Diagnosis in Health Clinic – Practical								

	Semester total			**30**	**320**	**480**	**800**	**–**	**22**
16MBU401	Immunology	I	h	04	40	60	100	3	4
16MBU402	Medical Microbiology	IV	j	04	40	60	100	3	4
16MBU403	Recombinant DNA Technology	IV	h,g,i	04	40	60	100	3	4
16MBU404A	Biofertilizers and Biopesticides			03	40	60	100	3	3
16MBU404B	Personal Health Care	IV	j						
16MBU411	Immunology - Practical	I	h	04	40	60	100	6	2
16MBU412	Medical Microbiology - Practical	IV	j	04	40	60	100	9	2
16MBU413	Recombinant DNA Technology – Practical	IV	h,g,i	04	40	60	100	9	2
16MBU414A	Biofertilizers and Biopesticides - Practical			03	40	60	100	6	1
16MBU414B	Personal Health Care - Practical	IV	j						
	Semester total			**30**	**320**	**480**	**800**	**-**	**22**
16MBU501A	Management of Human Microbial Diseases	IV	b	04	40	60	100	3	4
16MBU501B	Microbiological Analysis of air and water	I	b						
16MBU502A	Biomathematics and Biostatistics	VII	d	04	40	60	100	3	4
16MBU502B	Bioinformatics	VII	c						
16MBU503A	Instrumentation and Biotechniques	VI	b	04	40	60	100	3	4
16MBU503B	Plant Pathology	II	b						
16MBU504A	Microbial Biotechnology	V	g	03	40	60	100	3	3
16MBU504B	Inheritance Biology	II	a						
16MBU511A	Management of Human Microbial Diseases - Practical	IV	b	04	40	60	100	9	2
16MBU511B	Microbiological Analysis of air and water - Practical	I	b						
16MBU512A	Biomathematics and Biostatistics - Practical	VII	d	04	40	60	100	3	2
16MBU512B	Bioinformatics - Practical	VII	c						
16MBU513A	Instrumentation and Biotechniques - Practical	VI	b	04	40	60	100	3	2
16MBU513B	Plant Pathology - Practical	II	b						
16MBU514A	Microbial Biotechnology - Practical	V	g	03	40	60	100	6	1
16MBU514B	Inheritance Biology - Practical	II	a						

	Semester total			**30**	**320**	**480**	**800**	**–**	**22**
16MBU601A	Mushroom Cultivation	III	g	04	40	60	100	3	4
16MBU601B	Food Fermentation Techniques	IV	h						
16MBU602A	Biosafety and Intellectual Property Rights	V	i	04	40	60	100	3	4
16MBU602B	Microbes in Sustainable Agriculture and Development	IV	g						
16MBU603A	Cell Biology	VI	b	03	40	60	100	3	3
16MBU603B	Molecular Biology	VI	b						
16MBU611A	Mushroom Cultivation - Practical	III	g	04	40	60	100	6	2
16MBU611B	Food Fermentation Techniques – Practical	IV	h						
16MBU612A	Biosafety and Intellectual Property Rights - Practical	V	i	04	40	60	100	6	2
16MBU612B	Microbes in Sustainable Agriculture and Development -Practical	IV	g						
16MBU613A	Cell Biology – Practical	VI	b	03	40	60	100	3	1
16MBU613B	Molecular Biology - Practical	VI	b						
16MBU691	Project	IV	d	08	40	60	100	3	6
	ECA / NCC / NSS / Sports / General interest etc							Good	
	Semester total			**30**	**280**	**420**	**700**	**–**	**22**
	COURSE TOTAL			**180**	**1880**	**2820**	**4700**	**–**	**140**

*Colour fonts highlights

Red colour : Entrepreneurship course

Green colour : Employability courses

Blue colour : Skill development courses

Elective Courses

Skill Enhancement Elective Courses			
Elective	**Semester**	**Course code**	**Name of the course**
SEC – 1	III	16MBU304A	Microbial Quality Control in Food and Pharmaceutical Industries
		16MBU314A	Microbial Quality Control in Food and Pharmaceutical Industries - Practical
	III	16MBU304B	Microbial Diagnosis in Health Clinic
		16MBU314B	Microbial Diagnosis in Health Clinic - Practical
SEC – 2	IV	16MBU404A	Biofertilizers and Biopesticides
		16MBU414A	Biofertilizers and Biopesticides-Practical
	IV	16MBU404B	Personal Health Care

		16MBU414B	Personal Health Care –Practical
SEC – 3	V	16MBU501A	Management of Human Microbial Diseases
		16MBU511A	Management of Human Microbial Diseases – Practical
	V	16MBU501B	Microbiological Analysis of air and water
		16MBU511B	Microbiological Analysis of air and water – Practical
SEC – 4	VI	16MBU601A	Mushroom Cultivation
		16MBU611A	Mushroom Cultivation –Practical
	VI	16MBU601B	Food Fermentation Techniques
		16MBU611B	Food Fermentation Techniques -Practical

Discipline Specific Elective Courses

Electives	**Semester**	**Course code**	**Name of the course**
DSE – 1	V	16MBU502A	Biomathematics and Biostatistics
		16MBU512A	Biomathematics and Biostatistics - Practical
	V	16MBU502B	Bioinformatics
		16MBU512B	Bioinformatics – Practical
DSE – 2	V	16MBU503A	Instrumentation and Biotechniques
		16MBU513A	Instrumentation and Biotechniques - Practical
	V	16MBU503B	Plant Pathology
		16MBU513B	Plant Pathology – Practical
DSE – 3	V	16MBU504A	Microbial Biotechnology
		16MBU514A	Microbial Biotechnology – Practical
	V	16MBU504B	Inheritance Biology
		16MBU514B	Inheritance Biology – Practical
DSE – 4	VI	16MBU602A	Biosafety and Intellectual Property Rights
		16MBU612A	Biosafety and Intellectual Property Rights – Practical
	VI	16MBU602B	Microbes in Sustainable Agriculture and Development
		16MBU612B	Microbes in Sustainable Agriculture and Development – Practical
DSE – 5	VI	16MBU603A	Cell Biology
		16MBU613A	Cell Biology – Practical
	VI	16MBU603B	Molecular Biology
		16MBU613B	Molecular Biology- Practical
DSE – 6	VI	16MBU691	Project

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 emergency procedures.

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.

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 the environment.

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

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
PEO II	X							X	X	
PEO III				X			X	X		
PEO IV				X			X		X	
PEO V	X					X				X
PEO VI		X	X	X						
PEO VII	X		X	X	X					

DEPARTMENT OF MICROBIOLOGY
KARPAGAM ACADEMY OF HIGHER EDUCATION
PG – MICROBIOLOGY CURRICULUM (CBCS)
(2016 – 2017 Batch)

Course code	Name of the course	Objectives and out comes		Hrs / Week	Marks			Exam Hrs	Credit (s)
		PEOs	POs		CIA	ESE	Total		
SEMESTER – I									
16MBP101	Fundamentals of Microbiology and Classification	I	a	4	40	60	100	3	4
16MBP102	Microbial Physiology and Metabolism	II	a	4	40	60	100	3	4
16MBP103	Molecular genetics	II	b	4	40	60	100	3	4
16MBP104	Bioinstrumentation	VI	b	4	40	60	100	3	4
16MBP105A	Marine microbiology	I	a	4	40	60	100	3	4
16MBP105B	Computer applications and Bioinformatics	VI I	c,d						
16MBP105C	Biochemistry	II	A						
16MBP111	Basic Practical – I	VI	b, e	4	40	60	100	9	2
16MBP112	Basic Practical – II	VI	b, e	4	40	60	100	9	2
Journal Paper Analysis & Presentation		IV	c, e	2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**
SEMESTER – II									
16MBP201	Virology	I	a, b	4	40	60	100	3	4
16MBP202	Medical Bacteriology	I	a, c	4	40	60	100	3	4
16MBP203	Microbial Technology and Intellectual Property Rights	V	b, d	4	40	60	100	3	4
16MBP204	Environmental and agricultural microbiology	I	a,i	4	40	60	100	3	4
16MBP205A	Cell biology	I	a,c	4	40	60	100	3	4
16MBP205B	Quality assurance and quality control	I	a,d,e						
16MBP205C	Bioprocess engineering	I V	a,e						
16MBP211	Advanced Practical – III	I	b,e,f	4	40	60	100	9	2
16MBP212	Advanced Practical – IV	I	b,e,f	4	40	60	100	9	2
Journal Paper Analysis & Presentation		IV	c,e	2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**
SEMESTER – III									
16MBP301	Advanced Immunology	II	b, d	4	40	60	100	3	4

16MBP302	Food and Industrial Microbiology	IV	a, c	4	40	60	100	3	4
16MBP303	Medical Mycology and Parasitology	I	a,e,f	4	40	60	100	3	4
16MBP304	Biostatistics and Research Methodology	VI	c,d,g	4	40	60	100	3	4
16MBP305A	Biofertilizer and Biomanure Technology	I	a,i	4	40	60	100	3	4
16MBP305B	Laboratory animal care	V	b,d,f						
16MBP305C	Bio nanotechnology	IV	a,d,g						
16MBP311	Application Oriented Practical – V	I	b,h	4	40	60	100	9	2
16MBP312	Application Oriented Practical – VI	I	b,i	4	40	60	100	9	2
Journal Paper Analysis & Presentation		IV	c,d,e	2	-	-	-	-	-
Semester total				**30**	**280**	**420**	**700**	**-**	**24**

Course code	**Name of the course**	**Hrs / Week**	**Marks**			**Exam Hrs**	**Credit (s)**
			CIA	**ESE**	**Total**		
SEMESTER – IV							
16MBP491	Project and Viva Voce	-	80	120	200	-	15
Semester total		**-**	**80**	**120**	**200**	**-**	**15**
		90	**920**	**1380**	**2300**		**87**

Elective courses*

Elective – 1 (16MBP105)		**Elective – 2 (16MBP205)**		**Elective – 3 (16MBP305)**	
Course code	**Name of the course (Theory)**	**Course Code**	**Name of the course (Theory)**	**Course Code**	**Name of the course (Theory)**
16MBP105A	Marine microbiology	**16MBP205A**	Cell biology	**16MBP305A**	Biofertilizer and Biomanure Technology
16MBP105B	Computer applications and Bioinformatics	**16MBP205B**	Quality assurance and quality control	**16MBP305B**	Laboratory animal care
16MBP105C	Biochemistry	**16MBP205C**	Bioprocess engineering	**16MBP305C**	Bio nanotechnology

*Colour fonts highlights

Red colour : Entrepreneurship course

Green colour : Employability courses

Blue colour : Skill development courses

Postgraduate Programme – M.Sc Microbiology

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

a. Science Observation: 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. Laboratory Skills: 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. Data analysis skills: 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. Critical Thinking Skills: 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 – basedreasoning.

e. Problem Solving Skills: Microbiology majors will be competent problem-solvers. They should be able to assess the elements of a problem and develop and test a solution based on logic and the best possible information. Microbiology students should be able to analyze and interpret results from a variety of microbiological methods and apply these methods to analogous situations. They will use mathematical and graphing skills and reasoning to solve problems in microbiology

Programme Specific Outcomes (PSOs)

f. Upon master graduation, Microbiology majors will mastered a set of advanced skills, which would be useful to function effectively as professionals and to their continued development and learning within the field of Microbiology.

g. Our candidates will be able to explain why microorganisms are ubiquitous in nature, inhabiting a multitude of habitats and occupying a wide range of ecological habitats.

h. Able to cite examples of the vital role of microorganisms in biotechnology, fermentation, medicine and other industries important to human well being.

i. Able to demonstrate that microorganisms have an indispensible role in the environment, including elemental cycles, biodegradation etc.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Programme Educational Objectives of PG Microbiology: The major objectives of the postgraduate course is

PEO-I: To provide detailed knowledge of Microbiology (bacteriology, virology, parasitology and mycology) and their application fields (Medical, Agricultural and Marine Microbiology). To understand the beneficial and harmful role of microorganisms in the environment and in the industries.

PEO-II: To understand the fundamentals of physiological reactions including metabolic pathways and biochemical reactions in microorganisms. To understand the fundamental concepts of immunology, biochemistry, biotechnology and genetics etc.

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

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

PEO-V: Gain experience with standard molecular tools and approaches utilized: manipulate genes, gene products and organisms. Become familiar with handling of Laboratory animals for the research purpose. Interpret differences in data distributions via visual displays.

PEO-VI: Become familiar with public policy, biosafety, bioinformatics and intellectual property rights issues related to microbiology applications.

POs	a	b	c	D	e	f	g	H	I
PEO I	X	X				X	X	X	
PEO II	X	X							X
PEO III			X	X	X	X			
PEO IV	X					X	X	X	X
PEO V		X	X	X		X			
PEO VI				X	X	X			X

B.Sc. PHYSICS

CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum and Syllabus

Students admitted from 2016 onwards

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

DEPARTMENT OF PHYSICS

KARPAGAMACADEMY OF HIGHER EDUCATION

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

Eachanari Post, Coimbatore – 641 021, INDIA.

Phone: 0422-6453777, 6471113-5, 2980011-2980018;

Fax No: 0422 – 2980022, 2980023

Email: info@karpagam.com

Web: www.kahedu.edu.in

PREAMPLE

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

- To update the knowledge of the students in one of the most important basic sciences, namely PHYSICS.

- To update the knowledge of a person in the latest fields of science like Atomic and Nuclear Physics, Laser Physics, Materials Science, Nano Technology, Astrophysics etc.

- To motivate and support young talented researchers in their research activities.

- To prepare the students to fit into National Laboratories like CSIR laboratories and National Physical Laboratories etc., as working personnel. Also to make them to work in Universities and colleges as teachers.

- To enhance the knowledge of the structure and evolution of the Universe, fundamental properties of matter and energy through the support of leading edge research.

- To provide efficient and resourceful hands to help in inter-disciplinary areas where basic and advanced knowledge in physics is utilized.

DEPARTMENT OF PHYSICS

FACULTY OF ARTS, SCIENCE AND HUMANITIES

UG PROGRAM (CBCS) – B.Sc. Physics

(2016–2018 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 – I										
16LSU101	Language – I	2	i	4	-	-	4	40	60	100
16ENU101	English	2	g	4	-	-	4	40	60	100
16PHU101	Mechanics	1,3	a	5	-	-	5	40	60	100
16PHU102	Solid State Physics	1,6	a	5	-	-	5	40	60	100
16PHU103	Mathematical Physics–I	5	e,h	4	-	-	4	40	60	100
16PHU111	Mechanics Practical	1,6	e	-	-	2	1	40	60	100
16PHU112	Solid State Physics Practical	6	e	-	-	2	1	40	60	100
16PHU113	Mathematical Physics–I Practical	4,5	e	-	-	4	2	40	60	100
Semester Total				**22**		**8**	**26**	**320**	**480**	**800**
SEMESTER – II										
16LSU201	Language -2	2	i	4	-	-	4	40	60	100
16PHU201	Electricity and Magnetism	1,3	a	5	-	-	5	40	60	100
16PHU202	Analog systems and Applications	2	a	5	-	-	5	40	60	100
16PHU203	Mathematical Physics – II	5	h	4	-	-	4	40	60	100
16PHU211	Electricity and Magnetism (Practical)	1,6	e	-	-	2	1	40	60	100
16PHU212	Analog systems and Applications (Practical)	5	e	-	-	2	1	40	60	100
16PHU213	Mathematical Physics – II (Practical)	4	e	-	-	4	2	40	60	100
16AEC201	Environmental studies	3	d	4	-	-	4	40	60	100
Semester Total				**22**		**8**	**26**	**320**	**480**	**800**
SEMESTER – III										

16PHU301	Thermal Physics and Statistical Mechanics	3	a,c	4	-	-	4	40	60	100
16PHU302	Physics of Devices and Communication	1	a,e	4	-	-	4	40	60	100
16PHU303	Electromagnetic Theory	7	e,f	4	-	-	4	40	60	100
16PHU304A	Renewable Energy and Energy harvesting	**7**	e, f	3	-	-	3	40	60	100
16PHU304B	Physics Workshop skill	7	i							
16PHU311	Thermal Physics and Statistical Mechanics -Practical	6	a,e	-	-	4	2	40	60	100
16PHU312	Physics of Devices and Communication (Practical)	6	a,e	-	-	4	2	40	60	100
16PHU313	Electromagnetic Theory (Practical)	6	e	-	-	4	2	40	60	100
16PHU314A	Renewable Energy and Energy harvesting (Practical)	6	e	-	-	3	1	40	60	100
16PHU314B	Physics Workshop skill (Practical)	6	e	-	-					
	Semester total			**15**		**15**	**22**	**320**	**480**	**800**
SEMESTER – 4										
16PHU401	Waves and optics	3	a,c	4	-	-	4	40	60	100
16PHU402	Nuclear and Particle physics	1	j	4	-	-	4	40	60	100
16PHU403	Digital Signal Processing	2	f	4	-	-	4	40	60	100
16PHU404A	Basic Instrumentation Skill	1	a	3	-	-	3	40	60	100
16PHU404B	Radiation Safety	7	i							
16PHU411	Wave and Optics (Practical)	6	e		-	04	2	40	60	100
16PHU412	Nuclear and Particle Physics (Practical)	6	j,f	-	-	04	2	40	60	100
16PHU413	Digital Signal Processing (Practical)	6	e	-	-	04	2	40	60	100
16PHU414A	Basic Instrumentation Skill	6	e	-	-	03	1	40	60	100
16PHU414B	Radiation Safety	6	e							
	Semester total			**15**		**15**	**22**	**320**	**480**	**800**
SEMESTER – 5										
16PHU501A	Computational Skill	1	D	3	-	-	3	40	60	100
16PHU501B	Weather Forecasting	1	D		-	-		40	60	100
16PHU502A	Elements of Modern Physics	1	c,h	4	-	-	4	40	60	100
16PHU502B	Medical Physics	2	C							
16PHU503A	Digital, Analog and Instrumentation	5	c,h	4	-	-	4	40	60	100
16PHU503B	Embedded System: Introduction to Microcontroller	5	c,h		-	-		40	60	100

16PHU504A	Classical Mechanics	3	a,h	4	-		4	40	60	100
16PHU504B	Advanced Mathematical Physics	5	c,h		-			40	60	100
16PHU511A	Computational Skill (Practical)	1	D	-	-	3	1	40	60	100
16PHU511B	Weather Forecasting (Practical)	1	D							
16PHU512A	Elements of Modern Physics (Practical)	6	E	-	-	4	2	40	60	100
16PHU512B	Medical Physics (Practical)	2	F	-	-			40	60	100
16PHU513A	Digital, Analog and Instrumentation (Practical)	5	e,h	-	-	4	2	40	60	100
16PHU513B	Embedded System: Introduction to Microcontroller (Practical)	5	h							
16PHU514A	Classical Mechanics (Practical)	3	6	-	-	4	2	40	60	100
16PHU514B	Advanced Mathematical Physics (Practical)	5	h							
	Semester total			**15**		**15**	**22**	**320**	**480**	**800**
SEMESTER – 6										
16PHU601A	Electrical circuit and network skill	4	h	3	-	-	3	40	60	100
16PHU601B	Applied Optics	3	a,c		-	-		40	60	100
16PHU602A	Quantum Mechanics	3	a,h	4	-	-	4	40	60	100
16PHU602B	Atmospheric Physics	1	d							
16PHU603A	Nano Materials and Applications	2	f	4	-	-	4	40	60	100
16PHU603B	Biological Physics	3	f		-	-		40	60	100
16PHU611A	Electrical circuit and network skill (Practical)	5	e,h		-	3	1	40	60	100
16PHU611B	Applied Optics (Practical)	6	e							
16PHU612A	Quantum Mechanics (Practical)	6	e		-	4	2	40	60	100
16PHU612B	Atmospheric Physics (Practical)	6	e,f					40	60	100
16PHU613A	Nano Materials and Applications (Practical)	6	e,f			4	2	40	60	100
16PHU613B	Biological Physics (Practical)	6	f					40	60	100
16PHU691	Project	8	a,e,g			8	6	40	60	100
	Semester total			**11**		**19**	**22**	**280**	**420**	**700**
	ECA / NCC / NSS / Sports / General interest etc									
	G. Total						**140**	**1880**	**2820**	**4700**

PROGRAMME OUTCOMES (POs)

At the end of the programme, the students will

a) Understood the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.

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

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

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

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

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

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

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

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs)

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

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

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

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

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

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

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

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

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

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

Pos	**a**	**b**	**c**	**d**	**E**	**f**	**g**	**h**	**i**	**j**	**k**	**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					

M.Sc. PHYSICS

CHOICE BASED CREDIT SYSTEM (CBCS)

Curriculum and Syllabus

2016 – 2017

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

KARPAGAM ACADEMY OF HIGHER EDUCATION

(Deemed to be University)

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Eachanari Post, Coimbatore – 641 021

KARPAGAM ACADEMY OF HIGHER EDUCATION, COIMBATORE – 21

M. Sc., PHYSICS

SCHEME OF EXAMINATION

COURSE OBJECTIVE

- To update the knowledge of the students in one of the most important basic sciences, namely PHYSICS.

- To update the knowledge of a person in the latest fields of science like Atomic and Nuclear Physics, Laser Physics, Materials Science, Nano Technology, Astrophysics etc.

- To motivate and support young talented researchers in their research activities.

- To prepare the students to fit into the national Laboratories like CSIR Laboratories and National physical Laboratory etc, as working personnel. Also, to make them to work in Universities and colleges as teachers.

- To enhance the knowledge of the structure and evolution of the universe, fundamental properties of matter and energy through the support of leading edge research.

- To provide efficient and resourceful hands to help in inter-disciplinary areas where basic and advanced knowledge in physics is utilized.

KARPAGAM ACADEMY OF HIGHER EDUCATION

M.Sc. Physics (CBCS)
(2016 – 2017 Batch)

Course code	Name of the course	Objectives and out comes		Instruction hours / week			Marks			Credit (s)
		PEOs	POs	L	T	P	CIA	ESE	Total	
SEMESTER – I										
16PHP101	Condensed Matter Physics	1,3	a	4	-	-	40	60	100	4
16PHP102	Electronic Devices and Circuits	2,4	b	4	-	-	40	60	100	4
16PHP103	Thermodynamics and Statistical Mechanics	1	b	4	-	-	40	60	100	4
16PHP104	Mathematical Physics	1	a,b	4	-	-	40	60	100	4
16PHP105A	Material Science	3,6	d,f	4	-	-	40	60	100	4
16PHP105B	Astronomy and Astrophysics									
16PHP105C	Crystal Growth Techniques									
16PHP111	Practical – I	4	b,f	-	-	4	40	60	100	2
16PHP112	Practical – II	4	d	-	-	4	40	60	100	2
Journal Paper Analysis & Presentation		5,7	d	2	-	-	-	-	-	-
Semester total				**22**		**8**	**280**	**420**	**700**	**24**
SEMESTER-II										
16PHP201	Classical Mechanics and Relativity	5	e	4	-	-	40	60	100	4
16PHP202	Quantum Mechanics - I	3	c	4	-	-	40	60	100	4
16PHP203	Nuclear Physics	2	d	4	-	-	40	60	100	4
16PHP204	Spectroscopy	5	g	4	-	-	40	60	100	4
16PHP205A	Digital Signal Processing	6,1	a,f	4	-	-	40	60	100	4
16PHP205B	Computational Physics									
16PHP205C	Thin Film Physics									
16PHP211	Practical – III	4	b,f	-	-	4	40	60	100	2
16PHP212	Practical – IV	4	d	-	-	4	40	60	100	2
Journal Paper Analysis & Presentation		5,7	d	2	-	-	2	-	-	-
Semester total				**22**		**8**	**280**	**420**	**700**	**24**
SEMESTER-III										
16PHP301	Quantum Mechanics – II	3	b,f	4	-	-	40	60	100	4
16PHP302	Laser and Applications	4	e	4	-	-	40	60	100	4

16PHP303	Electromagnetic theory and Electrodynamics	7	a,b	4	-	-	40	60	100	4
16PHP304	Digital Electronics and Microprocessor	2	c	4	-	-	40	60	100	4
16PHP305A	Nano structure Characterisation	1	d	4	-	-	40	60	100	4
16PHP305B	Solar Energy and its utilization	2,6	d							
16PHP305C	Optoelectronics	2	d,e							
16PHP311	Practical – V	4	b,f	-	-	4	40	60	100	2
16PHP312	Practical – VI	4	d	-	-	4	40	60	100	2
Journal Paper Analysis & Presentation		5,7	d	2	-	-	2	2	-	-
Semester total				**22**		**8**	**280**	**420**	**700**	**24**
SEMESTER-IV										
16PHP491	Project and Viva Voce	1,5,6	d,e,f	-	-	-	80	120	200	15
Semester total						**-**	**80**	**120**	**200**	**15**
							920	**1380**	**2300**	**87**

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)**
A	Material Science	**A**	Digital Signal Processing	**A**	Nano structure Characterisation
B	Astronomy and Astrophysics	**B**	Computational Physics	**B**	Solar Energy and its utilization
C	Crystal Growth Techniques	**C**	Thin Film Physics	**C**	Optoelectronics

Blue- Employability

Green –Entrepreneurship

Red- Skill development

PROGRAMME OUTCOMES

At the end of the programme, the students will

a) Acquire scientific knowledge to identify, analyze and solve the complex problems in the field of theoretical & experimental physics.

b) Apply theoretical knowledge of physics principles and mathematical techniques.

c)They can get opportunities after M.Sc. program include doing research in leading national and international universities, laboratories and research institutes.

d)Gain the knowledge and understand the fundamental laws and principles along with its applications in research skills which include advanced laboratory techniques.

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

PROGRAMME SPECIFIC OUTCOMES

f)Recognize how observation, experiment and theory work together.

g) They acquire the knowledge to design and develop a device to meet the social needs.

h) Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Understanding the advanced trends in Physics.

PEO 2: Perform procedures as per laboratory standards in the areas like electronics and communications, laser, Nuclear Physics, Solar energy and Thermal Physics.

PEO 3: Analyze the quantum methods in the solution of problems involving atomic spectra, blackbody radiation, the photoelectric effect, X-ray emission, the structure of the atom, and one-dimensional potentials.

PEO 4: To understand the classical experimental techniques and modern measurement technology including analog and digital electronics, laboratory test equipment, optics, lasers, and detectors

PEO 5: To develop and strong student competencies in Physics and its applications in a technology-rich, interactive environment.

PEO 6: To create a sense of ethical responsibilities among students.

PEO 7: To develop and strong student skills in research, analysis and interpretation of complex information.

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 (REGULAR)
COURSE OF STUDY AND SCHEME OF EXAMINATIONS (2016 and onwards)

CURRICULUM

SEMESTER I

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BECC101	Communicative English	4	12	3	0	0	3	40	60	100
16BECC102	Engineering Mathematics I	2	1,4	3	2	0	4	40	60	100
16BEPH103 / 16BECH103	Engineering Physics / Engineering Chemistry	1,2	4	3	0	0	3	40	60	100
16BEAE104	Basic Automobile Engineering	2,3	2,3	3	0	0	3	40	60	100
16BEAE105A / 16BEAE105B	Basic Electrical and Electronics Engineering / Elements of Mechanical Engineering	2,4	11	3	0	0	3	40	60	100
PRACTICALS										
16BEPH111 / 16BECH111	Engineering Physics Laboratory / Engineering Chemistry Laboratory	1	1	0	0	4	2	40	60	100
16BEAE112	Engineering Workshop Practice	2	2,9	0	0	4	2	40	60	100
16BEAE113	Engineering Graphics	2	3,4	2	0	2	3	40	60	100
TOTAL							**23**	**320**	**480**	**800**
VAC										
16BECC151	Human Values	1	7	1	0	0	-	100	-	100

SEMESTER II

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BECC201A / 16BECC201B	Business Communication / Technical English	4	12	3	0	0	3	40	60	100
16BECC202	Engineering Mathematics II	2	1,4	3	2	0	4	40	60	100
16BEPH203 / 16BECH203	Engineering Physics / Engineering Chemistry	1,2	4	3	0	0	3	40	60	100
16BECC204	Environmental Sciences	1,4	1,2,6,9	3	0	0	3	40	60	100
16BEAE205A / 16BEAE205B	Basic Electrical and Electronics Engineering / Elements of Mechanical Engineering	2,4	11	3	0	0	3	40	60	100
PRACTICALS										
16BEPH211 / 16BECH211	Engineering Physics Laboratory / Engineering Chemistry Laboratory	1	1	0	0	4	2	40	60	100
16BEAE212	Computer Practice and Programming Laboratory	2	1,2	1	0	4	3	40	60	100
16BEAE213	Machine Drawing	2,3	2,3,4	1	0	2	2	40	60	100
TOTAL							**23**	**320**	**480**	**800**
VAC										
16BEAE251	Aptitude Training	4	7	1	0	0	-	100	-	100

SEMESTER III

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BEAE301	Methods of Applied Mathematics	2	1,4	3	2	0	4	40	60	100

16BEAE302	Engineering Mechanics	2	2,4	3	2	0	4	40	60	100
16BEAE303	Applied Thermodynamics	2	2,3	3	0	0	3	40	60	100
16BEAE304	Automotive Engines	2,3	2,3	3	0	0	3	40	60	100
16BEAE305	Automotive Chassis	2,3	2,3,4	3	0	0	3	40	60	100
16BEAE306A / 16BEAE306B	Engineering Materials and Metallurgy / Composite Materials	2,3	1,3	3	0	0	3	40	60	100
PRACTICALS										
16BEAE311	Automotive Engine Components Laboratory (HC)	2,3	2,3	0	0	3	2	40	60	100
16BEAE312	Computer Aided Machine Drawing Laboratory (HC)	2,3	2,3,4	0	0	3	2	40	60	100
16BEAE313	Course Oriented Project - I	2,4	1,4,8,9	1	0	0	1	100	-	100
TOTAL							**25**	**420**	**480**	**900**
VAC										
16BEAE351	Soft Skills	4	7	1	0	0	-	100	-	100

SEMESTER IV

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BEAE401	Theory of Machines	2,3	1,3,4	3	0	0	3	40	60	100
16BEAE402	Fluid Mechanics and Heat Transfer	2	1,3	3	2	0	4	40	60	100
16BEAE403	Strength of Materials	2,3	1,3,4	3	2	0	4	40	60	100
16BEAE404	Automotive Transmission	2,3	2,3,4	3	0	0	3	40	60	100
16BEAE405	Automotive Pollution and NVH Control	1,2	2,6	3	0	0	3	40	60	100

PRACTICALS										
16BEAE411	Automotive Chassis and Transmission Laboratory	2,3	1,2,3,4	0	0	3	2	40	60	100
16BEAE412	Scientific Computing Laboratory	2	1	2	0	2	3	40	60	100
16BEAE413	Fluid Mechanics and Strength of Materials Laboratory	2	1,3	0	0	3	2	40	60	100
16BEAE414	Course Oriented Project - II	2,4	1,4,8,9	1	0	0	1	100	-	100
TOTAL							**25**	**420**	**480**	**900**
VAC										
16BEAE451	Automotive Ergonomics and Safety	2,3	2,3	1	0	0	-	100	-	100

SEMESTER V

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BEAE501	Design of Machine Elements	2,3	1,2,3,4	3	2	0	4	40	60	100
16BEAE502	IC Engine Design	2,3	1,2,3,4	3	2	0	4	40	60	100
16BEAE503A / 16BEAE503B	Automotive Electrical and Electronics / Automation and Mechatronics	2,4	2	3	0	0	3	40	60	100
16BEAE5E--	Professional Elective - I	-	-	3	0	0	3	40	60	100
16BEAE5E--	Professional Elective - II	-	-	3	0	0	3	40	60	100
PRACTICALS										
16BEAE511	Thermal Engineering Laboratory	2,3	2,3	0	0	3	2	40	60	100
16BEAE512	Automotive Electrical and Electronics Laboratory	2,4	2	0	0	3	2	40	60	100
16BEAE513	Dynamics and Mechatronics Laboratory	2,3	1,2,3	0	0	3	2	40	60	100

16BEAE514	Course Oriented Project - III	2,4	1,4,8,9	1	0	0	1	100	-	100
TOTAL							**24**	**320**	**480**	**800**
VAC										
16BEAE551	In-plant Training	2,4	1,4,8,9	0	0	0	-	100	-	100
16BEAE552	Technical Presentation & Seminar	4	11	1	0	0	-	100	-	100

SEMESTER VI

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BEAE601	Automotive Chassis Design	2,3	1,2,3,4	3	2	0	4	40	60	100
16BEAE602	Vehicle Dynamics	2,3	1,2,4	3	0	0	3	40	60	100
16BEAE603	Vehicle Body Engineering and Safety	2,3	1,2,3,4	3	0	0	3	40	60	100
16BEAE604A / 16BEAE604B	Manufacturing Technology / Production Process for Automotive Components	2,3	2,3,9	3	0	0	3	40	60	100
16BEAE6E--	Professional Elective – III	-	-	3	0	0	3	40	60	100
16BEAE6E--	Professional Elective - IV	-	-	3	0	0	3	40	60	100
PRACTICALS										
16BEAE611	Automobile Vehicle Maintenance and Reconditioning Laboratory	2,3	1,2,3	0	0	3	2	40	60	100
16BEAE612	Manufacturing Processes Laboratory	2,3	1,2,3,4	0	0	3	2	40	60	100
TOTAL							**23**	**420**	**480**	**900**
VAC										
16BEAE651	Mini Project	2,4	1,4,8,9	1	0	0	2	100	-	100

SEMESTER VII

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BECC701	Professional Ethics & Principles of Management and Entrepreneurship Development	1,3	7,10, 11,12	3	0	0	3	40	60	100
16BEAE702	Finite Element Analysis	2,3	2,3,4,5	3	2	0	4	40	60	100
16BEAE7E--	Professional Elective - V	-	-	3	0	0	3	40	60	100
	Open Elective-I	-	-	3	0	0	3	40	60	100
	Open Elective-II	-	-	3	0	0	3	40	60	100
PRACTICALS										
16BEAE711	Auto Scanning and Vehicle Testing Laboratory	2,3	1,2,3	0	0	3	2	40	60	100
16BEAE712	Computer Aided Design and Analysis Laboratory	2,3	1,2,3, 4,5	0	0	3	2	40	60	100
16BEAE791	Project Work Phase-I	2,4	1,4,8,9	0	0	8	4	40	60	100
TOTAL							**24**	**320**	**480**	**800**
VAC										
16BEAE751	Industrial Robotics	2	2,9	1	0	0	-	100	-	100

SEMESTER VIII

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
THEORY										
16BEAE801	Total Quality Management	1,3	7,10, 11,12	3	0	0	3	40	60	100
16BEAE8E--	Professional Elective - VI	-	-	3	0	0	3	40	60	100

PRACTICALS										
16BEAE891	Project Work Phase-II and Viva-Voce	2,4	1,4,8,9	-	-	32	16	120	180	300
TOTAL							**22**	**200**	**300**	**500**

TOTAL CREDITS: 191

LIST OF ELECTIVES

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
Electives (For V Semester)										
16BEAE5E01	Design for Manufacture and Assembly	2,3	2,3,5	3	0	0	3	40	60	100
16BEAE5E02	Automotive Aerodynamics	2,3	2,3,4	3	0	0	3	40	60	100
16BEAE5E03	Control System	2,3	2	3	0	0	3	40	60	100
16BEAE5E04	Two and Three Wheeler Technology	2,3	2,9	3	0	0	3	40	60	100
16BEAE5E05	Optimization for Engineering Design	2,3	2,3,5	3	0	0	3	40	60	100
16BEAE5E06	Modern Vehicle Technology	2,3	2,9,10	3	0	0	3	40	60	100
16BEAE5E07	Automotive Embedded System	2,3	2	3	0	0	3	40	60	100
16BEAE5E08	Fuel Cell Technology	2,3	2,6,9,10	3	0	0	3	40	60	100
16BEAE5E09	Hybrid Vehicle Technology	2,3	2,6,9,10	3	0	0	3	40	60	100
Electives (For VI Semester)										
16BEAE6E01	Alternate Fuels and Energy systems	2,3	2,6,8,10	3	0	0	3	40	60	100
16BEAE6E02	Advanced Theory of IC Engines	2,3	2,3,4	3	0	0	3	40	60	100
16BEAE6E03	Vibration and Noise Control	2,3	2,3,4	3	0	0	3	40	60	100
16BEAE6E04	Failure Analysis and Design	2,3	2,3,4	3	0	0	3	40	60	100
16BEAE6E05	Computer Aided Vehicle Design	2,3	2,3,4,5	3	0	0	3	40	60	100
16BEAE6E06	Industrial Engineering and Operations Research	2,3	1,2,8	3	0	0	3	40	60	100
16BEAE6E07	Quality Control and Reliability Engineering	2,3	2,8	3	0	0	3	40	60	100
16BEAE6E08	Computational Fluid Dynamics	2,3	2,8	3	0	0	3	40	60	100
16BEAE6E09	Intelligent Vehicle Technology	2,3	2,4,5	3	0	0	3	40	60	100

Electives (For VII Semester)										
16BEAE7E01	Vehicle Transport Management	2,3	2,8	3	0	0	3	40	60	100
16BEAE7E02	Lean Manufacturing	2,3	2,8	3	0	0	3	40	60	100
16BEAE7E03	Supply Chain Management	2,3	2,8	3	0	0	3	40	60	100
16BEAE7E04	Process Planning and Cost Estimation	2,3	2,8	3	0	0	3	40	60	100
16BEAE7E05	Automotive Air Conditioning	2,3	2,9	3	0	0	3	40	60	100
Electives (For VIII Semester)										
16BEAE8E01	Special Vehicles	2,3	2,9,10	3	0	0	3	40	60	100
16BEAE8E02	Tractor and Farm Equipment	2,3	2,9,10	3	0	0	3	40	60	100
16BEAE8E03	Off Road Vehicles	2,3	2,9,10	3	0	0	3	40	60	100
16BEAE8E04	Vehicle Maintenance	2,3	2,6,9,12	3	0	0	3	40	60	100
16BEAE8E05	Intellectual Property Rights (IPR)	2,3	2,12	3	0	0	3	40	60	100

LIST OF OPEN ELECTIVES

Course Code	Title of the Course	PEO	PO	L	T	P	C	CIA	ESE	Total
SCIENCE AND HUMANITIES										
16BESHOE01	Probability and Random Process	2,4	1,9	3	0	0	3	40	60	100
16BESHOE02	Fuzzy Mathematics	2,4	1,9	3	0	0	3	40	60	100
16BESHOE03	Linear Algebra	2,4	1	3	0	0	3	40	60	100
16BESHOE04	Engineering Acoustics	2,4	2,9	3	0	0	3	40	60	100
16BESHOE05	Solid Waste Management	2,4	9	3	0	0	3	40	60	100
16BESHOE06	Green Chemistry	2,4	6	3	0	0	3	40	60	100
16BESHOE07	Applied Electrochemistry	2,4	6	3	0	0	3	40	60	100
16BESHOE08	Industrial Chemistry	2,4	6	3	0	0	3	40	60	100
COMPUTER SCIENCE ENGINEERING										
16BECSOE01	Internet Programming	2,4	5	3	0	0	3	40	60	100
16BECSOE02	Multimedia and Animation	2,4	5	3	0	0	3	40	60	100
16BECSOE03	PC Hardware and Troubleshooting	2,4	5	3	0	0	3	40	60	100
16BECSOE04	Java Programming	2,4	5	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
16BEEEOE01	Electric Hybrid Vehicles	2,4	2,9,10	3	0	0	3	40	60	100
16BEEEOE02	Energy Management & Energy Auditing	2,4	9,10	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	2,4	5	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	2,4	7,9	3	0	0	3	40	60	100
ELECTRONICS AND COMMUNICATION ENGINEERING										
16BEECOE01	Real Time Embedded Systems	2,4	2,3,4	3	0	0	3	40	60	100
16BEECOE02	Consumer Electronics	2,4	11	3	0	0	3	40	60	100
16BEECOE03	Neural Networks and its Applications	2,4	9,11	3	0	0	3	40	60	100
16BEECOE04	Fuzzy Logic and its Applications	2,4	9,11	3	0	0	3	40	60	100

BIOTECHNOLOGY										
16BTBTOE01	Bioreactor Design	2,4	11	3	0	0	3	40	60	100
16BTBTOE02	Food Processing and Preservation	2,4	9	3	0	0	3	40	60	100
16BTBTOE03	Basic Bioinformatics	2,4	9	3	0	0	3	40	60	100
16BTBTOE04	Fundamentals of Nano Biotechnology	2,4	9,11	3	0	0	3	40	60	100
MECHANICAL ENGINEERING										
16BEMEOE01	Computer Aided Design	2,4	2,3,4,5	3	0	0	3	40	60	100
16BEMEOE02	Industrial Safety and Environment	2,4	9	3	0	0	3	40	60	100
16BEMEOE03	Transport Phenomena	2,4	2	3	0	0	3	40	60	100
16BEMEOE04	Introduction to Biomechanics	2,4	11	3	0	0	3	40	60	100
CIVIL ENGINEERING										
16BECEOE01	Housing, Plan and Management	2,4	9,10	3	0	0	3	40	60	100
16BECEOE02	Building Services	2,4	9,10	3	0	0	3	40	60	100
16BECEOE03	Management of Irrigation Systems	2,4	9,10	3	0	0	3	40	60	100
16BECEOE04	Advanced Construction Technology	2,4	11	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING (Courses offered to other Department)										
16BEAEOE01	Automobile Engineering	2,4	2	3	0	0	3	40	60	100
16BEAEOE02	Basics of Two and Three Wheelers	2,4	2	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	2,4	2,9	3	0	0	3	40	60	100
16BEAEOE04	Introduction to Modern Vehicle Technology	2,4	2,9	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

(2016 and onwards)

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
SEMESTER I												
THEORY												
16BECC101	Communicative English	HS	f,g,h,j,l	i, iv	3	0	0	3	40	60	100	3
16BECC102	Engineering Mathematics-I	BS	a,b,d,j	i,ii, iv	3	2	0	4	40	60	100	5
16BEPH103/ 16BECH103	Engineering Physics/ Engineering chemistry	BS	a,b,c,d,j	i, iv	3	2	0	4	40	60	100	3
16BEBME104	Introduction to Biomedical Engineering	BS	a,b,c,d,f,g,j	i,ii, iv	3	2	0	4	40	60	100	3
16BEBME105	Basic Electrical and Electronics Engineering	ES	a,b,c,f,g	i, iv	3	2	0	4	40	60	100	3
PRACTICALS												
16BEPH111/ 16BECH111	Engineering Physics Laboratory/Engineering Chemistry Laboratory	BS	a,c,f,h,j,l	ii, iv	0	0	4	2	40	60	100	4
16BEBME112	Computer Practice and Programming Lab	ES	a,b,d,e, j	i, iv	1	0	4	3	40	60	100	5
16BEBME11	Engineering Graphics	ES	a,b,d,e, j	i, iv	0	0	4	2	40	60	100	4
	TOTAL				**16**	**2**	**12**	**23**	**320**	**480**	**800**	**30**
VALUE ADDED COURSE												
16BECC151	Human values	MC			1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS PER WEEK		**31**										

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	CONTACTHOURS / WEEK
SEMESTER II												
THEORY												
16BECC201A/ 16BECC201B	Business Communication/Technical English	HS	f,g,h,j,l	i, iv	3	0	0	3	40	60	100	3
16BECC202	Engineering Mathematics-II	BS	a,f,h,j,k	i, iv	3	2	0	4	40	60	100	5
16BEPH203/ 16BECH203	Engineering Physics/ Engineering chemistry	BS	a,c,f,h,j,l	ii, iv	3	0	0	3	40	60	100	3
16BECC204	Environmental Sciences	HS	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
16BEBME205	Materials Science	ES	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME206	Elements of Mechanical Engineering	ES	a,b,c,f,g	i, iv	3	0	0	3	40	60	100	3

PRACTICALS												
16BEPH211/ 16BECH211	Engineering Physics Laboratory/ Engineering Chemistry Laboratory	BS	a,b,c,d,j	i, iv	0	0	4	2	40	60	100	4
16BEBME212	Engineering Workshop	ES	a,b,c,f,g	i, iv	0	0	4	2	40	60	100	4
	TOTAL				**18**	**2**	**8**	**23**	**320**	**480**	**800**	**28**
VALUE ADDED COURSE												
16BEBME251	Aptitude training	MC			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 III												
THEORY												
16BEBME301A/ 16BEBME301	Optimization and Calculus of Variables /Linear Algebra and Special Functions	BS	a,b,c,d ,f,g,j	i,ii, iv	3	2	0	4	40	60	100	5
16BEBME302	Digital Electronics	PC	a,b,d ,f,,j	i,ii, iv	3	2	0	4	40	60	100	5
16BEBME303	C++ and Data Structures	ES	a,b, c, d ,f,g,j	i,ii, iv	3	0	0	3	40	60	100	3
16BEBME304	Electronic Devices and Circuits	PC	a,b,e,h,j,k	i,ii,iii,iv	3	0	0	3	40	60	100	3
16BEBME305	Anatomy and Human Physiology	PC	a,b,c,d ,f,g,j	i,ii,	3	0	0	3	40	60	100	3
16BEBME306	Biochemistry	PC	a,b,c,d ,f,g,j	i,ii, iv	3	0	0	3	40	60	100	3
PRACTICALS												
16BEBME311	Circuits and Devices Laboratory	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME312	Bio Chemistry and Human Physiology Laboratory	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME313	Course Oriented project-I	PC	h,I,j,l,n	i,ii	0	0	2	1	100	-	100	2
	TOTAL				**18**	**4**	**8**	**25**	**420**	**480**	**900**	**30**
VALUE ADDED COURSE												
16BEBME351	Soft skills	MC	f,g,h,i,j	ii,iv	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS PER WEEK			**31**									

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS/ WEEK
SEMESTER IV												
THEORY												
16BEBME401	Probability and Statistics	BS	a,b,d,j	i,ii, iv	3	2	0	4	40	60	100	5
16BEBME402	Linear Integrated Circuits	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME403	Biosensors and Transducers	PC	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3

16BEBME404	Signals and Systems	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME405	Pathology and Microbiology	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME406	Biomaterials and artificial organs	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
PRACTICALS												
16BEBME411	Linear Integrated Circuits Lab	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME412	Biosensors and Transducers lab	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME413	Course Oriented project-II	PC	h,I,j,l,n	i,ii	0	0	2	1	100	-	100	2
	TOTAL				**18**	**2**	**8**	**24**	**420**	**480**	**900**	**28**
VALUE ADDED COURSE												
16BEBME451	Hands on training in electronic Equipments	MC	h,I,j,l	i,ii	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS PER				29								

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
SEMESTER V												
THEORY												
16BEBME501	Bio Control System	PC	a,b,c,d,g,j	i,ii, iii	3	2	0	4	40	60	100	5
16BEBME502A/ 16BEBME502B	Biomedical Signal Processing/ Instrumental methods of analysis	PC	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
16BEBME503	Biomedical Instrumentation	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME504	Microprocessor and Microcontroller	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME5E--	Professional Elective I	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16 OE	Open Elective I	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
PRACTICALS												
16BEBME511	Microprocessor and Microcontroller Lab	PC	h,I,j,l	i,ii	3	0	0	3	40	60	100	3
16BEBME512A/ 16BEBME512B	Biomedical Signal Processing Lab / Instrumental methods of analysis lab	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME513	Biomedical Instrumentation Lab	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME514	Course Oriented project-	PC	h,I,j,l,n	i,ii	0	0	2	1	100	-	100	2
	TOTAL				**15**	**2**	**11**	**23**	**420**	**480**	**900**	**28**
VALUE ADDED COURSE												
16BEBME551	Basic Simulation	MC	a,b,d,e, j	i, iv	1	0	0	-	100	0	100	1
16BEBME552	Inplant training	MC	a,b,d, l	ii,iv	0	0	0	-	100	0	100	-
TOTAL CONTACT HOURS			**29**									

PE-I	TITLE OF THE COURSE	PO	PEO	L	T	P	C	CIA	ESE	Total
16BEBME5E01	Biofluids and Dynamics			3	0	0	3	40	60	100
16BEBME5E02	Biometric Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME5E03	Advanced Biochemistry	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME5E04	Elements of Biotechnology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME5E05	Medical Imaging and Application	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME5E06	Bio Health Informatics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME5E07	An Interface with Biology and Medicine	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

ELECTIVES TO BE OPTED FOR SPECIALIZATION

S.NO.	SPECIALIZATION	PROFESSIONAL ELECTIVE I
A	Bio-imaging Technology	16BEBME5E05
B	Health Science Informatics	16BEBME5E06
C	Computational Systems Biology	16BEBME5E07

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
SEMESTER VI												
THEORY												
16BEBME601	Image processing	PC	a,b,c,d,g,j,m	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME602A/ 16BEBME602B	Biomechanics/Bioinformatics	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME603	Diagnostic Equipments	PC	a,b,c,d,g,j,m	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME604	Hospital Management	PC	a,b,c,d,g,j	i,ii, iii, iv	3	0	0	3	40	60	100	3
16BEBME6E--	Professional Elective-II	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME6E--	Professional Elective - III/ Open Elective-II	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
PRACTICALS												
16BEBME611A/ 16BEBME611B	Biomechanics Lab/ Bioinformatics Lab	PC	h,I,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME612	Image processing Lab	PC	h,I,j,l,m	i,ii	0	0	3	2	40	60	100	3
	TOTAL				**18**	**0**	**6**	**22**	**320**	**480**	**800**	**24**
VALUE ADDED COURSE												
16BEBME651	Mini Project	MC	h,I,j,l,n	i,ii	0	0	1	-	100	0	100	1
16BEBME652	Technical Presentation & Seminar	MC	f,g,h,i,j	ii,iv	0	0	1	-	100	0	100	1
TOTAL CONTACT HOURS PER				**26**								

PE-II& PE -III	TITLE OF THE COURSE	PO	PEO	L	T	P	C	CIA	ESE	Total TOTAL
16BEBME6E01	Physiological Modelling	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

16BEBME6E02	Tele health Technology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME6E03	Cancer Biology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME6E04	Biosignal Conditioning Circuits	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME6E05	Radiological equipments	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME6E06	Biostatics & Design of Experiments	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME6E07	Computational Biology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME6E08	Medical and Molecular Imaging	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME6E09	Scientific & Bio analytic Instrumentation	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

ELECTIVES TO BE OPTED FOR SPECIALIZATION

S.NO.	SPECIALIZATION	PROFESSIONAL ELECTIVE II & III
A	Bio-imaging Technology	16BEBME6E05, 16BEBME6E08
B	Health Science Informatics	16BEBME6E02, 16BEBME6E06
C	Computational System Biology	16BEBME6E09, 16BEBME6E07

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PO	PEO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS / WEEK
	SEMESTER VII											
	THEORY											
16BECC701	Professional Ethics, Principles of Management and Entrepreneurship development	HS	j,h,g, k	i, iv	3	0	0	3	40	60	100	3
16BEBME702A/ 16BEBME702	Virtual Instrumentation Design for medical system / Therapeutic equipments	PC	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16 OE	Open Elective-1	OE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16 OE	Open Elective-2	OE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME7E	Professional Elective-IV	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
	PRACTICALS											
16BEBME711A/ 16BEBME711B	Virtual Instrumentation Design for medical system Lab/ Biomedical Equipments	PC	h,l,j,l	i,ii	0	0	3	2	40	60	100	3
16BEBME791	Project Work Phase I	PW	h,l,j,l,n	i,ii	0	0	8	4	40	60	100	8
TOTAL					**15**	**0**	**11**	**21**	**280**	**420**	**700**	**26**
TOTAL CONTACT HOURS PER WEEK					**26**							

SUB. CODE	TITLE OF THE COURSE	PO	PEO	L	T	P	C	CIA	ESE	TOTAL
16BEBME7E01	Rehabilitation Engineering	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

16BEBME7E02	Lasers and Fiber Optics in Medicine	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME7E03	Patient and Devices Safety	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME7E04	Health Informatics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME7E05	Bio-System and Application	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

ELECTIVES TO BE OPTED FOR SPECIALIZATION		
S.NO.	**SPECIALIZATION**	**PROFESSIONAL ELECTIVE VII**
A	Bio-imaging Technology	16BEBME7E03
B	Health Science Informatics	16BEBME7E05
C	Computational Systems Biology	16BEBME7E01

SUB. CODE	**TITLE OF THE COURSE**	**Sub. Area**	**PO**	**PEO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS / WEEK**
SEMESTER VIII												
THEORY												
16BEBME8E_	Professional Elective-V	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
16BEBME8E	Professional Elective-VI	PE	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100	3
PRACTICALS												
16BEBME891	Project Work Phase II and Viva-Voce	PW	h,I,j,l,n	i,ii	0	0	32	16	120	180	300	32
TOTAL					**6**	**0**	**32**	**22**	**200**	**300**	**500**	**38**
TOTAL CONTACT HOURS PER WEEK					**38**							

SEMESTER VIII

Elective V & VI

SUB. CODE	**TITLE OF THE COURSE**	**PO**	**PEO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**
16BEBME8E01	Biological Spectroscopy	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME8E02	Robotics and Automation	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME8E03	Nanotechnology in Medicine	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME8E04	Tissue Engineering	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME8E05	Speech Processing	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME8E06	Rapid Prototyping	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

16BEBME8E07	Bio MEMS	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEBME8E08	Intellectual Property Rights	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

OPEN ELECTIVES COURSES OFFERED BY OTHER DEPARTMENTS

SUB. CODE	TITLE OF THE COURSE	PO	PEO	L	T	P	C	CIA	ESE	TOTAL
SCIENCE AND HUMANITIES										
16BTSHOE01	Probability and Random Process	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTSHOE02	Fuzzy Mathematics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTSHOE03	Linear Algebra	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTSHOE04	Engineering Acoustics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTSHOE05	Solid Waste Management	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTSHOE06	Green Chemistry	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTSHOE07	Applied Electrochemistry	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTSHOE08	Industrial Chemistry	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
16BECSOE01	Internet Programming	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE02	Multimedia and Animation	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE03	PC Hardware and Trouble shooting	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE04	Java Programming	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE05	Introduction to Computing using Python	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE06	Data Visualization using R Programming	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE07	Data Visualization using Click View	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE08	Data Visualization using Tabaleu	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECSOE09	Data Visualization using QLKR	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
16BEEEOE01	Electric Hybrid Vehicles	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEEEOE02	Energy Management & Energy Auditing	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
ELECTRONICS AND COMMUNICATION ENGINEERING										
16BEECOE01	Real Time Embedded Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEECOE02	Consumer Electronics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEECOE03	Neural Networks and its Applications	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEECOE04	Fuzzy Logic and its Applications	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100

BIOTECHNOLOGY										
16BTBTOE01	Bioreactor Design	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTBTOE02	Food Processing and Preservation	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTBTOE03	Basic Bioinformatics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BTBTOE04	Fundamentals of Nano Biotechnology	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
MECHANICAL ENGINEERING										
16BEMEOE01	Computer Aided Design	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEMEOE02	Industrial Safety and Environment	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEMEOE03	Transport Phenomena	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEMEOE04	Introduction to Biomechanics	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING										
16BEAEOE01	Automobile Engineering	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEAEOE02	Basics of Two and Three Wheelers	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BEAEOE04	Introduction to Modern Vehicle	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
CIVIL ENGINEERING										
16BECEOE01	Housing, Plan and Management	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECEOE02	Building Services	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECEOE03	Management of Irrigation Systems	a,b,c,d,g,j	i,ii, iii	3	0	0	3	40	60	100
16BECEOE04	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

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

FACULTY OF ENGINEERING

B.E. CIVIL ENGINEERING (REGULAR)

COURSE OF STUDY AND SCHEME OF EXAMINATIONS (2016 and Onwards)

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

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

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

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

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

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

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

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

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

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

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

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

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

PROGRAMME SPECIFIC OUTCOMES (PSO)

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

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

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

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

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

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

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

PEO-2 To offer platform for research and development

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

PEO-PO mapping

	PO1	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

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Contact Hours /week
THEORY												
16BECC101	Communicative English	HS	1	10	3	0	0	3	40	60	100	3
16BECC102	Engineering Mathematics I	BS	1	1	3	2	0	4	40	60	100	5
16BEPH103 16BECH103	Engineering Physics / Engineering Chemistry	BS	1,2	3	3	0	0	3	40	60	100	3
16BECE104	BasicCivilEngineering	ES	1	1	3	0	0	3	40	60	100	3
16BECE105A 16BECE105B	Basic Electrical and Electronics Engineering Elements of Mechanical Engineering	ES	**1**	**1**	3	0	0	3	40	60	100	3
PRACTICAL												
16BEPH111 16BECH111	Engineering Physics Laboratory/ Engineering Chemistry Laboratory	BS	1,2	3	0	0	4	2	40	60	100	4
16BECE112	EngineeringWorkshopPractice	ES	1	1	0	0	4	2	40	60	100	4
16BECE113	Computer Practice and Programming Lab	ES	1	2	1	0	4	3	40	60	100	5
TOTAL								**23**	**320**	**480**	**800**	**30**
VALUE ADDED COURSE												
16BECC151	HumanValues	MC	1	12	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK												31

SEMESTER II

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOT	Contact Hours /week
THEORY												
16BECC201A 16BECC201B	BusinessCommunication / Technical English	HS	1	10	3	0	0	3	40	60	100	3
16BECC202	Engineering Mathematics II	BS	1	11	3	2	0	4	40	60	100	5
16BEPH203 16BECH203	Engineering Physics / Engineering Chemistry	BS	1,2	3	3	0	0	3	40	60	100	3
16BECC204	Environmental Sciences	HS	3	7,12	3	0	0	3	40	60	100	3
16BECE205A 16BECE205B	Basic Electrical and Electronics Engineering / Elements of Mechanical Engineering	ES	1	1	3	0	0	3	40	60	100	3
16BECE206	Engineering Mechanics	ES	1	1	3	0	0	3	40	60	100	3
PRACTICAL												

16BEPH211 16BECH211	Engineering Physics Laboratory / Engineering Chemistry Laboratory	BS	1	1	0	0	4	2	40	60	100	4
16BECE212	EngineeringGraphics	ES	1	1	2	0	2	3	40	60	100	4
TOTAL								**24**	**320**	**480**	**800**	**28**
VALUE ADDED COURSE												
16BECE251	AptitudeTraining	MC		1	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK												**29**

SEMESTER III

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Contact Hours /week
THEORY												
16BECE301	Methods of Applied Mathematics	BS	1	1	3	2	0	4	40	60	100	5
16BECE302	Solid MechanicsI	ES	1	3	3	0	0	3	40	60	100	3
16BECE303	Mechanics of fluids	ES	1	3	3	0	0	3	40	60	100	3
16BECE304A 16BECE304B	Building Materials and Geology**(SC)**/ Equipment**(SC)**	PC	1	2	3	0	0	3	40	60	100	3
16BECE305	SurveyingI**(HC)**	PC	1	6	3	0	0	3	40	60	100	3
PRACTICAL												
16BECE311	Building PlanningandDrawing Laboratory **(HC)**	PC	1	4, 5	0	0	3	2	40	60	100	3
16BECE312	ConstructionMaterialsLaboratory **(HC)**	PC	1, 2	2	0	0	3	2	40	60	100	3
16BECE313	SurveyingPracticalI**(HC)**	PC	1	6	0	0	3	2				3
TOTAL								**22**	**320**	**480**	**800**	**26**
VALUE ADDED COURSE												
16BECE351	SoftSkills	MC	1	12	1	0	0	-	100	0	100	1
	TOTAL CONTACT HOURS/WEEK											**27**

SEMESTERIV

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Contact Hours /week
THEORY												
16BECE401	ConcreteTechnology**(HC)**	BS	1	2	3	0	0	3	40	60	100	3
16BECE402	Solid Mechanics II	ES	1	3	3	0	0	3	40	60	100	3
16BECE403	Applied Hydraulics and Machinery**(HC)**	ES	1	7	3	0	0	3	40	60	100	3
16BECE404	Mechanics of Soil **(HC)**	PC	1	3	3	0	0	3	40	60	100	3
16BECE405	SurveyingII**(HC)**	PC	1	6	3	0	0	3	40	60	100	3
PRACTICAL												
16BECE411	Strengthof MaterialsLaboratory **(HC)**	PC	1, 2	4, 9	0	0	3	2	40	60	100	3
16BECE412	Scientific Computing Laboratory	PC	1	1	2	0	2	3	40	60	100	4
16BECE413	SurveyingPracticalII**(HC)**	PC	1	6	0	0	3	2	40	60	100	3
TOTAL								**22**	**320**	**480**	**800**	**25**
VALUE ADDED COURSE												
16BECE451	Technical Presentation/Seminar	MC	1	12	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK												**26**

SEMESTER V

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Contact Hours /week
THEORY												
16BECE501	Structural Analysis I **(HC)**	PC	1	2, 3	3	0	0	3	40	60	100	3
16BECE502	Design of RC Structures I **(HC)**	PC	1	2, 3	3	0	0	3	40	60	100	3
16BECE503A 16BECE503B	Transportation Engineering**(SC)**/High way Engineering**(SC)**	PC	1, 2	2, 3	3	0	0	3	40	60	100	3
16BECE504	Environmental Engineering I **(HC)**	PC	1, 3	6	3	0	0	3	40	60	100	3
16BECE5E--	Professional Elective I	PE	1	3	3	0	0	3	40	60	100	3
PRACTICAL												
16BECE511	Applied Hydraulics and Hydraulic Machinery Laboratory **(HC)**	PC	1, 3	7	0	0	3	2	40	60	100	3
16BECE512	Geotechnical Laboratory**(HC)**	PC	1, 3	7	0	0	3	2	40	60	100	3
16BECE513	Concrete and Highway Laboratory **(HC)**	PC	1, 2	4, 9	0	0	3	2				3
TOTAL								**21**	**320**	**480**	**800**	**24**
VALUE ADDED COURSE												
16BECE551	In-plant Training	MC	1	12	-	-	-	-	100	0	100*	-
16BECE552	Survey Camp	MC	1	6	-	-	-	-	100	0	100	-
TOTAL CONTACT HOURS/WEEK												**24**

SEMESTER VI

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Contact Hours /week
THEORY												
16BECE601	Structural Analysis II**(HC)**	PC	1	2,3	3	0	0	3	40	60	100	3
16BECE602	Design of RC Structures II**(HC)**	PC	1	2,3	3	0	0	3	40	60	100	3
16BECE603A 16BECE603B	Water Resources Engineering **(SC)**/ Irrigation Engineering**(SC)**	PC	1,3	6	3	0	0	3	40	60	100	3
16BECE604	Environmental Engineering II **(HC)**	PC	1	6	3	0	0	3	40	60	100	3
16BECE6E--	Professional Elective II	PE	1	3	3	0	0	3	40	60	100	3
16BECE6E--	Professional Elective III	PE	1	3	3	0	0	3	40	60	100	3
PRACTICAL												
16BECE611	Irrigation andEnvironmental Engineering Drawing**(HC)**	PC	1	3	0	0	3	2	40	60	100	3
16BECE612	Environmental Engineering Laboratory**(HC)**	PC	1	3	0	0	3	2	40	60	100	3
TOTAL								**22**	**320**	**480**	**800**	**24**
VALUE ADDED COURSE												
16BECE651	Computer Aided Design Laboratory	MC	1	4,5	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK												**25**

SEMESTER VII

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Contact Hours /week
THEORY												
16BECC701	Professional Ethics, Principles of Management and Entrepreneurship Development	HS	**3**	**8**	3	0	0	3	40	60	100	3
16BECE702	Design of Steel Structures **(HC)**	PC	1	2,3	3	0	0	3	40	60	100	3
16BECE7E--	Professional Elective IV	PE	1	3	3	0	0	3	40	60	100	3
16BECE7E--	Professional Elective V	PE	1	3	3	0	0	3	40	60	100	3
	Open Elective I	OE	1	3	3	0	0	3	40	60	100	3
	Open Elective II	OE	1	3	3	0	0	3	40	60	100	3
PRACTICAL												
16BECE711	Structural Detailing and Drawing Laboratory **(HC)**	PC	1	11	0	0	3	2	40	60	100	3
16BECE791	Project Work-Phase I	PW	1,2,3	4,5,9,11	0	0	8	4	40	60	100	8
TOTAL								**24**	**320**	**480**	**800**	**29**
VALUE ADDED COURSE												
16BECE751	Planning and Execution of Civil Engineering Projects	MC	1	4,5	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK												**30**

SEMESTER VIII

SUB. CODE	TITLE OF THE COURSE	Sub. Area	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Contact Hours /week
THEORY												
16BECE801	Estimation, Quantity Surveying and Valuation **(HC)**	PC	1	11	3	0	0	3	40	60	100	3
16BECE8E--	Professional Elective VI	PE	1	3	3	0	0	3	40	60	100	3
PRACTICAL												
16BECE891	Project Work - Phase II & Viva voce	PW	1,2,3	4,5,9,11	0	0	32	16	120	180	300	32
TOTAL								**22**	**200**	**300**	**500**	**38**
TOTAL CONTACT HOURS/WEEK												**38**

***To be evaluated internally by a committee of members**
Final report + (certificateifnecessary) – 50 marks
Final presentation andviva voce – 50marks

Total number of

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)

SEMESTER V
Elective I

SUB. CODE	TITLE OF THE PAPER	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BECE5E01	Hydrology	1,2	2,4,7,15	3	0	0	3	40	60	100
16BECE5E02	Cartography	1,2	5,6	3	0	0	3	40	60	100
16BECE5E03	Composite Materials and Structures	1,2	1,5,6	3	0	0	3	40	60	100
16BECE5E04	Foundation Engineering	1,2	2,3,4	3	0	0	3	40	60	100
16BECE5E05	Ground Water Engineering	1,2	2,3,7	3	0	0	3	40	60	100

SEMESTERVI
Elective II &III

SUB. CODE	TITLE OF THE PAPER	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BECE6E01	Urban Water Resources management	1,2	5,7,9	3	0	0	3	40	60	100
16BECE6E02	Ground Improvement Techniques	1,2	2,3,4	3	0	0	3	40	60	100
16BECE6E03	Building Services	1,2	1,5,6	3	0	0	3	40	60	100
16BECE6E04	Prefabricated Structures	1,2	1,9,12,15	3	0	0	3	40	60	100
16BECE6E05	Soil Pollution Engineering	1,2	2,3,4	3	0	0	3	40	60	100
16BECE6E06	Railways, Airports and Harbours	1,2	1,3,4,5,14	3	0	0	3	40	60	100
16BECE6E07	Repair and Rehabilitation of Structures	1,2	1,5,6	3	0	0	3	40	60	100
16BECE6E08	Municipal Solid Waste Management	1,2	4,7,11,14	3	0	0	3	40	60	100
16BECE6E09	Air Pollution Management	1,2	3,4,5,7	3	0	0	3	40	60	100

SEMESTER VII
Elective IV & V

SUB. CODE	TITLE OF THE PAPER	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BECE7E01	Design of Bridges	1,2	1,9,12, 15	3	0	0	3	40	60	100
16BECE7E02	Tall Buildings	1,2	1,9,12, 15	3	0	0	3	40	60	100
16BECE7E03	Traffic Engineering and management	1,2	1,3,4,5, 14	3	0	0	3	40	60	100
16BECE7E04	Smart Structures and smart Materials	1,2	5,9,6	3	0	0	3	40	60	100
16BECE7E05	Finite Element Techniques	1,2	1,2,5,6, 9	3	0	0	3	40	60	100
16BECE7E06	Geographical Information System	1,2	5,9,6	3	0	0	3	40	60	100
16BECE7E07	Remote sensing Techniques and Applications	1,2	5,9,6	3	0	0	3	40	60	100
16BECE7E08	Introduction to Soil Dynamics and Machine Foundations	1,2	2,3,4	3	0	0	3	40	60	100
16BECE7E09	Industrial Waste Management	1,2	4,7,11, 14	3	0	0	3	40	60	100

SEMESTER VII
Elective VI

SUB. CODE	TITLE OF THE PAPER	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BECE8E01	Industrial Structures	1,2	1,9,12,15	3	0	0	3	40	60	100
16BECE8E02	Seismic Design of Reinforced Concrete Structures	1,2	1,2,5 ,9,6	3	0	0	3	40	60	100
16BECE8E03	Environmental Impact assessment of Water resources development	1,2	4,7,11,14	3	0	0	3	40	60	100
16BECE8E04	Construction resource Planning and Management	1,2	1,9,12,15	3	0	0	3	40	60	100
16BECE8E05	Pre-stressed Concrete Structures	1,2	1,5,6	3	0	0	3	40	60	100

OPEN ELECTIVES

COURSES OFFERED BY OTHER DEPARTMENTS

SUB. CODE	TITLE OF THE PAPER	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
SCIENCE AND HUMANITIES										
16BESHOE01	Probability and Random Process	1	1	3	0	0	3	40	60	100
16BESHOE02	Fuzzy Mathematics	1	1	3	0	0	3	40	60	100
16BESHOE03	Linear Algebra	1	1	3	0	0	3	40	60	100
16BESHOE04	Engineering Acoustics	1,2	1,2	3	0	0	3	40	60	100
16BESHOE05	Solid Waste Management	1,2	7,11,14	3	0	0	3	40	60	100
16BESHOE06	Green Chemistry	1,2	1,3,5	3	0	0	3	40	60	100
16BESHOE07	Applied Electrochemistry	1,2	1,3,5	3	0	0	3	40	60	100
16BESHOE08	Industrial Chemistry	1,2	1,3,5	3	0	0	3	40	60	100
COMPUTER SCIENCE ENGINEERING										
16BECSOE01	Internet Programming	1,2	1,3	3	0	0	3	40	60	100
16BECSOE02	Multimedia And Animation	2	1,3	3	0	0	3	40	60	100
16BECSOE03	Pc Hardware And Trouble Shooting	2,	5,6	3	0	0	3	40	60	100
16BECSOE04	Java Programming	1,2	1,3	3	0	0	3	40	60	100
ELECTRICAL & ELECTRONICS ENGINEERING										
16BEEEOE01	Electric Hybrid Vehicle	1,2	1,5	3	0	0	3	40	60	100
16BEEEOE02	Energy Management &Energy Auditing	1,2	1,6,7	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	1	1,4	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	1,2	1,6,7	3	0	0	3	40	60	100
ELECTRONICS COMMUNICATION ENGINEERING										
16BEECOE01	Real Time Embedded Systems	1,2	1,2	3	0	0	3	40	60	100
16BEECOE02	Consumer Electronics	1	1	3	0	0	3	40	60	100
16BEECOE03	Neural Networks and its Applications	1,2	1,5	3	0	0	3	40	60	100
16BEECOE04	Fuzzy Logic and its Applications	1	1,5	3	0	0	3	40	60	100
BIOTECHNOLOGY										
16BTBTOE01	Bioreactor Design	1,2	1,3,4,6	3	0	0	3	40	60	100
16BTBTOE02	Food Processing and Preservation	1	1	3	0	0	3	40	60	100
16BTBTOE03	Basic Bioinformatics	1	1	3	0	0	3	40	60	100
16BTBTOE04	Fundamentals of NanoBiotechnology	1,2	1	3	0	0	3	40	60	100
MECHANICALENGINEERING										
16BEMEOE01	Computer Aided Design	1,2	1,3,4,6	3	0	0	3	40	60	100
16BEMEOE02	Industrial Safety and Environment	1,2	1,3,12	3	0	0	3	40	60	100
16BEMEOE03	Transport Phenomena	1,2	1,3,5	3	0	0	3	40	60	100
16BEMEOE04	Introduction to Biomechanics	1	1,2	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING										
16BEAEOE01	Automobile Engineering	1	1,2	3	0	0	3	40	60	100
16BEAEOE02	Basics of Two And Three Wheelers	1	1,5	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	1	1,12	3	0	0	3	40	60	100

16BEAEOE04	Introduction to Modern Vehicle Technology	1	1,12	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
16BECEOE01	Housing, Plan and Management	1,2	5,9,6	3	0	0	3	40	60	100
16BECEOE02	Building Services	1,2	8	3	0	0	3	40	60	100
16BECEOE03	Management of irrigation systems	1,2	7,9,11	3	0	0	3	40	60	100
16BECEOE04	Advanced construction technology	1,2	3,4,5,7	3	0	0	3	40	60	100

Total number of credits:180

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

Note:

1. The passing minimum for value added course is 50 marks out of 100 marks.There will be two tests,of which one will be class test covering 50% of syllabus for 50 marks and other for 50marks.
2. Credits for value added course are not counted for computation ofCGPA.
3. Interested students can opt one self study course in eighth semester from open electives which will be reflected in the mark sheet if he/shepasses.

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

B.E. COMPUTER SCIENCE AND ENGINEERING

CURRICULUM
2016

(CHOICE BASED CREDIT SYSTEM)

(REGULAR PROGRAMME)

Department of Computer Science and Engineering

FACULTY OF ENGINEERING

KARPAGAM ACADEMY OF HIGHER EDUCATION

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

Pollachi Main Road, Eachanari post, Coimbatore - 641 021. INDIA

Phone : 0422-6471113-5, 6453777 Fax No : 0422-2980022-3

Email : info@ karpagam.com Web : www.kahedu.edu.in

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

B.E (CSE)
COURSE OF STUDY AND SCHEME OF EXAMINATIONS
(2016 BATCH ONWARDS)

SUB. CODE	TITLE OF THE COURSE	Sub Area	PEO	PO,PSO	L	T	P	C	Contact Hrs/Week	CIA	ESE	TOTAL
SEMESTER I												
THEORY:												
16BECC101	Communicative English	HS	II	f,g,i	3	0	0	3	3	40	60	100
16BECC102	Engineering Mathematics – I	BS	I,III	a,f,i,j	3	2	0	4	5	40	60	100
16BEPH103 16BECH103	Engineering Physics/ Engineering Chemistry	BS	I	a,d,f,h,i,j,k	3	0	0	3	3	40	60	100
16BECS104	Problem Solving Techniques	ES	I	a,j,k	3	0	0	3	3	40	60	100
16BECS105	Basics of Electrical and Electronics Engineering	ES	I	a,d,f,h,i,j,k	3	0	0	3	3	40	60	100
PRACTICAL :												
16BEPH111 16BECH111	Engineering Physics Lab / Engineering Chemistry Lab	BS	I,III	a,b,c,d,e,f,i,j,k	0	0	4	2	4	40	60	100
16BECS112	Engineering Workshop Practices Lab	ES	II	c,i,j	0	0	4	2	4	40	60	100
16BECS113	Engineering Graphics	ES	I,II	g,j,k	1	0	3	3	4	40	60	100
TOTAL								**23**	**29**	**320**	**480**	**800**
VALUE ADDED COURSES												
16BECC151	Human Values	MC	II	c,i,j	1	0	0	-	1	100	0	100
TOTAL									**30**	**320**	**480**	**800**
Total Contact Hours/Week					**30**							

SEMESTER II												
THEORY:												
16BECC201A 16BECC201B	Business Communication/ Technical English	HS	II	f,h,I,g	3	0	0	3	3	40	60	100
16BECC202	Engineering Mathematics – II	BS	I	a,b,c,f,m1	3	2	0	4	5	40	60	100
16BEPH203 16BECH203	Engineering Physics/ Engineering Chemistry	BS	I	a,d,f,h,i,j,k	3	0	0	3	3	40	60	100
16BECC204	Environmental Sciences	HS	II	f,g,h	3	0	0	3	3	40	60	100
16BECS205	Electron Devices	ES	II	f,g,h	3	0	0	3	3	40	60	100
16BECS206	C Programming	ES	I	a,j,k	3	0	0	3	3	40	60	100
PRACTICAL :												
16BEPH211 16BECH211	Engineering Physics Lab/ Engineering Chemistry Lab	BS	I,III	a,b,c,d,e,f,i,j,k	0	0	4	2	4	40	60	100
16BECS212	C Programming Lab	ES	I	a,b,c,d,f,k,m1	0	0	3	2	3	40	60	100
TOTAL								**23**	**27**	**320**	**480**	**800**
VALUE ADDED COURSES												
16BECS251	Introduction to Programming with Scratch Tool	MC	I	a,j,k	2	0	0	-	2	100	0	100
TOTAL									**29**	**320**	**480**	**800**
Total Contact Hours/Week									**29**			

SEMESTER III											
THEORY:											
16BECS301	Discrete Structures	BS	I,III	a,f,i,j	3	2	0	4	5	40	60
16BECS302	Data Structures **(HC)**	PC	I,III	a,b,c,d,f,k,m1,m2	2	2	0	3	4	40	60
16BECS303	Digital Principles and System Design **(HC)**	PC	I	a,b,c,m1	2	2	0	3	4	40	60
16BECS304	Object Oriented Programming with Java **(HC)**	PC	I	a,b,c,d,f,k,m1	3	0	0	3	4	40	60
	System Software / Programming with Java Script **(SC)**	PC	I,III	a,b,c,d,j,k,m1	3	0	0	3	4	40	60
16BECS305A 16BECS305B		PC	I	a,b,c,d,f,k,m1	2	0	2	3	4	40	60
PRACTICAL :											
16BECS311	Java Programming Lab	PC	I	a,b,c,d,f,k,m1	0	0	3	2	3	40	60
16BECS312	Digital Electronics Lab	PC	I	a,b,c,m1	0	0	3	2	3	40	60
16BECS313	Data Structures Lab	PC	I	a,b,c,d,f,k,m1	0	0	3	2	3	40	60
TOTAL								**22**	**30**	**320**	**480**
VALUE ADDED COURSES											
16BECS351	PC hardware Assembly and Troubleshooting	MC	I	a,b,e,m1	1	1	0	-	2	100	0
TOTAL								**22**	**32**	**320**	**480**
Total Contact Hours/Week		**32**									

SEMESTER IV

THEORY:

16BECS401	Database Management Systems **(HC)**	PC	I	a,b,e, m1	3	0	0	3	4	40	60
16BECS402	Computer Architecture **(HC)**	PC	I	a,b,c	3	0	0	3	4	40	60
16BECS403A 16BECS403B	Microprocessors & Micro controllers/ Information Storage and Management**(SC)**	PC	I	a,b,c, m1	3	0	0	3	4	40	60
16BECS404	Design and Analysis of Algorithms **(HC)**	PC	I,II I	a,b,c,d ,f,m1, m2	3	0	0	3	4	40	60
16BECS405	Formal Languages and Automata (HC)	PC	I	a,b,c, d,f,m 1	3	0	0	3	4	40	60
PRACTICAL :											
16BECS411	Advanced Java Programming	PC	I	a,b,c, d,f,k, m1	2	0	2	3	4	40	60
16BECS412	Database Management Systems Lab	PC	I	a,b,e, m1	0	0	3	2	3	40	60
16BECS413	Embedded Computing Systems	PC	I	a,b,c, m1	1	0	2	3	3	40	60
TOTAL								**23**	**30**	**320**	**480**
VALUE ADDED COURSES											
16BECS451	Mobile Application Development	MC	I	a,b,c,d ,e,f	1	1	0	-	2	100	0
TOTAL								**23**	**32**	**320**	**480**
Total Contact Hours/Week									**32**		

SEMESTER V											
THEORY:											
16BECS501	Operating Systems **(HC)**	PC	I	a,b,c,m1	3	0	0	3	4	40	60
16BECS502	Computer Networks**(HC)**	PC	I,II	a,b,c,d,e,m1	3	0	0	3	4	40	60
16BECS503	Software Engineering(HC)	PC	I,II	a,b,c,d,j,k,m1	3	0	0	3	4	40	60
16BECS5E--	Department Elective I	PE			3	0	0	3	4	40	60
16BECS5E--	Department Elective II	PE			3	0	0	3	4	40	60
PRACTICAL :											
16BECS511	Computer Networks Lab	PC	I,II	a,b,c,d,e,m1	0	0	3	2	3	40	60
16BECS512	Operating Systems Lab	PC	I	a,b,c,m1	0	0	3	2	3	40	60
16BECS513	Case Tools Lab	PC	I	a,b,c,d,f,m1	0	0	3	2	3	40	60
TOTAL								**21**	**29**	**320**	**480**
VALUE ADDED COURSES											
16BECS551	Implant Training	MC	II	c,i,j	0	0	0	-	0	100	0
16BECS561	Soft Skills	MC	II	c,i,j	0	1	0	-	1	100	0
TOTAL								**21**	**30**	**320**	**480**
Total Contact Hours/Week		**30**									

SEMESTER VI											
THEORY:											
16BECS601	Compiler Design**(HC)**	PC	I	a,b,c,d ,m1	2	2	0	3	4	40	60
16BECS602A 16BECS602B	Network Security /Mobile and Pervasive Computing **(SC)**	PC	I,II I	a,b,c,d ,e,m1	3	0	0	3	4	40	60
16BECS603	Artificial Intelligence **(HC)**	PC	I	a,b,c,d ,m1	3	0	0	3	4	40	60
16BECS604A 16BECS604B	Data Warehousing and DataMining/ Object Oriented Analysis and Design (SC)	PC	I	a,b,e, m1	3	0	0	3	4	40	60
16BECS6E--	Department Elective III	PE			3	0	0	3	4	40	60
16BECS6E--	Department Elective IV	PE			3	0	0	3	4	40	60
PRACTICAL :											
16BECS611	Python Programming	PC	I	a,b,c,d ,m1	2	0	2	3	4	40	60
16BECS612	Artificial Intelligence Lab	PC	I	a,b,c,d ,m1	0	0	3	2	3	40	60
TOTAL								**23**	**31**	**320**	**480**
VALUE ADDED COURSES											
16BECS651	CCNA- Introduction to Networks	MC	I,II I	a,b,c,e ,m1	0	0	1	-	1	100	0
TOTAL								**23**	**32**	**320**	**480**

		SEMESTER VII										
THEORY:												
16BECC701	Professional Ethics, Principles of Management and Entrepreneurship Development	HS	II	f,h,I,g	3	0	0	3	3	40	60	100
16BECS702	Internet and Web Technology	PC	I	a,b,c,d,m1	3	0	0	3	4	40	60	100
16BECS7E--	Programme Elective –V	PE			3	0	0	3	4	40	60	100
	Open Elective-I	OE			3	0	0	3	3	40	60	100
	Open Elective-II	OE			3	0	0	3	3	40	60	100
PRACTICAL :												
16BECS711	Web Technology Lab	PC	I	a,b,c,d,m1	0	0	3	2	3	40	60	100
16BECS791	Project Work (Phase-I)	PW			0	0	8	4	8	40	60	100
TOTAL								**21**	**28**	**280**	**420**	**700**
VALUE ADDED COURSES												
16BECS751	CCNA –Routing and Switching Essentials	MC	I,III	a,b,c,e,m1	0	0	1	-	1	100	0	100
TOTAL								**21**	**29**	**280**	**420**	**700**
		SEMESTER VIII										
	THEORY:											
16BECS801	Software Testing	PC	I,III	a,b,c,d,j,k, m1	3	0	0	3	3	40	60	100
16BECS8E--	Programme Elective –VI	PE			3	0	0	3	4	40	60	100
	PRACTICALS:											
16BECS891	Project work (Phase-II) & Viva Voce	PW			-	-	32	16	32	120	180	300
TOTAL								**22**	**39**			
TOTAL								**22**	**39**	**200**	**300**	**500**
	TOTAL CREDITS OF THE COURSE	**181**										

L: Lecture Hour T: Tutorial Hour P: Practical hour
C: Credit
ESE: End Semester Examination

CIA: Continuous Internal Assessment

**--Skill Development

**--Enterpreneurship

**--Employability

LIST OF PROFESSIONAL ELECTIVES

Professional Elective for semester-V										
SUB. CODE	**TITLE OF THE COURSE**	**PEO**	**PO,PSO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**
16BECS5E01	Advanced Data Structures	I	a,b,c,d,m1	3	0	0	3	40	60	100
16BECS5E02	Advanced Computer Architecture	I	a,b,c,m1	3	0	0	3	40	60	100
16BECS5E03	Design Patterns	I	a,b,c	3	0	0	3	40	60	100
16BECS5E04	Advanced Databases	I,III	a,b,e	3	0	0	3	40	60	100
Professional Elective for semester-V										
16BECS5E05	Advanced Operating Systems	I	a,b,c,m1	3	0	0	3	40	60	100
16BECS5E06	C# and.NET	I	a,b,c,d,e,m1	3	0	0	3	40	60	100
16BECS5E07	Servlets and JSP	I	a,b,c,d,e,m1	3	0	0	3	40	60	100
16BECS5E08	User Interface Design	I	a,b,c,f,j,m1	3	0	0	3	40	60	100
Professional Elective for semester-VI										
16BECS6E01	Internet of Things	I	a,b,c,e,m1,m2	3	0	0	3	40	60	100
16BECS6E02	Network Routing Algorithms	I	a,b,c,m1	3	0	0	3	40	60	100
16BECS6E03	Distributed Computing	I	a,b,c,d,m1	3	0	0	3	40	60	100
16BECS6E04	Video Analytics	I,III	a,b,c,d,e, m1	3	0	0	3	40	60	100
Professional Elective for semester-VI										
16BECS6E05	Wireless Sensor Networks	I	a,b,c,m1	3	0	0	3	40	60	100
16BECS6E06	Service Oriented Architecture	I	a,b,c,d,m1	3	0	0	3	40	60	100
16BECS6E07	Software Project Management	I,III	a,b,c,d,j,k, m1	3	0	0	3	40	60	100
16BECS6E08	TCP/IP Design and Implementation	I	a,b,c,m1	3	0	0	3	40	60	100
Professional Elective for semester-VII										
16BECS7E01	Managing Big Data	I,III	a,b,c,d,e, m1	3	0	0	3	40	60	100
16BECS7E02	Ad Hoc Networks	I	a,b,c,d,m1	3	0	0	3	40	60	100
16BECS7E03	Cloud Computing	I	a,b,c,m1	3	0	0	3	40	60	100
16BECS7E04	Information Security	I	a,b,c,m1	3	0	0	3	40	60	100
Professional Elective for semester-VIII										
16BECS8E01	Semantic Web	I	a,b,c,d,m1	3	0	0	3	40	60	100
16BECS8E02	E-Commerce	I	f	3	0	0	3	40	60	100
16BECS8E03	Human Computer Interaction	I,III	a,b,c,d,e,	3	0	0	3	40	60	100

			m1							
16BECS8E04	Natural Language Processing	I	a,b,c,d,m1	3	0	0	3	40	60	100

OPEN ELECTIVES

Science & Humanities										
SUB. CODE	**TITLE OF THE COURSE**	**PEO**	**PO,PSO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**
16BESHOE01	Probability and Random Process	I,II	a,c,d,h,j	3	0	0	3	40	60	100
16BESHOE02	Fuzzy Mathematics	I	a,b,c	3	0	0	3	40	60	100
16BESHOE03	Linear Algebra	I	a,g,h,j	3	0	0	3	40	60	100
16BESHOE04	Engineering Acoustics	I,II	a,b,g,h,j	3	0	0	3	40	60	100
16BESHOE05	Solid Waste Management	I, III	a,b,c,g	3	0	0	3	40	60	100
16BESHOE06	Green Chemistry	I, III	a,b,c,g	3	0	0	3	40	60	100
16BESHOE07	Applied Electrochemistry	I,II,III	a,b,c,	3	0	0	3	40	60	100
16BESHOE08	Industrial Chemistry	I,II	a,b,c,d,g,h,j	3	0	0	3	40	60	100
Electrical & Electronics Engineering										
16BEEEOE01	Electric Hybrid Vehicles	I	a,b,c	3	0	0	3	40	60	100
16BEEEOE02	Energy Management & Energy Auditing	I	a,b,c,h,j	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	I,II	a,b,g,h,j	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	I,II, III	a,b,c,d,g,h,j	3	0	0	3	40	60	100
Electronics & Communication Engineering										
16BEECOE01	Real Time Embedded Systems	I,II	a,b,c,d	3	0	0	3	40	60	100
16BEECOE02	Consumer Electronics	I	a,b,c,,j	3	0	0	3	40	60	100
16BEECOE03	Neural Networks and its Applications	I	a,b,c,d	3	0	0	3	40	60	100

16BEECOE04	Fuzzy Logic and its Applications	I,II	a,b,d	3	0	0	3	40	60	100
Bio Technology										
17BTBTOE01	Bioreactor Design	I,II,III	a,b,c,	3	0	0	3	40	60	100
17BTBTOE02	Food Processing and Preservation	I, III	a,b,d	3	0	0	3	40	60	100
17BTBTOE03	Basic Bioinformatics	I	a,b,c,	3	0	0	3	40	60	100
17BTBTOE04	Fundamentals of Nano Biotechnology	I	a,b,c,d,g,h,j	3	0	0	3	40	60	100
Mechanical Engineering										
16BEMEOE01	Computer Aided Design	I	a,b,c,d	3	0	0	3	40	60	100
16BEMEOE02	Industrial Safety and Environment	I	a,b,d,g	3	0	0	3	40	60	100
16BEMEOE03	Transport phenomena	I, III	a,b,c,d	3	0	0	3	40	60	100
16BEMEOE04	Introduction to Biomechanics	I,II,III	a,b,c,d,g,h,j	3	0	0	3	40	60	100

Automobile Engineering										
16BEAEOE01	Automobile Engineering	I, III	a,b, d,g	3	0	0	3	40	60	100
16BEAEOE02	Basics of two and three Wheelers	I,II	a,b, d,	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	I	a,b, c	3	0	0	3	40	60	100
16BEAEOE04	Introduction to Modern Vehicle Technology	I,II, III	a,b, c	3	0	0	3	40	60	100
Civil Engineering										
16BECEOE01	Housing, Plan and Management	I,III	a,b, c,d	3	0	0	3	40	60	100
16BECEOE02	Building Services	I,III	a,b, c,d	3	0	0	3	40	60	100
16BECEOE03	Management of Irrigation Systems	I,II	a,b, d	3	0	0	3	40	60	100
16BECEOE04	Advanced Construction Technology	I	a,b, c	3	0	0	3	40	60	100

Courses Offered to other Departments

Computer Science Engineering										
SUB. CODE	**TITLE OF THE COURSE**	**PEO**	**PO, PSO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**
16BECSOE01	Internet Programming	I,III	a,b,c, g,h,m 1	3	0	0	3	40	60	100
16BECSOE02	Multimedia and Animation	I,III	a,b,c, g,h,j, m2	3	0	0	3	40	60	100
16BECSOE03	PC hardware and Troubleshooting	I	a,b,c, d ,j,m2	3	0	0	3	40	60	100
16BECSOE04	Java Programming	I,II	a,b,c, d,m1	3	0	0	3	40	60	100

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.

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

B.E ELECTRONICS AND COMMUNICATION ENGINEERING (REGULAR)
COURSE OF STUDY AND SCHEME OF EXAMINATIONS
(From 2016 Onwards)

SUB. CODE	TITLE OF THE COURSE	Sub area	Objectives & Outcomes		L	T	P	C	CIA	ESE	TOTAL	Contact Hours
			PEO	PO								
SEMESTER I												
THEORY												
16BECC101	Communicative English	HS	1,3	a,e, g,j,	3	0	0	3	40	60	100	3
16BECC102	Engineering Mathematics – I	BS	1,3	a,b, d,e,, j,k,l	3	2	0	4	40	60	100	5
16BEPH103 / 16BECH103	Engineering Physics / Engineering Chemistry	BS	2,3	e,f,g ,i	3	0	0	3	40	60	100	3
16BEEC104	Basic Electrical Engineering	ES	2	a,c,j	3	0	0	3	40	60	100	3
16BEEC105	Basic Electronics Engineering	PC	3	h,j	3	0	0	3	40	60	100	3
PRACTICALS												
16BEPH111 / 16BECH111	Engineering Physics Laboratory / Engineering Chemistry Laboratory	BS	1,2	a,b, e,j	0	0	4	2	40	60	100	4
16BEEC112	Engineering Workshop Practice	ES	1,2	a,b, e,j	0	0	4	2	40	60	100	4
16BEEC113	Electrical Engineering Laboratory	ES	1,2	a,b, e,j	0	0	3	2	40	60	100	3
	TOTAL				**15**	**2**	**11**	**22**	**320**	**480**	**800**	**28**
Value added Course												
16BECC151	Human values	MC	1,2	a,b,j	1	0	0	-	100	0	100	1
	TOTAL							**22**				**29**
SEMESTER II												
THEORY												
16BECC201A / 16BECC201B	Business Communication / Technical English	HS	1,3	a,e, g,j,k	3	0	0	3	40	60	100	3
16BECC202	Engineering Mathematics – II	BS	1,3	a,b, d,e, g,j	3	2	0	4	40	60	100	5
16BEPH203 / 16BECH203	Engineering Physics / Engineering Chemistry	BS	1,2	a,b, e,j	3	0	0	3	40	60	100	3
16BECC204	Environmental Sciences	HS	1,2,5	b,c, e,j	3	0	0	3	40	60	100	3
16BEEC205	Circuit Theory	ES	1,2,5	b,c,	3	1	0	4	40	60	100	5

				e,j								
		PRACTICALS										
16BEPH211 / 16BECH211	Engineering Physics Laboratory / Engineering Chemistry Laboratory	BS	1,3	a,b, d,e, g,j	0	0	4	2	40	60	100	4
16BEEC212	Electric Circuits Laboratory	ES	1,2	a,b, e,j	0	0	3	2	40	60	100	4
16BEEC213	Engineering Graphics	ES	1,2	a,b, e,j	1	0	4	3	40	60	100	3
	TOTAL				**16**	**3**	**11**	**24**	**320**	**480**	**800**	**30**
		Value added Course										
16BEEC251	Hands On Training in Electronic Workshop	MC	3	g	1	0	0	-	100	0	100	1
	TOTAL							**24**				**31**
		SEMESTER III										
		THEORY										
16BEEC301A / 16BEEC301B	Optimization and Calculus of Variables /Linear Algebra and Special Functions	BS	1,3	a,e, g,j,k	3	2	0	4	40	60	100	5
16BEEC302	Electronic Devices and Circuits	PC	1,2	a,c, d,j,l, m	3	0	0	3	40	60	100	3
16BEEC303	Digital Electronics	PC	1,2	a,b, c,e,l ,m	3	0	0	3	40	60	100	3
16BEEC304	C Programming	ES	1,3	b,c, h,l	3	0	0	3	40	60	100	3
16BEEC305	Electromagnetic Fields	PC	1,2	b,c,l ,m	3	1	0	4	40	60	100	4
		PRACTICALS										
16BEEC311	C Programming Laboratory	ES	1,3	b,c, e,h,l	0	0	3	2	40	60	100	3
16BEEC312	Electronic Devices and Circuits Laboratory	PC	1,2	b,c, e,d,j ,l	0	0	3	2	40	60	100	3
16BEEC313	Digital Electronics Laboratory	PC	1,2	b,c, e,l, m	0	0	3	2	40	60	100	3
	TOTAL				**15**	**3**	**9**	**23**	**320**	**480**	**800**	**27**
		Value added Course										
16BEEC351	PCB Designing	MC	1,2	b,c, e,l, m	1	0	0	-	0	100	100	1
	TOTAL							**23**				**28**
		SEMESTER IV										
		THEORY										
16BEEC401	Linear Integrated Circuits	PC	1,2	a,b, d,,g, j	3	0	0	3	40	60	100	3
16BEEC402	Signals and Systems	PC	1,2	a,b, c,l	3	2	0	4	40	60	100	5
16BEEC403	Transmission Lines and Networks	PC	1,2	a,d,l	3	0	0	3	40	60	100	3

16BEEC404	Communication Theory	PC	1,2	b,c, d,m	3	0	0	3	40	60	100	3
16BEEC405	Electronic Circuits	PC	3	d,h, k	3	0	0	3	40	60	100	3
16BEEC406A / 16BEEC406B	Control Systems/ Computer Networks	PC	1,2	b,c, d,e, m	3	0	0	3	40	60	100	3
	PRACTICALS											
16BEEC411	Electronic Circuits and Simulation Laboratory	PC	PC	1,2	a, d, e,l ,m	0	3	2	40	60	100	3
16BEEC412	Linear Integrated Circuits Laboratory	PC	PC	1,2	a, d, e,l ,m	0	3	2	40	60	100	3
	TOTAL				**18**	**2**	**6**	**23**	**320**	**480**	**800**	**26**
	Value added Course											
16BEEC451	Life skills	MC	1,2	e,l, m	1	0	0	-	100	0	100	1
16BEEC452	Technical Seminar	MC	1,2	e,l, m	1	0	0	-	100	0	100	1
	TOTAL							**23**				**28**
	SEMESTER V											
	THEORY											
16BEEC501	Digital Signal Processing	PC	1,2,3	h,l, m	3	1	0	4	40	60	100	4
16BEEC502	Digital Communication	PC	1,2	a,b, c,l, m	3	0	0	3	40	60	100	3
16BEEC503	Antennas and Wave Propagation	PC	1,2	a,d,l ,m	3	0	0	3	40	60	100	3
16BEEC504	Microprocessors and Microcontrollers	PC	1,2,3	c,e, h,j,l	3	0	0	3	40	60	100	3
16BEEC5E**	Professional Elective	PE	1,2	a,c, h,l, m	3	0	0	3	40	60	100	3
	PRACTICALS											
16BEEC511	Digital Signal Processing Laboratory	PC	1,2,3	c,e, h,l, m	0	0	3	2	40	60	100	3
16BEEC512	Communication Systems Laboratory	PC	1,2,3	b,e, h,l, m	0	0	3	2	40	60	100	3
16BEEC513	Microprocessor and Microcontroller Laboratory	PC	1,2	a,b, c,e,l ,m	0	0	3	2	40	60	100	3
	TOTAL				**15**	**1**	**9**	**22**	**320**	**480**	**800**	**25**
	Value added Course											
16BEEC551	In plant Training	MC	1,2	d,h,i ,l,n	-	-	-	-	100	0	100	-
	TOTAL							**22**				**25**
	SEMESTER VI											
	THEORY											
16BEEC601	Mobile Communication	PC	1,2,3	a,c,h	3	0	0	3	40	60	100	3

				,l,m								
16BEEC602A / 16BEEC602B	VLSI Design /Optical Communication	PC	1,2,3	c,e,h ,j,l	3	0	0	3	40	60	100	3
16BEEC603A / 16BEEC603B	Microwave Engineering/ Embedded Systems	PC	1,2	a,c,h ,l,m	3	0	0	3	40	60	100	3
16BEEC6E**	Professional Elective	PE	1,2	a,c,l, m	3	0	0	3	40	60	100	3
16BEEC6E**	Professional Elective	PE	1,2	a,c,l, m	3	0	0	3	40	60	100	3
16BEEC6E**	Professional Elective	PE	1,2	a,c,l, m	3	0	0	3	40	60	100	3
	PRACTICALS											
16BEEC611A /16BEEC611 B	VLSI Design Laboratory / Optical Communication Laboratory	PC	1,2	c,e,i ,l,m	0	0	3	2	40	60	100	3
16BEEC612A / 16BEEC612B	Microwave Engineering Laboratory /Embedded System Design Laboratory	PC	1,2,3	c,l, m,n	0	0	3	2	40	60	100	3
	TOTAL				**18**	**0**	**6**	**22**	**320**	**480**	**800**	**24**
	Value added Course											
16BEEC651	Communication skills and development	MC	1,2	e,l, m	1	0	0	-	100	0	100	1
16BEEC652	Basic Simulation Laboratory	MC	1,2	e,l, m	1	0	0	-	100	0	100	1
	TOTAL							**22**				**26**
	SEMESTER VII											
	THEORY											
16BECC701	Professional Ethics, Principles of Management and Entrepreneurship Development	HS	HS	3	f,g	0	0	3	40	60	100	3
16BEEC702A / 16BEEC702B	Measurements and Instrumentation/Robotics and Automation	PC	1,2	a,c,l, m	3	0	0	3	40	60	100	3
16BEEC7E**	Professional Elective	PE	1,2	a,c,l, m	3	0	0	3	40	60	100	3
16BESHOE** /16BECSOE* */16BEEEOE **/16BTBTO E**/16BEME OE**/16BTA SOE**/16BE AEOE**/ 16BECEOE**	Open Elective	OE	1,2	a,c,l, m	3	0	0	3	40	60	100	3
16BESHOE** /16BECSOE* */16BEEEOE	Open Elective	OE	1,2,3	c,e,h ,j,l	3	0	0	3	40	60	100	3

/16BTBTOE/16BEMEOE**/16BTASOE**/16BEAEOE**/16BECEOE**												
	PRACTICALS											
16BEEC711A / 16BEEC711B	VLSI Design Laboratory / Optical Communication Laboratory	PC	1,2	c,e,i,l,m	0	0	3	2	40	60	100	3
16BEEC791	Project Work-Phase I	PW	1,2,3	c,l, m,n	0	0	8	4	40	60	100	8
	TOTAL				**15**	**0**	**11**	**21**	**280**	**420**	**700**	**26**
	Value added Course											
16BEEC751A 16BEEC751B	Real Time controller / VLSI Design using Cadence tool	MC	1,2	c,e,i,l,m	1	0	0	-	100	0	100	1
	TOTAL							**21**				**27**
SEMESTER VIII												
THEORY												
16BEEC801A / 16BEEC801B	Medical Electronics/Digital Image Processing	PC	1,2,3	a,c,h,l,m	3	0	0	3	40	60	100	3
16BEEC8E**	Professional Elective	PE	1,2,3	c,e,h,j,l	3	0	0	3	40	60	100	3
	PRACTICALS											
16BEEC891	Project Work- Phase II & Viva-Voce	PW	1,2,3	c,l, m,n	0	0	32	16	120	180	300	32
	TOTAL				**6**	**0**	**32**	**22**	**200**	**300**	**500**	**38**
	GRAND TOTAL							**179**			**6900**	

PROFESSIONAL ELECTIVE LIST
SEMESTER V
ELECTIVE I

SUB. CODE	TITLE OF THE COURSE	Sub area	Objectives & Outcomes		L	T	P	C	CIA	ESE	TOTAL	Contact Hours
16BEEC5E01	Advanced Electronic system design	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC5E02	Telecommunication Switching and Networks	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC5E03	Television and Video Engineering	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC5E04	Computer Architecture	PE	1,2	a,c,h,l,m	3	0	0	3	40	60	100	3

SEMESTER VI
ELECTIVE II, III & IV

SUB. CODE	TITLE OF THE COURSE	Sub area	Objectives & Outcomes		L	T	P	C	CIA	ESE	TOTAL	Contact Hours
16BEEC6E01	Advanced Microprocessors	PE	1,2,3	a,c,h,l,m	3	0	0	3	40	60	100	3
16BEEC6E02	Wireless networks	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E03	Satellite Communication	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E04	Disaster Management	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E05	Radar and Navigational Aids	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E06	Internet and java	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E07	Total Quality Management	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E08	Photonics	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E09	Data Structures and algorithms	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E10	Probability and Random Process	PE	1,2,3	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E11	Remote Sensing	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC6E12	Opto electronic devices	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3

SEMESTER VII
ELECTIVE V

SUB. CODE	TITLE OF THE COURSE	Sub area	Objectives & Outcomes		L	T	P	C	CIA	ESE	TOTAL	Contact Hours
16BEEC7E01	Sensors and Transducers	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC7E02	Computer Hardware and Interfacing	PE	1,2	a,c,h,l,m,	3	0	0	3	40	60	100	3
16BEEC7E03	High Speed Networks	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3
16BEEC7E04	Nano Electronics	PE	1,2	a,c,l,m	3	0	0	3	40	60	100	3

SEMESTER VIII
ELECTIVE VI

SUB. CODE	TITLE OF THE COURSE	Sub area	Objectives & Outcomes	L	T	P	C	CIA	ESE	TOTAL	Contact Hours

16BEEC8E01	Artificial Neural Networks	PE	1,2	a,c, l,m	3	0	0	3	40	60	100	3
16BEEC8E02	Virtual instrumentation using lab view	PE	1,2	a,c, l,m	3	0	0	3	40	60	100	3
16BEEC8E03	FPGA Design	PE	1,2	a,c, l,m	3	0	0	3	40	60	100	3
16BEEC8E04	ASIC Design	PE	1,2	a,c, l,m	3	0	0	3	40	60	100	3

OPEN ELECTIVE LIST
SEMESTER VII & SEMESTER VIII

SUB. CODE	TITLE OF THE COURSE	L	T	P	C	CIA	ESE	TOTAL
SCIENCE AND HUMANITIES								
16BESHOE01	Probability and Random Process	3	0	0	3	40	60	100
16BESHOE02	Fuzzy Mathematics	3	0	0	3	40	60	100
16BESHOE03	Linear Algebra	3	0	0	3	40	60	100
16BESHOE04	Engineering Acoustics	3	0	0	3	40	60	100
16BESHOE05	Solid Waste Management	3	0	0	3	40	60	100
16BESHOE06	Green Chemistry	3	0	0	3	40	60	100
16BESHOE07	Applied Electrochemistry	3	0	0	3	40	60	100
16BESHOE08	Industrial Chemistry	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING								
16BECSOE01	Internet Programming	3	0	0	3	40	60	100
16BECSOE02	Multimedia and Animation	3	0	0	3	40	60	100
16BECSOE03	PC hardware and Troubleshooting	3	0	0	3	40	60	100
16BECSOE04	Java Programming	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING								
16BEEEOE01	Electric Hybrid Vehicles	3	0	0	3	40	60	100
16BEEEOE02	Energy Management and Energy Auditing	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	3	0	0	3	40	60	100
BIOTECHNOLOGY								
16BTBTOE01	Bioreactor Design	3	0	0	3	40	60	100
16BTBTOE02	Food Processing and Preservation	3	0	0	3	40	60	100
16BTBTOE03	Basic Bioinformatics	3	0	0	3	40	60	100
16BTBTOE04	Fundamentals of Nano Biotechnology	3	0	0	3	40	60	100
MECHANICAL ENGINEERING								
16BEMEOE01	Computer Aided design	3	0	0	3	40	60	100
16BEMEOE02	Industrial safety and Environment	3	0	0	3	40	60	100
16BEMEOE03	Transport Phenomena	3	0	0	3	40	60	100
16BEMEOE04	Introduction to Bio mechanics	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING								
16BEAEOE01	Automobile Engineering	3	0	0	3	40	60	100
16BEAEOE02	Basics of Two and Three Wheelers	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	3	0	0	3	40	60	100
16BEAEOE04	Introduction to Modern Vehicle Technology	3	0	0	3	40	60	100
CIVIL ENGINEERING								
16BECEOE01	Housing,Plan and Management	3	0	0	3	40	60	100
16BECEOE02	Building Services	3	0	0	3	40	60	100
16BECEOE03	Management of irrigation systems	3	0	0	3	40	60	100

16BECEOE04	Advanced construction technology	3	0	0	3	40	60	100

COURSES OFFERED TO OTHER DEPARTMENTS

SUB. CODE	TITLE OF THE COURSE	L	T	P	C	CIA	ESE	TOTAL
ELECTRONICS AND COMMUNICATION ENGINEERING								
16BEECOE01	Real Time Embedded Systems	3	0	0	3	40	60	100
16BEECOE02	Consumer Electronics	3	0	0	3	40	60	100
16BEECOE03	Neural Networks and its Applications	3	0	0	3	40	60	100
16BEECOE04	Fuzzy Logic and its Applications	3	0	0	3	40	60	100

Total number of credits: 179

L: Lecture Hour **T: Tutorial Hour** **CIA: Continuous Internal Assessment**

P: Practical Hour **C: No. of Credits** **ESE: End Semester Examinations**

Note:

1. The passing minimum for value added course is 50 marks out of 100 marks. There will be two tests, of which one will be class test covering 50% of syllabus for 50 marks and other for 50 marks.
2. Credits for value added courses are not counted for computation of CGPA.
3. Interested students can opt one self study course in eighth semester from open electives which will be reflected in the mark sheet only if he / she passes

KARPAGAM ACADEMY OF HIGHER EDUCATION
(2016- 2017)
CREDIT DITRIBUTION

Area Code	SEM-I	SEM-II	SEM-III	SEM-IV	SEM-V	SEM-VI	SEM-VII	SEM-VIII	Credit Total (KAHE)	Credit Total (AICTE)	KAHE in %	AICTE %
HS	3	6	-	-	-	3	-	-	**12**	**14**	**6.70%**	**5% to 10%**
BS	9	9	4	-	-	-	-	-	**22**	**30**	**12.29%**	**15% to 20%**
ES	7	7	5	-	-	-	-	-	**19**	**30**	**11.17%**	**15% to 20%**
PC	3	-	15	23	19	13	6	3	**82**	**50**	**45.24%**	**30% to 40%**
PE	-	-	-	-	3	9	3	3	**18**	**20**	**10.05%**	**10% to 15%**
OC	-	-	-	-	-	-	6	-	**6**	**12**	**3.35%**	**5% to 10%**
PW	-	-	-	-	-	-	4	16	**20**	**20**	**11.17%**	**10% to 15%**
Total	**22**	**22**	**24**	**23**	**22**	**25**	**19**	**22**	**179**	**176**	**-**	**-**

AICTE

Area Code	SEM-I	SEM-II	SEM-III	SEM-IV	SEM-V	SEM-VI	SEM-VII	SEM-VIII	Credit Total (AICTE)	AICTE %
HS	6	8	-	-	-	-	-	-	**14**	**5% to 10%**
BS	7	6	5	5	4	4	-	-	**31**	**15% to 20%**
ES	9	8	6	1	3	-	-	-	**27**	**15% to 20%**
EE	-	-	11	16	12	12	-	-	**51**	**30% to 40%**
EE*	-	-	-	-	3	6	12	-	**21**	**10% to 15%**
OE	-	-	-	-	-	-	6	6	**12**	**5% to 10%**
EEP	-	-	-	-	-	-	4	16	**20**	**10% to 15%**
Total	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**176**	**-**

Sl.No	Course work- Subject area	Area Code	Range of total credits				Suggested breakdown of credits (185)
			In Percentage		In nos.		
			Minimum	Maximum	Minimum	Maximum	
1	Humanities and Social Science including management	HS	5%	10%	10	19	**12**
2	Basic Sciences including maths, physics, chemistry and biology	BS	15%	20%	28	37	**22**
3	Engineering Science including materials, Workshop	ES	15%	20%	28	37	**19**
4	Professional core course relavant to the chosen branch	PC	35%	40%	65	74	**82**
5	Professional Electives	PE	10%	12%	19	23	**18**
6	Open Electives	OC	5%	8%	10	15	**6**
7	Project work, Seminar and Internship	PW	10%	12%	19	23	**20**
	TOTAL	-	-	-	-	-	**179**

TOTAL CHOICE OFFERED TO STUDENTS: CREDITS- 57 PERCENTAGE – 31.74%

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	✓	

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING
CURRICULUM 2016
(FULL TIME PROGRAMME)

Department of Electrical and Electronics Engineering

FACULTY OF ENGINEERING

KARPAGAM ACADEMYOFHIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)
Pollachi Main Road, EachanariPost,
Coimbatore- 641021, India.

B. E. ELECTRICAL AND ELECTRONICSENGINEERING

COURSE OF STUDY AND SCHEME OFEXAMINATIONS
(2016 and onwards)
SEMESTER - I

COURSE CODE	COURSETITLE	SUB AREA	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	CONTACT HOURS /WEEK
THEORY:												
16BECC101	Communicative English	HS	2	i,j,l	3	0	0	3	40	60	100	3
16BECC102	Engineering Mathematics - I	BS	2	a,b,e, l	3	2	0	4	40	60	100	5
16BEPH103/ 16BECH103	Engineering Physics /Engineering Chemistry **CHOICE BASED**	BS	1,2	a,b,c,e,g ,l	3	0	0	3	40	60	100	3
16BEEE104	Basic Electrical Engineering	ES	1,2	a,b,c,e,g ,l	3	0	0	3	40	60	100	3
16BEEE105	Basic Electronics Engineering	ES	1,2	a,b,c,e,g ,l	3	0	0	3	40	60	100	3
PRACTICAL:												
16BEPH111/ 16BECH111	Engineering Physics Laboratory /Engineering Chemistry Laboratory **CHOICE BASED**	BS	1,2	a,b	0	0	4	2	40	60	100	4
16BEEE112	Engineering Workshop Practices Laboratory	ES	1,2	a,c,d, e,f,j	0	0	4	2	40	60	100	4
16BEEE113	Computer Practice and programming Laboratory	ES	1	a,b,c, d,e,l	1	0	4	3	40	60	100	5
TOTAL					**16**	**2**	**12**	**23**	**320**	**480**	**800**	**30**

VALUE ADDED COURSE

16BECC151*	Human Values	MC	1,2	c,d,e,f	1	0	0	-	100*	-	-	1
Total Contact Hours/Week = 31 Hours												

SEMESTER 2												
COURSE CODE	**COURSETITLE**	**SUB AREA**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS/ WEEK**
THEORY												
16BECC201A/ 16BECC201B	Business Communication/ Technical English **CHOICE BASED**	HS	1,2	i,j,l	3	0	0	3	40	60	100	3
16BECC202	EngineeringMathematics-II	BS	2	a,b,c,e,l	3	2	0	4	40	60	100	5
16BEPH203/ 16BECH203	Engineering Physics/Engineering Chemistry **CHOICE BASED**	BS	1,2	a,b	3	0	0	3	40	60	100	3
16BECC204	Environmental Sciences	HS	1	a,c,e,f,g, h,l	3	0	0	3	40	60	100	3
16BEEE205	Analysis of Electric Circuits	ES	1	a,b,c,d,e,l	3	2	0	4	40	60	100	5
PRACTICAL												
16BEPH211/ 16BECH211	Engineering Physics Laboratory / Engineering Chemistry Laboratory **CHOICE BASED**	BS	1,2	a,b	0	0	4	2	40	60	100	4
16BEEE212	Electric Circuits Laboratory	ES	2	a,c,d,e,f, j,l	0	0	3	2	40	60	100	3
16BEEE213	Engineering Graphics	ES	1,2	c,d	1	0	3	3	40	60	100	3
TOTAL					**16**	**4**	**10**	**24**	**320**	**480**	**800**	**29**

VALUE ADDED COURSE

16BEEE251*	Aptitude Training	MC	1,2		1	0	0	-	100*	-	-	1
Total Contact Hours/Week =30 Hours												

SEMESTER III

SEMESTER 3												
COURSE CODE	**COURSETITLE**	**SUB AREA**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS/ WEEK**
THEORY												
16BEEE301A/ 16BEEE301B	Methods of Applied Mathematics / Linear Algebra and Special Function (**CHOICE BASED)**	BS	1,2	a,b,c,e,l	3	2	0	4	40	60	100	5
16BEEE302	ElectricalMachines -I(**HC)**	PC	1	a,b,c,d,e,j	3	0	0	3	40	60	100	3
16BEEE303	Electromagnetic Theory (**HC)**	PC	1	a,b,c,d,e,j	3	0	0	3	40	60	100	3
16BEEE304	Electronic Devices and Circuits	PC	2	a,b,c,d,e, l	3	0	0	3	40	60	100	3
16BEEE305A/ 16BEEE305B	Renewable Energy Sources/ Power Plant Engineering(**CHOICE BASED)**	ES	1	a,b,c,d,e,g, l	3	0	0	3	40	60	100	3
PRACTICAL												
16BEEE311	Electrical Machines – I Laboratory	PC	1	a,d,e,k,l	0	0	3	2	40	60	100	3
16BEEE312	Electronic Devices and Circuits Laboratory	PC	2	a,d,e,k,l	0	0	3	2	40	60	100	3
16BEEE313	Basic Simulation Laboratory for Electrical Systems	ES	1	a,d,e,j,k,l	0	0	3	2	40	60	100	3
TOTAL					**15**	**2**	**9**	**22**	**320**	**480**	**800**	**26**

VALUE ADDED COURSE

16BEEE351*	Introduction to Solar PV Design	MC	1,2	a,b,c,d,e ,l	1	0	0	-	100*	-	-	1
Total Contact Hours/Week =27 Hours												

SEMESTER IV

SEMESTER 4												
COURSE CODE	**COURSETITLE**	**SUB AREA**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS/ WEEK**
THEORY												
16BEEE401	Electrical Machines - II**(HC)**	PC	1	a,b,c,d,e g,l	3	2	0	4	40	60	100	5
16BEEE402	Transmission and Distribution Systems **(HC)**	PC	1	a,b,c,d,e g,l	3	0	0	3	40	60	100	3
16BEEE403A/ 16BEEE403B	Measurements and Instrumentation /Transducer Engineering **(SC) (CHOICE BASED)**	PC	1	a,b,c,d,e,l	3	0	0	3	40	60	100	3
16BEEE404	Pulse and Digital Logic Circuits **(HC)**	PC	2	a,b,c,e,	3	0	0	3	40	60	100	3
16BEEE405A/ 16BEEE405B	BasicThermodynamics and Energy Conversion Devices / Engineering Materials **(CHOICEBASED)**	ES	1,2	a,b,c,d,e,g, l	3	0	0	3	40	60	100	3
PRACTICAL												
16BEEE411	Electrical Machines Laboratory –II	PC	1	a,b,c,d,e,l	0	0	3	2	40	60	100	3
16BECC412	Scientific Computing Laboratory	BS	2	a,b,c,e	0	0	2	2	40	60	100	3
16BEEE413	Measurements and Instrumentation Laboratory	PC	1	a,d,e,j,k,l	0	0	3	2	40	60	100	3
TOTAL					**15**	**2**	**8**	**22**	**320**	**480**	**800**	**26**

VALUE ADDED COURSE

16BEEE451*	Electricity Standards	MC	1,2	a,b,c,d,e ,l	1	0	0	-	100*	-	-	1
Total Contact Hours/Week =27 Hours												

SEMESTER V

SEMESTER 5												
COURSE CODE	**COURSETITLE**	**SUB AREA**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS/ WEEK**
THEORY												
16BEEE501	Power Electronics**(HC)**	PC	2	a,b,c,d, e,g	3	0	0	3	40	60	100	3
16BEEE502	Power System Analysis**(HC)**	PC	2	a,d,e	3	2	0	4	40	60	100	5
16BEEE503	Control System Engineering **(HC)**	PC	1	a,b,c,d,e,l	3	2	0	4	40	60	100	5
16BEEE5E_ _	Professional Elective-I **(CHOICE BASED)**	PE	-	-	3	0	0	3	40	60	100	3
16BEEE5E_ _	Professional Elective-II **(CHOICE BASED)**	PE	-	-	3	0	0	3	40	60	100	3
PRACTICAL												
16BEEE511	Power Electronics Laboratory	PC	2	a,c,d,j,k,l	0	0	3	2	40	60	100	3
16BEEE512	Analog and Digital CircuitsLaboratory	PC	2	a,d,e,k,l	0	0	3	2	40	60	100	3
16BEEE513	Control System Engineering Laboratory	PC	1	c,d,e,f,i,j	0	0	3	2	40	60	100	3
TOTAL					**15**	**4**	**9**	**23**	**320**	**480**	**800**	**28**

VALUE ADDED COURSE

16BEEE551*	In plant Training	MC	-	-	-	0	0	-	100*	-	-	-
16BEEE552*	Control and Maintenance for Electrical Motors/ Programmable Logic Controller (PLC)	MC	1,2	a,b,d,e,l	1	0	0	-	100*	-	-	1
Total Contact Hours/Week =29 Hours												

SEMESTER VI

SEMESTER 6												
COURSE CODE	**COURSETITLE**	**SUB AREA**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS/WEEK**
THEORY												
16BEEE601	Solid State Drives**(HC)**	PC	2	a,b,c,d,e,g	3	0	0	3	40	60	100	3
16BEEE602	Power System Operation andControl **(HC)**	PC	2	a,b,c,d,e,g,l	3	0	0	3	40	60	100	3
16BEEE603A/ 16BEEE603B	Microprocessor and Microcontroller / Microprocessor based system design (**SC) CHOICE BASED**	PC	1	a,b,c,e,h,k,l	3	0	0	3	40	60	100	3
16BEEE604	Design of Electrical Apparatus**(HC)**	PC	1	a,c,d,g,l	3	0	0	3	40	60	100	3
16BEEE6E_ _	Professional Elective-III **(CHOICE BASED)**	PE	-	-	3	0	0	3	40	60	100	3
16BEEE6E_ _	Professional Elective-IV (**CHOICE BASED)**	PE	-	-	3	0	0	3	40	60	100	3
PRACTICAL												
16BEEE611	Micro Processor and Micro Controller Laboratory	PC	2	a,c,d,j,k,l	0	0	3	2	40	60	100	3
16BEEE612	Electrical Estimation and Rewinding Laboratory	PC	1,2	a,c,d,e,f,g	0	0	3	2	40	60	100	3
TOTAL					**18**	**0**	**6**	**22**	**320**	**480**	**800**	**24**

VALUE ADDED COURSE

16BEEE651*	PCB Design and Servicing of Domestic Appliances	MC	1,2	a,b,d,e,l	1	0	0	-	100*	-	-	1
Total Contact Hours/Week =25 Hours												

SEMESTER VII

SEMESTER 7												
COURSE CODE	**COURSETITLE**	**SUB AREA**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS/WEEK**
THEORY												
16BECC701	Professional Ethics, Principle of Management and Entrepreneurship Development	HS	1	a,b,d,e,f, g,i	3	0	0	3	40	60	100	3
16BEEE702	Power System Protection and Switchgear**(HC)**	PC	2	a,b,c,d,e, g,l	3	0	0	3	40	60	100	3
16BEEE7E_ _	Professional Elective-V**(CHOICE BASED)**	PE	-	-	3	0	0	3	40	60	100	3
	Open Elective-I **(CHOICE BASED)**	OC	-	-	3	0	0	3	40	60	100	3
	Open Elective - II **(CHOICEBASED)**	OC	-	-	3	0	0	3	40	60	100	3
PRACTICAL												
16BEEE711	Power System Simulation Laboratory	PC	1	a,c,d,j,k,l	0	0	3	2	40	60	100	2
16BEEE791	Project work-Phase- I	PW	1,2		0	0	8	4	40	60	100	8
TOTAL					**15**	**0**	**11**	**21**	**280**	**420**	**700**	**25**

VALUE ADDED COURSE

16BEEE751*	ETAP and PSCAD	MC	1,2	a,b,d,e,l	1	0	0	-	100*	-	-	1
Total Contact Hours/Week =26 Hours												

SEMESTER VIII

SEMESTER 8												
COURSE CODE	**COURSETITLE**	**SUB AREA**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**	**CONTACT HOURS/WEEK**
THEORY												
16BECC801A/ 16BECC801B	Energy Management, Utilization and Auditing/ Smart Grid **(SC) CHOICE BASED**	PC	2	b,e,f,g,h, i,j	3	0	0	3	40	60	100	3
16BEEE8E_ _	Professional Elective-VI**(CHOICE BASED)**	PE	-	-	3	0	0	3	40	60	100	3
PRACTICAL												
16BEEE891	Project work -Phase - II & Viva-Voce	PW	1,2	-	0	0	32	16	120	180	300	32
TOTAL					**6**	**0**	**32**	**22**	**200**	**300**	**500**	**38**
Total Contact Hours/Week =38 Hours												

L:LectureHour **T:Tutorial Hour** **CIA:**
P:PracticalHour **C: No.ofCredits** **ESE: End SemesterExamination**
V A C: Value AddedCourse

Total Credits earned: 23+24+22+22+23+22+21+22=179
against the specified range –[175-190 Credits]
* Credits for **Mandatory Courses (MC)** are not counted for computation of CGPA.The passing minimum for **Mandatory Courses (MC)** is 50 marks out of 100 Marks.There will be two tests, of which one will be class test covering 50% of syllabus for 50 marks and other class test covering next 50% of syllabus for 50 marks.[Total 50+50=100Marks].
Interested students can opt one self study course in the Seventh semester from open electives which will be reflected in the mark sheets, only if he/she passes in the course.

LIST OF PROFESSIONAL ELECTIVES

PROFESSIONAL ELECTIVE-I AND PROFESSIONAL ELECTIVE-II VSEMESTER											
S. No	**SUB. CODE**	**TITLE OF THE COURSE**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**
1	16BEEE5E01	Network Analysis and Synthesis	2	a,d,e	3	0	0	3	40	60	100
2	16BEEE5E02	Advanced Control System	2	b,c,h,i	3	0	0	3	40	60	100
3	16BEEE5E03	Electric Hybrid Vehicle	2	a,c,d,h	3	0	0	3	40	60	100
4	16BEEE5E04	Communication Engineering	1	-	3	0	0	3	40	60	100
5	16BEEE5E05	Introduction to Neural Networks	1	a,c,e,g,l	3	0	0	3	40	60	100
6	16BEEE5E06	Computer Architecture	1	a,c,e	3	0	0	3	40	60	100
7	16BEEE5E07	Fuzzy Logic and its applications	1	a,c,e,n	3	0	0	3	40	60	100
8	16BEEE5E08	Distributed Generation	2	c,d,e,g,h,i	3	0	0	3	40	60	100
9	16BEEE5E09	Digital Signal Processing	1	a,b,c,d,e,g,l,m	3	0	0	3	40	60	100
10	16BEEE5E10	Industrial Automation	1	a,c,d,e,k,m,n	3	0	0	3	40	60	100
11	16BEEE5E11	Sensor and Transducer	1	a,b,c,e,i	3	0	0	3	40	60	100
12	16BEEE5E12	IntellectualProperty Rights	1	h,j,l	3	0	0	3	40	60	100
PROFESSIONAL ELECTIVE-III AND PROFESSIONAL ELECTIVE-IV VI SEMESTER											
13	16BEEE6E01	Computer Organization andArchitecture	1	a,c,e	3	0	0	3	40	60	100
14	16BEEE6E02	Embedded System	1	-	3	0	0	3	40	60	100
15	16BEEE6E03	Programmable Logic Controller and its Application	1,2	a,b,d,e,l	3	0	0	3	40	60	100

16	16BEEE6E04	Computer Networks	1	a,c,e	3	0	0	3	40	60	100
17	16BEEE6E05	High Voltage Engineering	2	a,b,c,d,e,g,l	3	0	0	3	40	60	100
18	16BEEE6E06	Special Electrical Machines	2	a,c,d,e,h	3	0	0	3	40	60	100
19	16BEEE6E07	Fibre Optics and Laser Instruments	1	a,b,e,k,l,m	3	0	0	3	40	60	100
20	16BEEE6E08	Mobile Communication	1	a,b,d,e	3	0	0	3	40	60	100
21	16BEEE6E09	Switched Mode Power Conversion	2	a,c,e	3	0	0	3	40	60	100
22	16BEEE6E10	Biomedical Instrumentation	1,2	a,c,d,e,f,m,n	3	0	0	3	40	60	100
23	16BEEE6E11	Modern semiconductor Devices	2	a,c,d,e,g	3	0	0	3	40	60	100
PROFESSIONAL ELECTIVE-V VII SEMESTER											
24	16BEEE7E01	Artificial Intelligence and Expert Systems	2	a,c,e	3	0	0	3	40	60	100
25	16BEEE7E02	HVDC and EHVAC	2	a,b,c,h,i,l	3	0	0	3	40	60	100
26	16BEEE7E03	Power System Economics	2	a,c,e	3	0	0	3	40	60	100
27	16BEEE7E04	Power System Restructuring and Deregulation	2	a,c,e,j,k,l	3	0	0	3	40	60	100
28	16BEEE7E05	Power Quality	2	a,c,d,e,h,l	3	0	0	3	40	60	100
29	16BEEE7E06	Power System Dynamics	2	a,c,e	3	0	0	3	40	60	100
30	16BEEE7E07	Computer Aided Analysis and Design of Electrical Apparatus	1	a,c,d,g	3	0	0	3	40	60	100
31	16BEEE7E08	Digital System Design usingVHDL	1	a,c,e,h,l	3	0	0	3	40	60	100
32	16BEEE7E09	Optimization Techniques	2	a,c,e	3	0	0	3	40	60	100
33	16BEEE7E10	Real Time Operating System	1	a,c,e.j.l,n	3	0	0	3	40	60	100
34	16BEEE7E11	Advances in Soft Computing	1	a,c,e	3	0	0	3	40	60	100

PROFESSIONAL ELECTIVE-VI VIII SEMESTER											
35	16BEEE8E01	Flexible AC Transmission Systems	2	a,b,c,e,j,l	3	0	0	3	40	60	100
36	16BEEE8E02	Power System Stability	2	d,e	3	0	0	3	40	60	100
37	16BEEE8E03	Power Generation Systems	2	c,d,e,g,h,i	3	0	0	3	40	60	100
38	16BEEE8E04	Total Quality Management	1	b,e,f,g,h,i,j	3	0	0	3	40	60	100
39	16BEEE8E05	Virtual Instrumentation	1	a,b,e,h,l,m,n	3	0	0	3	40	60	100
40	16BEEE8E06	Robotics and Automation	1	a,c,e,m,n	3	0	0	3	40	60	100

LIST OF OPEN ELECTIVES

List of Open Electives offered by Other Departments Science& Humanities											
SL. No.	**SUB. CODE**	**TITLE OFTHE COURSE**	**PEO**	**PO**	**L**	**T**	**P**	**C**	**CIA**	**ESE**	**TOTAL**
1	16BESHOE01	Probability and Random Process	1,2	a,c,d,h, j	3	0	0	3	40	60	100
2	16BESHOE02	Fuzzy Mathematics	1	a,b,c	3	0	0	3	40	60	100
3	16BESHOE03	Linear Algebra	1	a,g,h,j	3	0	0	3	40	60	100
4	16BESHOE04	Engineering Acoustics	1,2	a,b, g,h,j	3	0	0	3	40	60	100
5	16BESHOE05	Solid Waste Management	1,2	a,b,c,g	3	0	0	3	40	60	100
6	16BESHOE06	Green Chemistry	1,2	a,b,c,g	3	0	0	3	40	60	100
7	16BESHOE07	Applied Electrochemistry	1,2	a,b,c,	3	0	0	3	40	60	100
8	16BESHOE08	Industrial Chemistry	1,2	a,b,c,	3	0	0	3	40	60	100
Computer Science Engineering											
10	16BECSOE01	Internet Programming	1,2	a,b,c,g, h	3	0	0	3	40	60	100
11	16BECSOE02	Multimedia and Animation	1,2	a,b,c,g, h,j	3	0	0	3	40	60	100
12	16BECSOE03	PC Hardware and Trouble shooting	1	a,b,c,d ,j	3	0	0	3	40	60	100
13	16BECSOE04	Java Programming	1,2	a,b,c,d,	3	0	0	3	40	60	100
Electronics and Communication Engineering											
14	16BEECOE01	Real Time Embedded Systems	1,2	a,b,c,d	3	0	0	3	40	60	100
15	16BEECOE02	Consumer Electronics	1	a,b,c,j	3	0	0	3	40	60	100
16	16BEECOE03	Neural Networks and its Applications	1	a,b,c,d	3	0	0	3	40	60	100

17	16BEECOE04	Fuzzy Logic and its Applications	1,2	a,d,g, h,j	3	0	0	3	40	60	100
Bio Technology											
18	16BTBTOE01	Bioreactor Design	1,2,	a,b,c,	3	0	0	3	40	60	100
19	16BTBTOE02	Food Processing and Preservation	1,2	a,b,d	3	0	0	3	40	60	100
20	16BTBTOE03	Basic Bioinformatics	1	a,b,c,	3	0	0	3	40	60	100
21	16BTBTOE04	Fundamentals of Nano Biotechnology	1	a,b,c,d,g, h,j	3	0	0	3	40	60	100
Mechanical Engineering											
22	16BEMEOE01	Computer Aided Design	1	a,b,c,d	3	0	0	3	40	60	100
23	16BEMEOE02	Industrial Safety and Environment	1	a,b,d,g	3	0	0	3	40	60	100
24	16BEMEOE03	Transport Phenomena	1,2	a,b,c,d	3	0	0	3	40	60	100
25	16BEMEOE04	Introduction to Biomechanics	1,2	a,b,c,d,g ,h,j	3	0	0	3	40	60	100
Automobile Engineering											
30	16BEAEOE01	Automobile Engineering	1,2	a,b,d,g	3	0	0	3	40	60	100
31	16BEAEOE02	Basics of Two and Three Wheelers	1,2	a,b,d,	3	0	0	3	40	60	100

32	16BEAEOE03	Automobile Maintenance	1	a,b,c	3	0	0	3	40	60	100
33	16BEAEOE04	Introduction to Modern Vehicle Technology	1,2	a,b,c	3	0	0	3	40	60	100
Civil Engineering											
34	16BECEOE01	Housing, Plan and Management	1,2	a,b,c,d	3	0	0	3	40	60	100
35	16BECEOE02	Building Services	1,2	a,b,c,d	3	0	0	3	40	60	100
36	16BECEOE03	Management of Irrigation Systems	1,2	a,b,c,d	3	0	0	3	40	60	100
37	16BECEOE04	Advanced Construction Technology	1,2	a,b,d	3	0	0	3	40	60	100
List of Electives Offered to Other Departments Electrical and Electronics Engineering											
38	16BEEEOE01	Electric Hybrid Vehicle	2	a,c,d,h,m,n	3	0	0	3	40	60	100
39	16BEEEOE02	Energy Management and Energy Auditing	2	b,e,f,g,h,i,j,n	3	0	0	3	40	60	100
40	16BEEEOE03	Programmable Logic Controller	1,2	a,b,d,e,l	3	0	0	3	40	60	100
41	16BEEEOE04	Renewable Energy Resources	1	a,b,c,d,e,g,l	3	0	0	3	40	60	100

SL. NO.	COURSE WORK- SUBJECT AREA	AREA CODE
1	Humanities and social science including management	HS
2	Basic sciences including maths, physics, chemistry and biology	BS
3	Engineering science including materials, Workshop, Drawing, Basic of Electrical/ Electronics/ Mechanical/ Computer/civil/ instrumentation	ES
4	Professional core course relevant to the chosen branch **(Must be split into Hard Core (HS)(no choice) and Soft Core (SC) (with choice))**	PC
5	Professional Electives	PE
6	Open Electives	OC
7	Project work, seminar and internship	PW
8	Mandatory Courses(Value addition)	MC

**--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 computationalplatforms.
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	✓	✓	✓	✓	✓	✓		✓		✓			✓	✓

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

B. E. MECHANICAL ENGINEERING (REGULAR)

COURSE OF STUDY AND SCHEME OF EXAMINATIONS

(2016 and 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**
16BECC101	Communicative English	1	1,2,3	3	0	0	3	40	60	100
16BECC102	Engineering Mathematics I	1	1,2,8,9	3	2	0	4	40	60	100
16BEPH103 16BECH103	Engineering Physics / Engineering Chemistry	1, 3	1,2,3,5,8,9	3	0	0	3	40	60	100
16BEME104	Basic Mechanical Engineering	1, 2	1,2,3,8,9,12	3	0	0	3	40	60	100
16BEME105A 16BEME105B	Basic Electrical and Electronics Engineering / Elements of Civil Engineering	1, 3	1,2,3,8,9,11	3	0	0	3	40	60	100
16BEPH111 16BECH111	Engineering Physics Laboratory / Engineering Chemistry Laboratory	1	1,2,5, 10	0	0	4	2	40	60	100
16BEME112	Engineering Workshop Practice	1, 2	1,2,3,5	0	0	4	2	40	60	100
16BEME113	Engineering Graphics – I	1, 2	1,2,3,5,9	0	0	4	2	40	60	100
			Total	**15**	**2**	**12**	**22**	**320**	**480**	**800**
VALUE ADDED COURSE										
16BECC151	Human Values	-	--	1	0	0	-	100	0	100

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**
16BECC201A 16BECC201B	Business Communication / Technical English	2	4,5, 10	3	0	0	3	40	60	100
16BECC202	Engineering Mathematics II	1	1,2,8,9	3	2	0	4	40	60	100
16BEPH203 16BECH203	Engineering Physics / Engineering Chemistry	1, 3	1,2,3,5,8,9	3	0	0	3	40	60	100
16BECC204	Environmental Sciences	1	1,2,3,4,10	3	0	0	3	40	60	100
16BEME205A 16BEME205B	Basic Electrical and Electronics Engineering / Elements of Civil Engineering	1, 3	1,2,3,8,9,11	3	0	0	3	40	60	100
16BEPH211 16BECH211	Engineering Physics Laboratory /Engineering Chemistry Laboratory	1	1,2,5, 10	0	0	4	2	40	60	100
16BEME212	Computer Practice and Programming Laboratory	1	1,2,9	1	0	4	3	40	60	100

16BEME213	Engineering Graphics – II	1, 2	1,2,3,5,9	0	0	3	2	40	60	100
Total				**16**	**2**	**11**	**23**	**320**	**480**	**800**
VALUE ADDED COURSE										
16BEME251	Aptitude Training	-	--	1	0	0	-	100	0	100

SEMESTER III										
Course Code	**Course title**	**Objectives & Outcomes**		**Instruction Hours / Week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
16BEME301	Methods of Applied Mathematics	1	1,3,5,6,7,8	3	2	0	4	40	60	100
16BEME302	Engineering Mechanics	1	1,2,3,4,10, 11	3	1	0	4	40	60	100
16BEME303	Manufacturing Technology – I (HC)	1	1,2,3,4,10	3	0	0	3	40	60	100
16BEME304	Fluid Mechanics and Machinery (HC)	1	1,2,3,4,10	3	2	0	4	40	60	100
16BEME305A 16BEME305B	Electrical Drives and Controls / Electronics and Microprocessor	1,2	1,2,3,4,6,9, 10	3	0	0	3	40	60	100
16BEME311	Fluid Mechanics and Machinery Laboratory (HC)	1	1,2,3,4,5,6, 9	0	0	3	2	40	60	100
16BEME312	Machine Drawing(HC)	1	1,2,3,4,10	0	0	3	2	40	60	100
16BEME313	Electrical Drives and Microprocessor Laboratory	1,2	1,2,3,4,6,9,1 2	0	0	3	2	40	60	100
Total				**15**	**5**	**9**	**24**	**320**	**480**	**800**
VALUE ADDED COURSE										
16BEME351	Soft Skills	-	--	1	0	0	-	100	0	100

SEMESTER IV										
Course Code	**Course title**	**Objectives & Outcomes**		**Instruction Hours / Week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
16BEME401	Strength of Materials (HC)	1	1,2,3,4,10	3	2	0	4	40	60	100
16BEME402	Manufacturing Technology – II (HC)	1	1,2,3,6,8,9	3	0	0	3	40	60	100
16BEME403	Engineering Thermodynamics	1	1,2,3,4,10	3	2	0	4	40	60	100
16BEME404A 16BEME404B	Industrial Metallurgy (SC) / Engineering Materials (SC)	1	1,2,3,4,10	3	0	0	3	40	60	100
16BEME405A 16BEME405B	Kinematics of Machinery (SC) / Industrial Engineering (SC)	1	1,2,3,4,10	3	0	0	3	40	60	100
16BEME406A 16BEME406B	Engineering Metrology (SC) / Industrial Metrology (SC)	1	1,2,3,6,8,9	3	0	0	3	40	60	100
16BEME411	Strength of Materials and Metallurgy Laboratory (HC)	1	1,2,3,5,9,10	0	0	3	2	40	60	100
16BEME412	Manufacturing Technology Laboratory (HC)	1	1,2,3,6,8,9, 12,14	0	0	4	2	40	60	100
Total				**18**	**4**	**7**	**24**	**320**	**480**	**800**
VALUE ADDED COURSE										
16BEME451	Production Drawing and Cost Estimation	-	--	1	0	0	-	100	0	100

SEMESTER V										
Course Code	**Course title**	**Objectives & Outcomes**		**Instruction Hours / Week**			**Credits**	**Maximum Marks**		
		PEO	**PO**	**L**	**T**	**P**		**CIA**	**ESE**	**Total**
								40	**60**	**100**
16BEME501	Heat Power Engineering (HC)	1	1,2,3,4,10	3	0	0	3	40	60	100
16BEME502	Design of Machine Elements (HC)	1	1,2,3,4,9	3	2	0	4	40	60	100
16BEME503A 16BEME503B	Dynamics of Machinery (SC) / Theory of Machines (SC)	1	1,2,3,4,9,12	3	0	0	3	40	60	100
16BEME5E–	Professional Elective I	--	--	3	0	0	3	40	60	100
16BEME5E–	Professional Elective II	--	--	3	0	0	3	40	60	100
16BEME511	Scientific Computing Laboratory	1	1,3,5,6,7,8,10	2	0	2	3	40	60	100
16BEME512	Dynamics and Metrology Laboratory	1	1,2,3,4,6,9,12	0	0	4	2	40	60	100
16BEME513	Thermal Engineering Laboratory I	1	1,2,3,4,7,11	0	0	4	2	40	60	100
Total				**17**	**2**	**10**	**23**	**320**	**480**	**800**
VALUE ADDED COURSE										
16BEME551	In–plant training	-	--	-	-	-	-	100	0	100
16BEME552	Geometrical Dimensioning and Tolerance	-	--	1	0	0	-	100	0	100

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**
16BEME601	Operations Research	1	1,3,5,6,7,8	3	2	0	4	40	60	100
16BEME602	Design of Transmission System	1	1,2,3,4,8,9 ,10	3	0	0	3	40	60	100
16BEME603	Heat and Mass Transfer	1	1,2,3,4,5	3	2	0	4	40	60	100
16BEME604	Economics for Engineers	1	1,2,3,5,7	3	0	0	3	40	60	100
16BEME6E––	Professional Elective III	--	--	3	0	0	3	40	60	100
16BEME6E––	Professional Elective IV	--	--	3	0	0	3	40	60	100
16BEME611	Computer Aided Modeling & Simulation Laboratory	1	1,2,3,4,5,8,9	0	0	3	2	40	60	100
16BEME612	Thermal Engineering Laboratory II			0	0	3	2	40	60	100
Total				**18**	**4**	**6**	**24**	**320**	**480**	**800**
VALUE ADDED COURSE										
16BEME651	Mini Project	-	--	0	0	1	-	100	0	**100**
16BEME652	Technical Presentation	-	--	0	0	1	-	100	0	**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**
16BECC701	Professional Ethics, Principles of Management and Entrepreneurship Development	1	1,2,3,4,5, 10,11	3	0	0	3	40	60	100
16BEME702	Mechatronic Systems	1	1,2,3,4,5	3	0	0	3	40	60	100
16BEME7E– –	Professional Elective V	--	--	3	0	0	3	40	60	100
	Open Elective I	--	--	3	0	0	3	40	60	100
	Open Elective II	--	--	3	0	0	3	40	60	100
16BEME711	CAE / CAM Laboratory	1	1,2,3,4,8,9	0	0	3	2	40	60	100
16BEME712	Mechatronics Laboratory	1	1,2,3,4,5,7	0	0	3	2	40	60	100
16BEME791	Project Work - Phase I	-	--	0	0	8	4	40	60	100
Total				**15**	**0**	**14**	**23**	**320**	**480**	**800**
VALUE ADDED COURSE										
16BEME751A 16BEME751B	Robotics and Automation / Motors and Pumps	-	--	1	0	0	-	100	0	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**
16BEME801	Total Quality Management	1	1,2,3,4,5,8 ,9	3	0	0	3	40	60	100
16BEME8E – –	Professional Elective VI	--	--	3	0	0	3	40	60	100
16BEME891	Project Work - Phase II & Viva-voce	--	--	0	0	32	16	120	180	300
				6	**0**	**32**	22	**200**	**300**	**500**

LIST OF ELECTIVES

PROFESSIONAL ELECTIVES (PE)

SEMESTER V
Elective I & II

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
16BEME5E01	Material Aspects in Design	1,3	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEME5E02	Computer Integrated Manufacturing	1,2	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEME5E03	Automobile Engineering	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEME5E04	Hydraulics and Pneumatics Power Control	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEME5E05	Design of Jigs, Fixtures and Press Tools	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
16BEME5E06	Renewable Energy Sources	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEME5E07	Industrial Robotics	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEME5E08	Design and Analysis of Experiments	1	1,2,3,7,9,13	3	0	0	3	40	60	100

SEMESTER VI
Elective III & IV

Course Code	Course title	Objectives & Outcomes		Instruction Hours / Week			Credits	Maximum Marks		
		PEO	PO	L	T	P		CIA	ESE	Total
								40	60	100
16BEME6E01	Power Plant Engineering	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEME6E02	Advanced Manufacturing Processes	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEME6E03	Computational Fluid Dynamics	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
16BEME6E04	Manufacture and Inspection of Gears	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEME6E05	Design for Manufacture and Assembly	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEME6E06	Gas Dynamics and Jet Propulsion	1	1,2,3,7,9,13	3	0	0	3	40	60	100

16BEME6E07	Advanced I.C. Engines	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEME6E08	Finite Element Methods	1	1,2,3,7,13,15	3	0	0	3	40	60	100

SEMESTER VII
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
16BEME7E01	Machine Tool Design	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEME7E02	Additive Manufacturing	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEME7E03	Composite Materials	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEME7E04	Refrigeration and Air Conditioning	1	1,2,3,7,9,12	3	0	0	3	40	60	100

SEMESTER VIII
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
16BEME8E01	Quality Control and Reliability Engineering	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEME8E02	Production Planning and Control	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEME8E03	Cogeneration and Waste Heat Recovery Systems	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEME8E04	Energy Conservation Methods and Energy Audit	1	1,2,3,7,9,15	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										
16BESHOE01	Probability and Random Process	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BESHOE02	Fuzzy Mathematics	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BESHOE03	Linear Algebra	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
16BESHOE04	Engineering Acoustics	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BESHOE05	Solid Waste Management	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BESHOE06	Green Chemistry	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BESHOE07	Applied Electrochemistry	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BESHOE08	Industrial Chemistry	1	1,2,3,7,13,15	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
16BECSOE01	Internet Programming	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BECSOE02	Multimedia and Animation	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BECSOE03	PC Hardware and Trouble shooting	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BECSOE04	Java Programming	1	1,2,3,7,9,15	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
16BEEEOE01	Electric Hybrid Vehicles	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEEEOE02	Energy Management & Energy Auditing	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	1	1,2,3,7,9,1	3	0	0	3	40	60	100

			2							
ELECTRONICS AND COMMUNICATION ENGINEERING										
16BEECOE01	Real Time Embedded Systems	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEECOE02	Consumer Electronics	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEECOE03	Neural Networks and its Applications	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEECOE04	Fuzzy Logic and its Applications	1	1,2,3,7,9,12	3	0	0	3	40	60	100
BIOTECHNOLOGY										
16BTBTOE01	Bioreactor Design	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BTBTOE02	Food Processing and Preservation	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BTBTOE03	Basic Bioinformatics	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BTBTOE04	Fundamentals of Nano Biotechnology	1	1,2,3,7,9,15	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING										
16BEAEOE01	Automobile Engineering	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEAEOE02	Basics of Two and Three Wheelers	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEAEOE04	Introduction to Modern Vehicle Technology	1	1,2,3,7,9,15	3	0	0	3	40	60	100
CIVIL ENGINEERING										
16BECEOE01	Housing, Plan and Management	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BECEOE02	Building Services	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BECEOE03	Management of Irrigation Systems	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BECEOE04	Advanced Construction Technology	1	1,2,3,7,9,15	3	0	0	3	40	60	100

COURSES OFFERED TO OTHER DEPARTMENTS

SUB.	TITLE OF THE	P	PO	L	T	P	C	CI	ES	TOT

CODE	COURSE	EO						A	E	AL
16BEMEOE01	Computer Aided Design	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEMEOE02	Industrial Safety and Environment	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEMEOE03	Transport Phenomena	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEMEOE04	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							10	✓			✓				✓

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
(2016 BATCH ONWARDS)

2016- 2017 BATCH

SUB.CODE	TITLE OFTHE COURSE	PEO	PO	Dom	L	T	P	C	CIA	ESE	TOTAL	Hrs/Week
SEMESTER I												
THEORY												
16BTCC101	Communicative English	1,2,3	H,I,k,l,m	HS	3	0	0	3	40	60	100	3
16BTBT102	Mathematics– I	2,3	a,b,e,h,I,m	BS	3	2	0	4	40	60	100	5
16BTPH103/ 16BTCH103	EngineeringPhysics/Engineering Chemistry	2,3	a,b,c,d, e,f,i,k,m	BS	3	0	0	3	40	60	100	3
16BTBT104	Introduction to Biotechnology	1,2	A,b,c,d	PC	3	0	0	3	40	60	100	3
16BTBT105	BasicElectricaland Electronics Engineering	2,3	a,b,c,e,i ,k,m	ES	3	0	0	3	40	60	100	3
PRACTICALS												
16BTPH111/ 16BTCH111	Engineering Physics Laboratory/ Engineering Chemistry Laboratory	2,3	A,b,c,I,m	BS	0	0	4	2	40	60	100	4
16BTBT112	Computer Practice and Programming Lab	2,3	A,b,c,I,m	ES	1	0	4	3	40	60	100	5
16BTBT113	EngineeringGraphics	2	a,d,e,m	ES	0	0	4	2	40	60	100	4
TOTAL					**16**	**2**	**12**	**23**	**320**	**480**	**800**	**30**
VALUE ADDED COURSE												
16BTCC151	Human Values	1,2	A,b,h,I,j,m	MC	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK				**31**								

SUB.CODE	TITLE OFTHE COURSE	PEO	PO	Dom	L	T	P	C	CIA	ESE	TOTAL	Hrs/Week
SEMESTER II												
THEORY												
16BTCC201A/ 16BTCC201B	Business Communication/Technical English	1,2,3	h,i,k,l,m	HS	3	0	0	3	40	60	100	3
16BTBT202	Mathematics– II	2,3	a,b,e,h ,I,m	BS	3	2	0	4	40	60	100	5
16BTPH203/ 16BTCH203	EngineeringPhysics/Engineering Chemistry	2,3	a,b,c,e, h,i,k,m	BS	3	0	0	3	40	60	100	3
16BTCC204	Environmental Sciences	1,3	F,g,h,m,l	HS	3	0	0	3	40	60	100	3
16BTBT205	Biochemistry-I	1,2	a,b,c,e,m	PC	3	0	0	3	40	60	100	3

16BTBT206	MaterialsScience	2,3	a,b,c,e, h,i,k,m	ES	3	0	0	3	40	60	100	3
PRACTICALS												
16BTPH211/ 16BTCH211	Engineering Physics Laboratory / Engineering Chemistry Laboratory	2,3	A,b,c,I,m	BS	0	0	4	2	40	60	100	4
16BTBT212	BiochemistryLaboratory	1,2	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
	TOTAL				**18**	**2**	**7**	**23**	**320**	**480**	**800**	**27**

SUB.CODE	TITLE OFTHE COURSE	PEO	PO	Dom	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
SEMESTER III												
THEORY												
16BTBT301	Probability & Statistics	1,3	a,b,m	BS	3	2	0	4	40	60	100	5
16BTBT302	CellBiology	1,3	a,b,c,	PC	3	0	0	3	40	60	100	3
16BTBT303	Microbiology	1,3	a,b,m	PC	3	0	0	3	40	60	100	3
16BTBT304	PrinciplesofChemicalEngineering	1,3	a,b,d,m,n	ES	3	0	0	3	40	60	100	3
16BTBT305	Bio-Organic Chemistry	1,3	a,b,c,m	PC	3	0	0	3	40	60	100	3
PRACTICALS												
16BTBT311	CellBiologyLab	1,2	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
16BTBT312	MicrobiologyLab	1,2	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
16BTBT313	Bio-OrganicChemistryLab	1,2	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
TOTAL					**15**	**2**	**9**	**22**	**320**	**480**	**800**	**26**
VALUE ADDED COURSE												
16BTBT351	Soft skills	1,2,3	H,I,k,l,m	MC	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK				**27**								

SUB.CODE	TITLE OFTHE COURSE	PEO	PO	Dom	L	T	P	C	CIA	ESE	TOTAL	Hrs/Week
SEMESTER IV												
THEORY												
16BTBT401	Unit operations	1,3	a,b,c,d,m,n		3	0	0	3	40	60	100	3
16BTBT402	ChemicalThermodynamics	1,3	a,b,c,d,m,n	ES	3	0	0	3	40	60	100	3

16BTBT403	InstrumentalMethodsof analysis	1,3	a,b,c,m	ES	3	0	0	3	40	60	100	3
16BTBT404	MolecularBiology	1,3	a,b,c,d ,e,f,m		3	0	0	3	40	60	100	3
16BTBT405	Bioprocess Principles	1,3	a,b,c,d,m,n	PC	3	0	0	3	40	60	100	3
16BTBT406	Biochemistry-II	1,2	a,b,c,e,m	PC	3	0	0	3	40	60	100	3
PRACTICALS												
16BTBT411	Instrumental Methodsof AnalysisLab	1,2	A,b,c,d,I,m,n,e	ES	0	0	3	2	40	60	100	3
16BTBT412	ChemicalEngineeringLab	1,2	A,b,c,d,I,m,n,e	PC	0	0	3	2	40	60	100	3
TOTAL					**18**	**0**	**6**	**22**	**320**	**480**	**800**	**24**
VALUE ADDED COURSE												
16BTBT451	Production of commercially valuable bioproducts	1,2	a,f,g,n,o	MC	0	0	1	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK				**25**								

SUB.CODE	TITLE OFTHE	PEO	PO	Dom	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
			SEMESTERV									
THEORY												
16BTBT501	Bioprocess Engineering	1,3	a,b,c,d,m,n	PC	3	0	0	3	40	60	100	3
16BTBT502	Genetic Engineering	1,2,3	a,b,c,d, e,f,m,n	PC	3	0	0	3	40	60	100	3
16BTBT503	Basics of Industrial Biotechnology	1,2,3	A,b,c,f,g,m	PC	3	0	0	3	40	60	100	3
16BTBT504A/ 16BTBT504B	Bioinformatics / Enzymology & Enzyme technology	1,3	a,b,c,d, e,m,o	PC	3	0	0	3	40	60	100	3
16BTBT505A/ 16BTBT505B	Plant biotechnology/Food	1,2,3	A,b,c,f,g,m	PC	3	0	0	3	40	60	100	3
PRACTICALS												
16BTBT511	BioprocessLab	1,2,	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
16BTBT512	Molecular biology and genetic	1,2,	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
16BTBT513A/ 16BTBT513B	BioinformaticsLab / Protein and	1,2,	A,b,c,d,I,m,n,e	PC	0	0	3	2	40	60	100	3

TOTAL					**18**	**0**	**9**	**24**	**360**	**540**	**900**	**27**
VALUE ADDED COURSE													
16BTBT551	Separation of Bioactive compounds from	1,2	a,f,g,n,o	MC	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK				**28**									

SUB.CODE	TITLE OFTHE COURSE	PEO	PO	Dom	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
SEMESTERVI												
THEORY												
16BTBT601	MassTransferOperations	1,2,3	a,b,c,d	PC	3	2	0	4	40	60	100	5
16BTBT602	Immunology	1,3	a,b,c,d	PC	3	0	0	3	40	60	100	3
16BTBT603A/ 16BTBT603B	Biopharmaceutical technology/Molecular modelling	1,2,3	a,b,c,d, f,m,n	PC	3	0	0	3	40	60	100	3
16BTBT604A/ 16BTBT604B	Chemical Reaction Engineering/Nanobiotechnology	1,2,3	a,b,c,d, e,f	PC	3	0	0	3	40	60	100	3
PRACTICALS												
16BTBT611	ImmunologyLab	1,2,	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
16BTBT612A/ 16BTBT612B	Biopharmaceutical Technology Lab/Molecular modeling Lab	1,2,	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
	TOTAL				**18**	**2**	**6**	**23**	**320**	**480**	**800**	**26**
TOTAL CONTACT HOURS/WEEK				**28**								

SUB.CODE	TITLE OFTHE COURSE	PEO	PO	Dom	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
			SEMESTER VII									
THEORY												
16BTCC701	Professional Ethics, Principles of Management and Entrepreneurship	1,2,3	f,h,I,j, k,l,m	HS	3	0	0	3	40	60	100	3
16BTBT702	DownstreamProcessing	1,2,3	a,b,c, d,e,f,m,n	PC	3	0	0	3	40	60	100	3
PRACTICALS												
16BTBT711	DownstreamProcessingLab	1,2,	A,b,c,d,I,m,n	PC	0	0	3	2	40	60	100	3
	TOTAL				**15**	**0**	**11**	**21**	**280**	**420**	**700**	**26**
TOTAL CONTACT HOURS/WEEK				**26**								

IST OFPROFESSIONAL ELECTIVES

Semester V

Professional Elective I

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTBT5E01	Animal Biotechnology	1,2, 3	a,b,c, d,f,m	3	0	0	3	40	60	100
16BTBT5E02	Entrepreneurship in biotechnology	1,2, 3	f,g,h ,I,m	3	0	0	3	40	60	100
16BTBT5E03	Industrial safety and Hazards Management	1,2, 3	f,g,h ,I,m	3	0	0	3	40	60	100
16BTBT5E04	Developmental Biology	1,3	a,b,c,m	3	0	0	3	40	60	100

Semester VI

Professional Elective II & III

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTBT6E01	Phytochemicals and herbal medicine	1,3	a,b,f, g,m	3	0	0	3	40	60	100
16BTBT6E02	Metabolic Engineering	1,2	A,b,m	3	0	0	3	40	60	100
16BTBT6E03	Genomics and Proteomics	1,3	a,b,cd, e,m	3	0	0	3	40	60	100
16BTBT6E04	Bioprocess plant design	1,2	A,b,c,d,f,g,m,n	3	0	0	3	40	60	100
16BTBT6E05	Molecular Pathogenesis	1,2	A,b,m	3	0	0	3	40	60	100
16BTBT6E06	Basics of drug action	1,2	A,b,c,f,m	3	0	0	3	40	60	100
16BTBT6E07	Marine Biotechnology	1,3	a,b,c,f,m	3	0	0	3	40	60	100
16BTBT6E08	Protein Engineering	1,3	a,b,c, d,m	3	0	0	3	40	60	100

Semester VII

Professional Elective IV

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTBT7E01	Immunotechnology	1,2	A,b,c,d,m	3	0	0	3	40	60	100
16BTBT7E02	Environmental Biotechnology	1,3	a,b,c, d,m	3	0	0	3	40	60	100
16BTBT7E03	Recombinant DNA technology	1,3	a,b,c, d,e,m,n	3	0	0	3	40	60	100
16BTBT7E04	Cancer biology	1,2	A,b,c,d,m	3	0	0	3	40	60	100

Semester VIII

Professional Elective V& VI

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTBT8E01	Tissue Engineering	1,2,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
16BTBT8E02	Clinical Trial and management	1,2,3	a,b,f,g,h,I,m	3	0	0	3	40	60	100
16BTBT8E03	Stem cell technology	1,2,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
16BTBT8E04	Biomass Energy	1,3	A,f,g,m	3	0	0	3	40	60	100
16BTBT8E05	Bio separations	1,2,3	A,b,c,e,f,g,m,n	3	0	0	3	40	60	100
16BTBT8E06	Bioconjugate technology	1,3	A,f,l,m	3	0	0	3	40	60	100
16BTBT8E07	IPR and ethical issues in biotechnology	1,3	A,b,d,f,,h,l,m	3	0	0	3	40	60	100
16BTBT8E08	Biological waste water Treatment	1,3	A,f,g,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										
16BTSHOE01	Probability and Random Process	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
16BTSHOE02	Fuzzy Mathematics	2,3	a,b,e,h,i,m	3	0	0	3	40	60	100
16BTSHOE03	Linear Algebra	2,3	a,b,m	3	0	0	3	40	60	100
16BTSHOE04	Engineering Acoustics	2,3	a,b,c,d,m	3	0	0	3	40	60	100
16BTSHOE05	Solid Waste Management	1,2	a,b,c,d,f,m	3	0	0	3	40	60	100
16BTSHOE06	Green Chemistry	1,2,3	a,b,c,d,e,f,g,m	3	0	0	3	40	60	100
16BTSHOE07	Applied Electrochemistry	2,3	a,b,c,d,e,f,m	3	0	0	3	40	60	100
16BTSHOE08	Industrial Chemistry	2,3	a,b,c,d,f,g,I,m	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
16BECSOE01	Internet Programming	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
16BECSOE02	Multimedia and Animation	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
16BECSOE03	PC Hardware and Trouble shooting	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
16BECSOE04	Java Programming	2,3	a,b,c,d,e,m	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
16BEEEOE01	Electric Hybrid Vehicle	2	a,b,m	3	0	0	3	40	60	100
16BEEEOE02	Energy Management & Energy Auditing	2	a,b,f,g,m	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	2	a,b	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	1,2	a,b,c,e,f,g,m	3	0	0	3	40	60	100

ELECTRONICS AND COMMUNICATION ENGINEERING										
16BEECOE01	Real Time Embedded Systems	1	a,b	3	0	0	3	40	60	100
16BEECOE02	Consumer Electronics	1	a,b	3	0	0	3	40	60	100
16BEECOE03	Neural Networks and its Applications	1	a,b,m	3	0	0	3	40	60	100
16BEECOE04	Fuzzy Logic and its Applications	1	a,b	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING										
16BEAEOE01	Automobile Engineering	1	a,b	3	0	0	3	40	60	100
16BEAEOE02	Basics of Two and Three Wheelers	1	a,b	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	1	a,b	3	0	0	3	40	60	100
16BEAEOE04	Introduction to Modern Vehicle technology	1	a,b	3	0	0	3	40	60	100
CIVIL ENGINEERING										
16BECEOE01	Housing Plan And Management	1	a,b,c,m	3	0	0	3	40	60	100
16BECEOE02	Building Services	1	a,b	3	0	0	3	40	60	100
16BECEOE03	Management of Irrigation Systems	1	a,b,c, m	3	0	0	3	40	60	100
16BECEOE04	Advanced Construction Technology	1	a,b,c, m	3	0	0	3	40	60	100
MECHANICAL ENGINEERING										
16BEMEOE01	Computer Aided Design	1,3	a,b,e,m, o	3	0	0	3	40	60	100
16BEMEOE02	Industrial Safety and Environment	1,3	a,b,c,f,g, m	3	0	0	3	40	60	100
16BEMEOE03	Transport Phenomena	1	a,b	3	0	0	3	40	60	100
16BEMEOE04	Introduction to Biomechanics	1,3	a,b,c,e,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

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		✓	✓			✓	✓					✓	✓	✓	✓

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.

B.TECH CHEMICAL ENGINEERING (REGULAR)

COURSE OF STUDY AND SCHEME OF EXAMINATIONS

(2016 BATCH ONWARDS)

SUB.CODE	TITLE OFTHE COURSE	Dom	Objectives & Outcomes		L	T	P	C	CIA	ESE	TOTAL	Hrs /Week
			PEO	PO								
16BTCC101	English for Engineers	HS	1,23	9,11	3	0	0	3	40	60	100	3
16BTCC102	Engineering Mathematics–I	BS	3	1,2,3,4,8	3	2	0	4	40	60	100	5
16BTPH103/ 16BTCH103	Engineering Physics/ Engineering Chemistry	BS	2,3,4	1,2,5,6,8,10,11	3	0	0	3	40	60	100	3
16BTCE104	Basic Chemical Engineering	PC	2,3	1,5,8,9	3	0	0	3	40	60	100	3
16BTCE105	Basic Electricaland Electronics Engineering	ES	1,2	1,2,3,5,6	3	0	0	3	40	60	100	3
16BTPH111/ 16BTCH111	EngineeringPhysics Laboratory/Engineering Chemistry Laboratory	BS	1,3	1,4,6	0	0	4	2	40	60	100	4
16BTCE112	Engineering Workshop Practice	ES	1,2	1,3	0	0	4	2	40	60	100	4
16BTCE113	EngineeringGraphics	ES	1,2	1,3	1	0	3	3	40	60	100	4
TOTAL				**16**	**2**	**11**	**23**	**320**		**480**	**800**	**29**
	VALUE ADDED COURSE											
16BTCC151	YOGA	MC	1,2	5,6	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK			**30**									

SUB.CODE	TITLE OFTHE COURSE	Dom	Objectives & Outcomes		L	T	P	C	CIA	ESE	TOTAL	Hrs/Week
16BTCC201A/ 16BTCC202B	Business Communication / Technical English	HS	1,2,3	9,11	3	0	0	3	40	60	100	3
16BTCC202	Engineering Mathematics–II	BS	3	1,2,4, 8,10	3	2	0	4	40	60	100	5
16BTPH203/ 16BTCH203	EngineeringPhysics/Engineering Chemistry	BS	2,3, 4	1,2,3, 5,6,7 , 8,11	3	0	0	3	40	60	100	3
16BTCC204	EnvironmentalSciences	HS	1,2	1,2,3,4, 5,6,7,1 1,12	3	0	0	3	40	60	100	3
16BTCE205	Engineering Mechanics	ES	1,2	1,3	3	0	0	3	40	60	100	3
166BTPH211 / 16BTCH211	EngineeringPhysics Laboratory/ EngineeringChemistry Laboratory	BS	1,3, 4	1,4,6, 7,8,11	0	0	4	2	40	60	100	4
16BTCE212	Computer Practice and Programming Laboratory	ES	1	1,2,3	1	0	4	3	40	60	100	5
16BTCE213	Physical Chemistry Lab	BS	1,3	1,4,6, 7,8,11	2	0	2	3	40	60	100	4
		TOTAL			**18**	**2**	**10**	**24**	**320**	**480**	**800**	**30**
VALUE ADDED COURSE												
16BTCC251	Business Plan	MC			1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK		**310**										

SUB.CODE	TITLE OFTHE COURSE	Dom	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
SEMESTERIII												
THEORY												
16BTCE301	Probability & Statistics	BS	3	1,2,4,8,10	3	2	0	4	40	60	100	5
16BTCE302	Organic Chemistry	BS	2,3,4	1,2,3,5,6,7, 8, 11	3	0	0	3	40	60	100	3
16BTCE303	Process Calculations	PC	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100	4
16BTCE304	Fluid Mechanics	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE305	Mechanical Operations	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
PRACTICALS												
16BTCE311	Organic Chemistry Laboratory	BS	1,3,4	1,4,6,7,8,11	0	0	3	2	40	60	100	3
16BTCE312	Fluid Mechanics Laboratory	PC	1,2	1,2,3,4,5,6,7,11,12	0	0	3	2	40	60	100	3
16BTCE313	Strength of Materials and Metallurgy Laboratory	PC	1,2	1,2,3,4,5,6,7,11,12	0	0	3	2	40	60	100	3
16BTCE314	Course Oriented Project 1	PW	1,2,4	1,2,3,4,5,6,8,7,11,12	0	0	2	1	100	-	100	2
	TOTAL				**15**	**3**	**11**	**24**	**420**	**480**	**900**	**29**
VALUE ADDED COURSE												
16BTCE351	Soft Skills	MC	1,2,4	1,2,3,4,5,6,7,8,9,10,11,12	1	0	0	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK			**300**									

SUB.CODE	TITLE OFTHE COURSE	Dom	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Hrs/Week
SEMESTER IV												
THEORY												
16BTCE401	Chemical Technology	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE402	Chemical Engineering Thermodynamics	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE403	Heat Transfer	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE404	Process Organic Synthesis	PC	2,3,4	1,2,3,5,6,7,8,11	3	0	0	3	40	60	100	3
16BTCE405	Material Science and Engineering	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
PRACTICALS												
16BTCE411	Scientific Computing Laboratory	BS	1,2	1,2,3,4,5,6,7,8,9,10,11,12	2	0	2	3	40	60	100	4
16BTCE412	Technical Analysis Laboratory	PC	1,2	1,2,3,4,5,6,8,7,11,12	0	0	3	2	40	60	100	3
16BTCE413	Mechanical Operations Laboratory	PC	1,2	1,2,3,4,5,6,8,7,11,12	0	0	3	2	40	60	100	3
16BTCE414	Course Oriented Project 2	PW	1,2,3,4	1,2,3,4,5,6,7,8,10,11,12	0	0	2	1	100	-	100	2
	TOTAL				**17**	**0**	**10**	**23**	**420**	**480**	**900**	**27**
VALUE ADDED COURSE												
16BTCE451	Production of Commercially Valuable Compounds	MC	1,2,3,	1,2,3,	1	0	0	-	100	0	10	1

			4	4,5,6,7,8,10,11,12							0	
TOTAL CONTACT HOURS/WEEK			**28**									

SUB.CODE	TITLE OFTHE COURSE	Dom	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
SEMESTER V												
THEORY												
16BTCE501	Chemical Reaction Engineering - I	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE502	Mass Transfer – I	PC	1,2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100	4
16BTCE503	Chemical Process Plant Safety and Hazard Analysis	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE504	Instrumental Methods of Analysis	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE5E	Professional Elective I	PE	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
PRACTICALS												
16BTCE511	Heat Transfer Laboratory	PC	1,2	1,2,3,4,5,6,7,11,12	0	0	3	2	40	60	100	3
16BTCE512	Process Equipment Design and Drawing -I	PC	1,2	1,2,3,4,5,6,7,8,9,10,11,12	0	0	3	2	40	60	100	3
16BTCE513	Chemical Reaction Engineering Laboratory	PC	1,2	1,2,3,4,5,6,7,8,9,10,11,12	0	0	4	2	40	60	100	4
16BTCE514	Course Oriented Project 3	PW		1,2,3,4,5,6,7,8,10,11,12	0	0	2	1	100	-	100	2
	TOTAL				**15**	**1**	**12**	**23**	**420**	**480**	**900**	**28**
VALUE ADDED COURSE												

16BTCE551	Pipe Stress Analysis (CAESAR-II)	MC		1,2,3,4,5,6,7,8,10,11,12	1	0	0	-	100	0	100	1
16BTCE552	In-PlantTraining	MC		1,2,3,4,5,6,7,8,10,11,12	0	0	0	-	100	0	100	0
TOTAL CONTACT HOURS/WEEK				**29**								

SUB.CODE	TITLE OFTHE COURSE	Dom	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Hrs/Week
	SEMESTER VI											
	THEORY											
16BTCE601	Chemical Reaction Engineering - II	PC	1, 2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE602	Mass Transfer-II	PC	1, 2	1,2,3,4,5,6,7,11,12	3	1	0	4	40	60	100	4
16BTCE603	Process Dynamics Control and Instrumentation	PC	1, 2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE604	Process Economics for Chemical Engineers	PC	1, 2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE6E--	Professional Elective II	PE	1, 2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE6E--	Professional Elective III	PE	1, 2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
	PRACTICALS											
16BTCE611	Mass transfer Lab	PC	1, 2	1,2,3,4,5,6,7,11,12	0	0	3	2	40	60	100	3
16BTCE612	Process Equipment Design and Drawing-II	PC	1, 2	1,2,3,4,5,6,7,11,12	0	0	3	2	40	60	100	3
	TOTAL				**18**	**1**	**6**	**23**	**320**	**480**	**800**	**25**
VALUE ADDED COURSE												
16BTCE651	MiniProject	MC	1	2	0	0	1	-	100	0	100	1
16BTCE652	Technical Presentation	MC	1	2	0	0	1	-	100	0	100	1
TOTAL CONTACT HOURS/WEEK				**27**								

B.CODE	TITLE OFTHE COURSE	Dom	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
	SEMESTER VII											
	THEORY											
BTCC701	Professional Ethics, Principles of ManagementandEntrepreneurship Development	HS	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
BTCE702	Transport phenomena	PC	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
BTCE7E–	Professional Elective IV	PE	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
	Open Elective I	OE	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
	Open Elective II	OE	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
	PRACTICALS											
BTCE711	Computational Methods in Chemical Engineering Laboratory	PC	1,2	1,2,3,4,5,6,7,8,9,10,11,12	0	0	3	2	40	60	100	3
BTCE712	Process Control Laboratory	PC	1,2	1,2,3,4,5,6,7,8,9,10,11,12	0	0	3	2	40	60	100	3
BTCE791	Project Work Phase I	PW	1,2	1,2,3,4,5,6,7,8,9,10,11,12	0	0	8	4	40	60	100	8
	TOTAL				**15**	**0**	**14**	**23**	**320**	**480**	**800**	**29**
	TOTAL CONTACT HOURS/WEEK										**29**	

b

SUB.CODE	TITLE OFTHE COURSE	Dom	PEO	PO	L	T	P	C	CIA	ESE	TOTAL	Hrs/ Week
	SEMESTER VIII											
	THEORY											
16BTCE8E_	Professional Elective V	PE	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
16BTCE8E_	Professional Elective VI	PE	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100	3
	PRACTICALS											
16BTCE891	ProjectWork Phase II and Viva-Voce	PW	1,2	1,2,3,4,5,6,7,8,9,10,11,12	0	0	32	16	120	180	300	32
	TOTAL				**6**	**0**	**32**	**22**	**200**	**300**	**500**	**38**
TOTAL CONTACT HOURS/WEEK					**38**							

TOTAL CREDITS EARNED FOR EIGHT SEMESTERS: 185

S.No.	Course Work-Subject Area	Credits/ Semester								Credits Total	Percentage
		I	II	III	IV	V	VI	VII	VIII		
1	Humanities and Social Sciences (HS)	3	6	-	-	-	-	3	-	**12**	**6.49**
2	Basic Sciences (BS)	9	12	9	3	-	-	-	-	**33**	**17.84**
3	Engineering Sciences -Common (ES)	8	6	-	-	-	-	-	-	**14**	**7.57**
4	Professional Subjects -Core **(HC)**	3	-	14	19	19	17	7	-	**79**	**42.70**
6	Electives PE	-	-	-	-	3	6	3	6	**18**	**9.73**
7	Open Electives (OE)	-		-	-	-	-	6	-	**6**	**3.24**
8	Project Work (PW)	-	-	1	1	1	-	4	16	**23**	**12.43**
9	Mandatory Courses (MC)	-	-	-	-	-	-		-	**-**	**-**
		TOTAL CREDITS								**185**	**100**

LIST OF PROFESSIONAL ELECTIVES

Semester V Professional
Elective I

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTCE5E01	Food Technology	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE5E02	Energy Technology and Conservation	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE5E03	Biochemical Engineering	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE5E04	Fertilizer Technology	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100

Semester VI Professional

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTCE6E01	Fluidization Engineering	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE6E02	Petroleum Refining Engineering	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE6E03	Pulp and Paper Technology	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE6E04	Polymer Technology	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE6E05	Drugs and Pharmaceutical Technology	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE6E06	Corrosion Engineering	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE6E07	Piping Engineering	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE6E08	Nanotechnology	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100

Elective II & III

Semester VII Professional
Elective IV

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTCE7E01	Electrochemical Engineering	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE7E02	Computational Fluid Dynamics	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100

16BTCE7E03	Wastewater Treatment	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE7E04	Total Quality Management	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100

Semester VIII Professional
Elective V & VI

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BTCE8E01	Process Optimization	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE8E02	Pilot Plant and Scale up Methods	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE8E03	Pollution Control in Process Industries	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE8E04	Statistical Thermodynamics	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE8E05	Plant Utilities	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE8E06	Industrial Management	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE8E07	Modern Separation Processes	1,2	1,2,3,4,5,6,7,11,12	3	0	0	3	40	60	100
16BTCE8E08	Process Modeling and Simulation	1,2	1,2,3,4,5,6,7,11,12	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										
16BESHOE01	Probability and Random Process	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BESHOE02	Fuzzy Mathematics	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BESHOE03	Linear Algebra	1,3	1,2,3,7,9,12	3	0	0	3	40	60	100
16BESHOE04	Engineering Acoustics	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BESHOE05	Solid Waste Management	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BESHOE06	Green Chemistry	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BESHOE07	Applied Electrochemistry	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BESHOE08	Industrial Chemistry	1	1,2,3,7,13,15	3	0	0	3	40	60	100
COMPUTER SCIENCE AND ENGINEERING										
16BECSOE01	Internet Programming	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BECSOE02	Multimedia and Animation	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BECSOE03	PC Hardware and Trouble shooting	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BECSOE04	Java Programming	1	1,2,3,7,9,15	3	0	0	3	40	60	100
ELECTRICAL AND ELECTRONICS ENGINEERING										
16BEEEOE01	Electric Hybrid Vehicles	1	1,2,3,7,9,15	3	0	0	3	40	60	100
16BEEEOE02	Energy Management & Energy Auditing	1	1,2,3,7,13,15	3	0	0	3	40	60	100
16BEEEOE03	Programmable Logic Controller	1	1,2,3,7,9,13	3	0	0	3	40	60	100
16BEEEOE04	Renewable Energy Resources	1	1,2,3,7,9,12	3	0	0	3	40	60	100
ELECTRONICS AND COMMUNICATION ENGINEERING										
16BEECOE01	Real Time Embedded Systems	1	1,2,3,7,9,15	3	0	0	3	40	60	100

16BEEC OE02	Consumer Electronics	1	1,2,3, 7,13,1 5	3	0	0	3	40	60	100
16BEEC OE03	Neural Networks and its Applications	1	1,2,3, 7,9,13	3	0	0	3	40	60	100
16BEEC OE04	Fuzzy Logic and its Applications	1	1,2,3, 7,9,12	3	0	0	3	40	60	100
BIOTECHNOLOGY										
16BTBT OE01	Bioreactor Design	1	1,2,3, 7,9,15	3	0	0	3	40	60	100
16BTBT OE02	Food Processing and Preservation	1	1,2,3, 7,13,1 5	3	0	0	3	40	60	100
16BTBT OE03	Basic Bioinformatics	1	1,2,3, 7,9,13	3	0	0	3	40	60	100
16BTBT OE04	Fundamentals of Nano Biotechnology	1	1,2,3, 7,9,15	3	0	0	3	40	60	100
AUTOMOBILE ENGINEERING										
16BEAEOE01	Automobile Engineering	1	1,2,3, 7,9,1 5	3	0	0	3	40	60	100
16BEAEOE02	Basics of Two and Three Wheelers	1	1,2,3, 7,13, 15	3	0	0	3	40	60	100
16BEAEOE03	Automobile Maintenance	1	1,2,3, 7,9,1 3	3	0	0	3	40	60	100
16BEAEOE04	Introduction to Modern Vehicle Technology	1	1,2,3, 7,9,15	3	0	0	3	40	60	100
CIVIL ENGINEERING										
16BECEOE01	Housing, Plan and Management	1	1,2,3, 7,9,15	3	0	0	3	40	60	100
16BECEOE02	Building Services	1	1,2,3, 7,13,1 5	3	0	0	3	40	60	100
16BECEOE03	Management of Irrigation Systems	1	1,2,3, 7,9,13	3	0	0	3	40	60	100
16BECEOE04	Advanced Construction Technology	1	1,2,3, 7,9,15	3	0	0	3	40	60	100

MECHANICAL ENGINEERING

SUB. CODE	TITLE OF THE COURSE	PEO	PO	L	T	P	C	CIA	ESE	TOTAL
16BEMEOE01	Computer Aided Design	1	1,2,3, 7,9,15	3	0	0	3	40	60	100
16BEMEOE02	Industrial Safety and Environment	1	1,2,3, 7,13,1 5	3	0	0	3	40	60	100
16BEMEOE03	Transport Phenomena	1	1,2,3,	3	0	0	3	40	60	100

			7,9,13							
16BEMEOE04	Introduction to Biomechanics	1	1,2,3, 7,9,15	3	0	0	3	40	60	100

TotalCredits EarnedforEightSsemesters: 185

L:Lecture Hour **T: TutorialHour** **CIA: Continuous InternalAssessment** **P:PracticalHour** **C: No. ofCredits** **ESE: End Semester Examinations**

Note:

1. The passing minimum for value added course is 50 marks out of 100 marks. There will be two tests,of which one will be class test covering 50% of syllabus for 50 marks and other for 50marks.
2. Credits for value added courses are not counted for computation ofCGPA.

Interested students can opt one-self-study course in eighth semester from open electives which will be reflected in the mark sheet only if he/she pass.

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								✓			✓				✓

FACULTY OF ARCHITECTURE

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

B.ARCH– CURRICULUM

2016-2017 batch

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

Bachelor of Architecture curriculum is designed to prepare the graduates having knowledge and Skillful aptitude

I. To become a successful Professional

II. To imbibe and implant a strong foundation in Architectural Design Skills involving advanced Technological science and social concern.

III. To learn the theoritical aspects, critical thinking process and Practices in the field of Architecture and design.

IV. To update themselves of new developments in the field of architecture

V. To follow and inspire high ethical values in professional practice.

PROGRAMME OUTCOME (PO):

1) Ability to gain knowledge of Building Science,Technology, Engineering,Architecture and Humanities.
2) Ability to understand and 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.

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				√		√	√	√	√

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

B.ARCH - CURRICULUM
2016-2017 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										
16ART101	Environmental Science	III	3,8,9	2	-	-	2	40	60	100
16ART102	History of Architecture – I	III	1, 8,9	3	-	-	3	40	60	100
16ART103	Mathematics in Architecture	III	3,6	3	-		3	40	60	100
16ARP111	Art, Craft and model making	II,III	2,6,7 8,9	1	-	4	3	60	90	150
16ARS121	Architectural design -I–(Basic Design)	I,II,II I,IV	2,6,7 8,9	2	-	10	7	160	240	400
16ARS122	Building Materials and construction – I	I,IV, V	2,4 8,9	2	-	5	4	80	120	200
16ARS123	Architectural Graphics I	I,II	1,2 8,9	1	-	5	3	60	90	150
Semester Total				**14**	**-**	**24**	**25**	**480**	**720**	**1200**
SEMESTER – II										
16ART201	Theory of Architecture	III	3,8,9	3	-	-	3	40	60	100
16ART202	History of Architecture – II	II,III	2 ,8,9	3	-	-	3	40	60	100
16ART203	Mechanics of Structures- I	II,III	2 ,8,9	3	-		3	40	60	100
16ARP211	Computer Application – I	I,II,I V	2,5,8,9	-	-	4	2	60	90	150
16ARS221	Architectural design –II	I,II,II I,IV	2,6,7 8,9	2	-	10	7	160	240	400
16ARS222	Building Materials and construction – II	I,IV, V	2,4 8,9	2	-	5	4	80	120	200
16ARS223	Architectural Graphics II	I,II	1,2 ,8,9	1	-	5	3	60	90	150
Semester Total				**14**	**-**	**24**	**25**	**480**	**720**	**1200**

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										
16ART301	Building services – I	III	3,8,9	3	-	-	3	40	60	100
16ART302	History of Architecture – III	II,III	2,8,9	3	-	-	3	40	60	100
16ART303	Mechanics of Structures – II	III,IV	2,5 8,9	3	-		3	40	60	100
16ARP311	Computer Application – II	II,III	2,8,9	-	-	5	2	60	90	150
16ARS321	Architectural design –III	I,II,III,IV	2,6,7 8,9	2	-	10	7	160	240	400
16ARS322	Building Materials and construction – III	I,IV,V	2,4 8,9	2	-	4	4	80	120	200
16ARS323	Climate Responsive Architecture I	III,IV	2,5 ,8,9	1	-	5	3	60	90	150
Semester Total				**14**	**-**	**24**	**25**	**480**	**720**	**1200**
SEMESTER – IV										
16ART401	Building services – II	III,IV	2,3 ,8,9	3	-	-	3	40	60	100
16ART402	Contemporary Architecture – I	II,III	2,8,9	3	-	-	3	40	60	100
16ART403	Design of Structures – I	II,III	2,8,9	3	-	-	3	40	60	100
16ARP411	Surveying and Site planning	I,II,IV	2,5,8,9	-	-	4	2	60	90	150
16ARS421	Architectural design –IV	I,II,III,IV	2,6,7 8,9	2	-	10	7	160	240	400
16ARS422	Building Materials and construction – IV	I,IV,V	2,4 ,8,9	2	-	5	4	80	120	200
16ARS423	Climate responsive Architecture – II	III,IV	2,5 ,8,9	1	-	4	3	60	90	150
Semester Total				**14**	**-**	**23**	**25**	**480**	**720**	**1200**
SEMESTER –V										
16ART501	Contemporary Architecture – II	III,IV	2,3 8,9	3	-	-	3	40	60	100
16ART502	Design of Structures – II	I,II,IV	2,5 8,9	3	-	-	3	40	60	100
16ARS521	Architectural design –V	I,II,IV	2,5 8,9	2	-	10	7	160	240	400
16ARS522	Building Materials and construction –V	I,II,III,IV	2,6,7 8,9	2	-	5	4	80	120	200
16ARS523	Building services – III	I,IV,V	2,4 8,9	2	-	5	4	80	120	200
16ARES	Elective 1	I,IV	5,6,7 8,9	-	-	4	2	40	60	100
16ARES	Elective 2	I,IV	5,6,7 8,9	-	-	4	2	40	60	100
Semester Total				**12**	**-**	**28**	**25**	**480**	**720**	**1200**

List of Elective subjects-***

16ARES531A Physical planning
16ARES531B Structures and Architecture
16ARES531C Sustainable architecture
16ARES531D Acoustics
16ARES531E Environmental Planning
16ARES531F Vernacular Architecture

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										
16ART601	Project Management	I,IV, V	4,6 8,9	3	-	-	3	40	60	100
16ART602	Housing	III,IV	2,5,6 8,9	3	-	-	3	40	60	100
16ARP611	Computer Application – III	I,II,II I,IV	2,6,7 8,9	1	-	4	3	80	120	200
16ARS621	Architectural design –VI	I,IV, V	1,5,6 8,9	2	-	10	7	160	240	400
16ARS622	Architectural detailing	II,III	1,3,5 8,9	2	-	4	4	80	120	200
16ARES631	Elective 3	I,IV	5,6,7 8,9	-	-	4	2	40	60	100
16ARES632	Elective 4	I,IV	5,6,7 8,9	-	-	4	2	40	60	100
Semester Total				**10**	**-**	**26**	**24**	**480**	**720**	**1200**

List of Elective subjects ***

16ARES631A Landscape Architecture
16ARES631B Product design
16ARES631C Interior Design
16ARES631D Architectural conservation
16ARES631E Architectural journalism
16ARES631F Advanced Structures
16ARES631G Disaster management

SEMESTER VII										
16ARP711	**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

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										
16ARP811	Practical Training – II Independent handling of Small Projects Contribution in Medium and Large Projects Training Portfolio II	III,IV	2,3,5	-	-	-	14	400	600	1000
16ARS821	Dissertation- 1	III,IV	2,3,6 8,9	-	-	-	2	40	60	100
Semester Total				**-**	**-**	**-**	**16**	**440**	**660**	**1100**
SEMESTER IX										
16ART901	Professional Practice	I,V	4,5,6 ,7	3	-	-	3	40	60	100
16ART902	Urban Design	III,IV	2,5	3	-	-	3	40	60	100
16ARS921	Architectural Design - VII	III,IV	2,5,7	2		12	8	200	300	500
16ARS922	Estimation and costing	I,II,III,I V	2,6,7	2	-	4	4	80	120	200
16ARE931	Elective 5	I,IV	5,6,7	1	-	4	3	60	90	150
16ARE931	Elective 6	I,IV	5,6,7	1	-	4	3	60	90	150
Semester Total				**12**	**-**	**24**	**24**	**480**	**720**	**1200**

List of Elective subjects (Any Two)

16ARES931A Developmental rules and regulations
16ARES931B Construction Technology
16ARES931C Integrated Building Management Systems.
16ARES931D Earth quake resistance architecture
16ARES931E Digital architecture
16ARES931F Advanced concrete technology
16ARES931G Real estate management

SEMESTER X										
16ARS1021	Architectural Thesis	I,II,III,IV,V	4,5,6,7	4	-	27	18	400	600	1000
16ARES1031*	Elective 7	I,V	2	-	-	4	2	80	120	200
Semester Total				**4**	**-**	**31**	**20**	**480**	**720**	**1200**

List of Elective subjects (Any Two)

16ARES1031A Industrial Architecture
16ARES1031B Green building
16ARES1031C Research methods
16ARES1031D Medical architecture
16ARES1031E Exhibition
16ARES1031F Progressive architecture
16ARES1031G High Rise Buildings

Credits :

Course	Credits
Theory	53
Practical	14
Studio	92
Elective	16
Practical Training	28
Dissertation	2
Architectural thesis	18
Total	**223**

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	24	1200
Semester- VII	14	1000
Semester- VIII	16	1100
Semester- IX	24	1200
Semester- X	20	1200
Total	**223**	**11700**

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

KARPAGAM
ACADEMY OF HIGHER EDUCATION
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FACULTY OF ARCHITECTURE
B.DES (INTERIOR DESIGN) - CURRICULUM
2016 – 2017 Batch

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

1. To prepare students to excel in computer applications to succeed in industry/ technical profession. The need to Design and present the ideas onto the working format
2. To provide students with solid foundation in technical design and aesthetics combination fundamentals required to solve related projects and also to pursue higher studies and research.
3. To train students with good design breadth with material understanding so as to comprehend, analyze, design and create design solutions for the real life projects.
4. To inculcate students in professional and ethical attitude, effective communication skills, multidisciplinary approach and an ability to relate design issues to broader social context.
5. To provide students with an academic environment aware of excellence, leadership and continuous learning, on technology and trends needed for a successful career.

PROGRAMME OUTCOMES (POs):

On successful completion of the program,

1. Graduates will acquire knowledge of basic design, digital fundamentals, design concepts, materials and a broader understanding into services and execution.
2. Graduates will have an ability to practically identify, formulate and implement design solutions and foray into main stream of the professional practice..
3. Graduates will have an ability to design and conduct experiments, analyze and interpret design data and make suitable drawings and 3d visualizations for execution..
4. Graduates will be able to design variety of projects based on the user study analysis and formulate requirements and design types along with styles and aesthetics related to the above.
5. Graduates will have the skill to work on bring in costing and project execution elements and they will recognize and implement related emerging disciplines. Graduates will be able to communicate the design language effectively in both verbal and written form.

PROGRAMME SPECIFIC OUTCOME (PSO):

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

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOME:

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

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

B.DES – CURRICULUM

2016 - 2017 Batch

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

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

FACULTY OF ARCHITECTURE
B.DES - CURRICULUM
2016-2017 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										
16IDT101	Communicative English	II	1,6	2	-	-	2	40	60	100
16IDT102	History of Interiors	II	1,6	3	-	-	3	40	60	100
16IDP111	Computer Applications I	I	3,6, 7	1	-	4	3	60	90	150
16IDP112	Art and Craft I	II	1,4, 6	1	-	4	3	40	60	100
16IDS121	Interior Design I	III	2,4, 5	2	-	10	7	160	240	400
16IDS122	Interior Materials & Construction I	III	1,6, 7	1	-	6	4	80	120	200
16IDS123	Interior Graphics I	I	1,6, 7	1	-	5	3	60	90	150
Semester Total				**11**	**-**	**29**	**25**	**480**	**720**	1200
SEMESTER – II										
16IDT201	Contemporary Interiors	III	1.4, 7	3	-	-	3	40	60	100
16IDT202	Human Values	II	1,4, 7	2	-	-	2	40	60	100
16IDP211	Computer applications II	I	3,6, 7	1	-	4	3	60	90	150
16IDP212	Art and Craft II	II	3,6, 7	1	-	4	3	40	60	100
16IDS221	Interior Design II	III	3,6, 7	2	-	10	7	160	240	400
16IDS222	Interior Materials & Construction II	III	1,6, 7	1	-	6	4	80	120	200
16IDS223	Interior Graphics II	I	1,6, 7	1	-	4	3	60	90	150
Semester Total				**11**	**-**	**28**	**25**	**500**	**750**	1200

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										
16IDT301	History of Interior Design	II	1,4,7	3	-	-	3	40	60	100
16IDT302	Space Planning	III	2,4,7	2	-	-	2	40	60	100
16IDT303	Fundamentals of Structures	II	1,4,7	3	-	-	3	40	60	100
16IDP311	Furniture Design	II	1,6,7	-	-	6	3	60	90	150
16IDP312	Workshop (Wood, cane& bamboo)	V	3,4,7	-	-	6	3	60	90	150
16IDS321	Interior Design IV	IV	3,4,7	2	-	10	7	160	240	400
16IDS322	Advanced materials & applications	V	1,2,7	1	-	6	4	80	120	200
Semester Total				**11**	**-**	**28**	**25**	**480**	**720**	1200

SEMESTER – IV										
16IDT401	Environmental Control – 1	II	3,6	3	-	-	3	40	60	100
16IDP411	Advanced Computer applications	I	2,5,6	1	-	4	3	60	90	150
16IDP412	Lifestyle Accessories Design	IV	1,4,7	1	-	4	3	60	90	150
16IDP413	Estimation and Costing	IV	5,6,7	-	-	6	3	40	60	100
16IDS421	Interior Design IV	V	3,6,7	2	-	10	7	160	240	400
16IDS422	Integrated Project Work - 1	V	1,6,7	-	-	6	3	60	90	150
16IDES431	Elective 1	IV	1,6,7	1	-	4	3	60	90	150
Semester Total				**8**	**-**	**34**	**25**	**480**	**720**	1200

Electives

1.16IDES431A-Workshop (Metal)

2.16IDES431B- Workshop (Weaving)

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										
16IDT501	Environmental Control II	II	3,6	3	-	-	3	40	60	100
16IDT502	Project Management	V	6,7	3	-	-	3	40	60	100
16IDS521	Interior Design V	V	3,6,7	2	-	10	7	160	240	400
16IDS522	Integrated Project Work - II	V	1,6,7	-	-	6	3	60	90	150
16IDS523	Working Drawings and Details	II	1,3,7	1	-	6	4	80	120	200
16IDS524	Interior Services	II	1,5,6	1	-	4	3	60	90	150
16IDES531	Elective 2	IV	1,6,7	-	-	4	2	40	60	100
Semester Total				**10**	**-**	**30**	**25**	**480**	**720**	1200
Electives 1.16IDES531A – Signage and graphics 2.16IDES531B – Product Design 3.16IDES531C - Set Design										
SEMESTER – VI										
16IDT601	Professional Practice	IV	6,7	3	-	-	3	40	60	100
16IDT602	Interior Landscape	V	1,2,7	3	-	-	3	40	60	100
16IDP611	Psychology of space & Behavioral Science	III	1.4,7	1	-	4	3	60	90	150
16IDP612	Workshop (Printing and Textiles)	II	1,6,7	1	-	6	4	80	120	200
16IDP613	Seminar	III	1.4,7	-	-	4	2	40	60	100
16IDS621	Interior Design VI	V	3,6,7	2	-	10	7	160	240	400
16IDS622	Integrated Project Work - III	V	1,6,7	-	-	6	3	60	90	150
Semester Total				**10**	**-**	**30**	**25**	**480**	**720**	1200

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 – VII										
Practical Training Under an Architect Specializing in interior/ Interior Designer (With not less than 5 years Experience) and registered with the council of Architecture / Member of IIA/Member of IIID										
16IDP711	Practical Training: Client Meeting/Interaction site Visits, Verification and Measurement concept and Scheme Development Construction Documents/ Drawings Training Portfolio I	V	5,6,7	-	-	-	15	400	600	1000
16IDS721	Field study and documentation	IV	1,6,7	-	-	6	3	200	-	200
Semester Total				-	-	6	18	600	600	1200
SEMESTER – VIII										
16IDS821	Design Thesis: Independent work of large interior project comprising study, analysis and design. Project Report , Drawing and Model	V	5,6,7	2	-	28	16	400	600	1000
16IDS822	Revitalization of Arts & Crafts	II	1,4,6	1	-	6	4	80	120	200
Semester Total				3	-	34	20	480	720	1200

Total Credits:

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

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

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

M.ARCH (Advance Design) - CURRICULUM
2016-2017 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
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)

M.ARCH (ADVANCED DESIGN) - CURRICULLUM

2016 -2017 batch (new syllabus)

SEMESTER-1

SUB.CODE	TITLE OF THE COURSE	Instruction Hrs			Marks			C	Exam Hrs
		L	T	P/S	CIA	ESE	Total		
16MARS111	Research and Field Studies I	1	-	2	40	60	100	2	6
16MARS112	Design Systems	2	-	4	80	120	200	4	6
16MARS113	Exhibition and Seminar I	-	-	3	100	-	100	2	6
16MARS114	Advanced Design Studio I	3	-	9	160	240	400	8	6
16MARES*	Advanced Elective I	2	-	4	80	120	200	4	6
TOTAL		**08**	**-**	**22**	**460**	**540**	**1000**	**20**	

*16MARESS1 - Introduction to Sustainable Architecture
16MARESH1 - Introduction to Housing Design
16MARESL1 - Introduction to Landscape Design
16MARESM1 - Introduction to Medical Architecture
16MARESA1 - Advanced Concrete Technology
16MARESR1 - Introduction to Retail and Exhibition Design

SEMESTER-2

SUB.CODE	TITLE OF THE COURSE	Instruction Hrs			Marks			C	Exam Hrs
		L	T	P/S	CIA	ESE	Total		
16MARS211	Research and Field Studies II	1	-	2	40	60	100	2	6
16MARS212	Exhibition and Seminar II	-	-	3	100	-	100	2	6
16MARS213	Advanced Design Studio II	3	-	9	160	240	400	7	6
16MARES*	Advanced Elective II	2	-	4	80	120	200	4	6
16MARES**	Advanced Elective III	2	-	4	80	120	200	4	6
TOTAL		**08**	**-**	**22**	**460**	**540**	**1000**	**19**	

*16MARESS2 - Building Performance Analysis
16MARESH2 - Housing Policies and Schemes
16MARESL2 - Plants and Application
16MARESM2 - Medical Systems and Typologies
16MARESA2 - Advanced Structural Analysis I
16MARESR2 - Visual Merchandising

**16MARESS3 - Sustainable Design Strategies
16MARESH3 - Sustainable Housing
16MARESL3 - Site Engineering
16MARESM3 - Hospital Standards
16MARESA3 - Advanced Structural Analysis II
16MARESR3 - Animation for Design

SEMESTER-3

SUB.CODE	TITLE OF THE COURSE	Instruction Hrs			Marks			C	Exam Hrs
		L	T	P/S	CIA	ESE	Total		
16MARS311	Dissertation I	2	-	10	160	240	400	7	6
16MARES*	Advanced Elective IV	2	-	4	80	120	200	4	6
16MARES**	Advanced Elective V	2	-	4	80	120	200	4	6
TOTAL		**06**	**-**	**18**	**320**	**480**	**800**	**15**	

*16MARESS4 - Sustainable Building Systems
16MARESH4 - Community Participation in Housing
16MARESL4 - Planting Design
16MARESM4 - Management of Healthcare Facilities
16MARESA4 - Design of Concrete Structures
16MARESR4 - Exhibition Construction and Detailing

**16MARESS5 - Sustainabie Trends and Theories
16MARESH5 - Special Types of Housing
16MARESL5 - Advanced Landscape Theories
16MARESM5 - Special Types of Healthcare
16MARESA5 - Steel Structures
16MARESR5 - Interactive Experience Design

SEMESTER-4

SUB.CODE	TITLE OF THE COURSE	Instruction Hrs			Marks			C	Exam Hrs
		L	T	P/S	CIA	ESE	Total		
16MARS411	Dissertation II	16	-	20	320	480	800	16	6
TOTAL		**16**	**-**	**20**	**320**	**480**	**800**	**16**	

Credit Details :

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

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

FACULTY OF PHARMACY

FACULTY OF PHARMACY
UG PROGRAM (CBCS) – B.PHARM
(2016–2017 Batch)
CURRICULUM

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										
16PYU101	Anatomy and Physiology -I	5	k	3	-	-	3	40	60	100
16PYU102	Pharmaceutical Inorganic Chemistry-I	5	a	3	-	-	3	40	60	100
16PYU103	Pharmaceutical Organic Chemistry-I	5	a	3	-	-	3	40	60	100
16PYU104	Biochemistry-I	5	a,k	3	-	-	3	40	60	100
16PYU105	Biostatistics & Computer Applications-I	4	d	3	-	-	3	40	60	100
16PYU111	Anatomy and Physiology Laboratory -I	5	b	-	-	3	2	40	60	100
16PYU112	Pharmaceutical Inorganic Chemistry Laboratory -I	5	b,j	-	-	3	2	40	60	100
16PYU113	Pharmaceutical Organic Chemistry Laboratory -I	5	a,b,j	-	-	3	2	40	60	100
16PYU114	Biochemistry Laboratory -I	5	a,b	-	-	3	2	40	60	100
16PYU115	Biostatistics & Computer Applications Laboratory -I	4	d	-	-	3	2	40	60	100
Semester Total		-	-	15	-	15	25	400	600	1000
SEMESTER – II										
16PYU201	Anatomy and Physiology -II	5	k	3	-	-	3	40	60	100
16PYU202	Pharmaceutical Inorganic Chemistry-II	5	a	3	-	-	3	40	60	100
16PYU203	Pharmaceutical Organic Chemistry-II	5	a	3	-	-	3	40	60	100
16PYU204	Biochemistry -II	5	a,k	3	-	-	3	40	60	100
16PYU205	Biostatistics & Computer Applications-II	4	d	3	-	-	3	40	60	100
16PYU211	Anatomy and Physiology Laboratory -II	5	k	-	-	3	2	40	60	100
16PYU212	Pharmaceutical Inorganic Chemistry Laboratory -II	5	a,b,j	-	-	3	2	40	60	100
16PYU213	Pharmaceutical Organic Chemistry Laboratory -II	5	a,b,j	-	-	3	2	40	60	100
16PYU214	Biochemistry Laboratory -II	5	b	-	-	3	2	40	60	100
16PYU215	Biostatistics & Computer Applications Laboratory -II	4	d	-	-	3	2	40	60	100
Semester Total		-	-	15	-	15	25	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										
16PYU301	Physical Pharmaceutics-I	5	a	3	-	-	3	40	60	100
16PYU302	Pharmaceutical Analysis and Physical Chemistry - I	1	c	3	-	-	3	40	60	100
16PYU303	Advanced Pharmaceutical Organic Chemistry-I	5	a	3	-	-	3	40	60	100
16PYU304	Pharmacy Practice and Pathophysiology-I	2,6	a,f,i	3	-	-	3	40	60	100
16PYU305	Pharmaceutical Technology-I	1,5	d	3	-	-	3	40	60	100
16PYU306	Social Pharmacy and Behavioral Science	3,6	f,g, h,j	3	-	-	3	40	60	100
16PYU311	Physical Pharmaceutics Laboratory -I	5	b	-	-	3	2	40	60	100
16PYU312	Pharmaceutical Analysis and Physical Chemistry Laboratory - I	1	b,c	-	-	3	2	40	60	100
16PYU313	Advanced Pharmaceutical Organic Chemistry Laboratory -I	5	b,j	-	-	3	2	40	60	100
16PYU314	Pharmacy Practice and Pathophysiology Laboratory-I	2,6	b,f,i	-	-	3	2	40	60	100
16PYU315	Communication Skills	3	h	1	-	-	2	100	-	100
Semester Total		-	-	19	-	12	26	500	600	1100
SEMESTER – IV										
16PYU401	Physical Pharmaceutics-II	5	a	3	-	-	3	40	60	100
16PYU402	Pharmaceutical Analysis and Physical Chemistry - II	1	c	3	-	-	3	40	60	100
16PYU403	Advanced Pharmaceutical Organic Chemistry-II	5	b	3	-	-	3	40	60	100
16PYU404	Pharmacy Practice & Pathophysiology-II	2,6	a,f,i	3	-	-	3	40	60	100
16PYU405	Pharmaceutical Technology-II	1,5	d	3	-	-	3	40	60	100
16PYU406	Pharmaceutical Jurisprudence	3,4	a,e, g	3	-	-	3	40	60	100
16PYU411	Physical Pharmaceutics Laboratory -II	5	b	-	-	3	2	40	60	100
16PYU412	Pharmaceutical Analysis and Physical Chemistry Laboratory - II	1	b,c	-	-	3	2	40	60	100
16PYU413	Advanced Pharmaceutical Organic Chemistry Laboratory -II	5	b,j	-	-	3	2	40	60	100
16PYU414	Pharmacy Practice & Pathophysiology Laboratory- II	2,6	b,f,i	-	-	3	2	40	60	100
16PYU451	Environmental Sciences	-	-	1	-	-	-	100	-	100
Semester Total		-	-	19	-	12	26	500	600	1100

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										
16PYU501	Pharmacognosy and Phytochemistry-I	1	a	3	-	-	3	40	60	100
16PYU502	Medicinal Chemistry - I	1	a,k	3	-	-	3	40	60	100
16PYU503	Pharmaceutical Dosage Forms and Cosmetic Technology – I	1	a,c, k	3	-	-	3	40	60	100
16PYU504	Pharmacology -I	5	a,d, k	3	-	-	3	40	60	100
16PYU505	Pharmaceutical Microbiology	1	k	3	-	-	3	40	60	100
16PYU506	Hospital and Clinical Pharmacy - I	2,6	a,f, h	3	-	-	3	40	60	100
16PYU511	Pharmacognosy and Phytochemistry Laboratory -I	1	a,b	-	-	3	2	40	60	100
16PYU512	Medicinal Chemistry Laboratory-I	1	a,b	-	-	3	2	40	60	100
16PYU513	Pharmaceutical Dosage Forms and Cosmetic Technology Laboratory- I	1	a,c	-	-	3	2	40	60	100
16PYU514	Pharmacology Laboratory - I	5	a,b, d	-	-	3	2	40	60	100
16PYU515	Pharmaceutical Microbiology Laboratory	1	a,b	-	-	3	2	40	60	100
Semester Total		-	-	18	-	15	28	440	660	1100
SEMESTER –VI										
16PYU601	Pharmacognosy and Phytochemistry –II	1	a,k	3	-	-	3	40	60	100
16PYU602	Medicinal Chemistry - II	1	a,k	3	-	-	3	40	60	100
16PYU603	Pharmaceutical Dosage Forms and Cosmetic Technology –II	1	a,c, k	3	-	-	3	40	60	100
16PYU604	Pharmacology -II	5	a,k	3	-	-	3	40	60	100
16PYU605	Pharmaceutical Biotechnology	1	a	3	-	-	3	40	60	100
16PYU606	Hospital & Clinical Pharmacy-II	2,6	a,f, h	3	-	-	3	40	60	100
16PYU611	Pharmacognosy and Phytochemistry Laboratory –II	1	a,b	-	-	3	2	40	60	100
16PYU612	Medicinal Chemistry Laboratory -II	1	a,b	-	-	3	2	40	60	100
16PYU613	Pharmaceutical Dosage forms and Cosmetic Technology Laboratory-II	1	a,c	-	-	3	2	40	60	100
16PYU614	Pharmacology Laboratory –II	5	a,d	-	-	3	2	40	60	100
16PYU615	Pharmaceutical Biotechnology Laboratory	1	a,b	-	-	3	2	40	60	100
Semester Total		-	-	18	-	15	28	440	660	1100

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										
16PYU701	Formulative Pharmacy & Biopharmaceutics-I	1,5	a,c,k	3	-	-	3	40	60	100
16PYU702	Advanced Pharmacognosy – I	1	a,k	3	-	-	3	40	60	100
16PYU703	Medicinal Chemistry-III	1	a,k	3	-	-	3	40	60	100
16PYU704	Pharmacology - III	5	a,k	3	-	-	3	40	60	100
16PYU705	Modern Methods of Pharmaceutical Analysis-I	1	c	3	-	-	3	40	60	100
	Professional Electives	1	a,c	-	-	3	2	40	60	100
16PYU711	Formulative Pharmacy & Biopharmaceutics Laboratory -I	1	a,b	-	-	3	2	40	60	100
16PYU712	Advanced Pharmacognosy Laboratory – I	1	a,b	-	-	3	2	40	60	100
16PYU713	Medicinal Chemistry Laboratory -III	5	a,d	-	-	3	2	40	60	100
16PYU714	Pharmacology Laboratory –III	1	a,c	-	-	3	2	40	60	100
16PYU7E01	Pharmaceutical Marketing	1,3	f	3	-	-	3	40	60	100
16PYU7E02	Pharmaceutical Regulatory Science	3,4	c,k							
16PYU7E03	Pharmacovigilance	2,5	a,h,i							
16PYU7E04	Quality Control and Standardizations of Herbals	1	b							
16PYU7E05	Cell and Molecular Biology	4,5	j.k							
Semester Total		-	-	18	-	15	28	440	660	1100
SEMESTER –VIII										
16PYU801	Formulative Pharmacy & Biopharmaceutics - II	1,5	a,c,k	3	-	-	3	40	60	100
16PYU802	Advanced Pharmacognosy – II	1	a,k	3	-	-	3	40	60	100
16PYU803	Medicinal Chemistry - IV	1	a,k	3	-	-	3	40	60	100
16PYU804	Pharmacology– IV	5	a,k	3	-	-	3	40	60	100
16PYU805	Modern Methods of Pharmaceutical Analysis - II	1	c	3	-	-	3	40	60	100
	Open Electives	1	a,c	-	-	3	2	40	60	100
16PYU811	Formulative Pharmacy & Biopharmaceutics Laboratory -II	1	a,b	-	-	3	2	40	60	100
16PYU812	Advanced Pharmacognosy Laboratory – I	1	a,b	-	-	3	2	40	60	100
16PYU813	Medicinal Chemistry Laboratory -IV	5	a,d	-	-	3	2	40	60	100
16PYU814	Pharmacology Laboratory –IV	1	a,c	-	-	3	2	40	60	100
16PYU815	Modern Methods of Pharmaceutical Analysis Laboratory -II	1,3 ,4	a,d,e,g	-	-	5	3	120	180	300
16PYU8OE01	Molecular Modelling	1,5	d	3	-	-	3	40	60	100
16PYU8OE02	Molecular Biology	4,5	j,k							
16PYU8OE03	Bioinformatics	1,5	d,k							
16PYU8OE04	Bioprocess Engineering	4,5	j,k							
16PYU8OE05	Computer Aided Design	1,5	d							
Semester Total		-	-	18	-	20	31	560	840	1400

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