



3.4.1.1 Inclusion of research ethics in the research methodology course work

Research Methodology Course List

S.No	Department	Course Code	Course Name	Hrs./Week	Credit
1	M.E. Communication System	19PATM101	Research Methodology and IPR	2	2
2	M.E. Computer Science and Engineering	19PATM101	Research Methodology and IPR	2	2
3	M.E. Manufacturing Engineering	19PATM101	Research Methodology and IPR	2	2
4	M.E. Power System Engineering	19PATM101	Research Methodology and IPR	2	2
5	M.E. VLSI	19PATM101	Research Methodology and IPR	2	2

Principal

Dr. N.RAMESH BABU, PRINCIPAL M. Kumarasamy College of Engineering THALAVAPALAYAM

KARUR - 639113.







REGULATION 2019 M.E., COMMUNICATION SYSTEMS CURRICULUM AND SYLLABUS





CURRICULUM AND SYLLABUS

REGULATION 2019

Programme: M.E. Communication Systems

Vision of the Department:

To empower the Electronics and Communication Engineering students with emerging technologies, professionalism, innovative research and social responsibility.

Mission of the Department:

M1: Attain the academic excellence through innovative teaching learning process, research areas & laboratories and Consultancy projects.

M2: Inculcate the students in problem solving and lifelong learning ability.

M3: Provide entrepreneurial skills and leadership qualities.

M4: Render the technical knowledge and industrial skills of faculties.

Programme Educational Objectives (PEOs):

PEO1: Graduates will be capable to develop their skills and provide optimal solutions to subsystems in the areas of Communication Systems

PEO2: Graduates will be capable of carrying out scientific research in the areas of Communication Systems

PEO3: Graduates will be able to analyze societal problem and can provide technological solutions.

Programme Outcomes (POs):

PO1: An ability to independently carryout research/investigation and development work to solve practical problems

PO2: An ability to write and present a substantial report/document

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

PO4: An ability to independently carry out research to deliver solutions for complex problems in Communication systems.

PO5: Able to communicate effectively in written and oral formats.

PO6: Ability to continuously engage in life-long learning with enhanced knowledge and competence.





CURRICULUM AND SYLLABUS REGULATION 2019

Programme: M.E. -Communication Systems

Structure of Curriculum

Sl.No.	Category	Credits
1	Basic Science courses (B)	4
2	Professional core courses (C)	12
3	Professional Elective courses relevant to chosen specialization/branch (E)	15
4	Project work, Practical, Minor project, seminar and internship in industry or elsewhere (P)	32
5	Mandatory Courses (M)	2
	Total Credits	68

^{*}Minor variation is allowed as per need of the respective disciplines.

1. Basic Science courses (B)

Course Code	Course Name	Hours / Week		C	
Course Coue	Course Name	L	T	P	
19PCMB101T	Applied Mathematics for Communication Engineers	3	1	0	4
			Total	Credits	4

T-Lecture T-Lecture+ Tutorial L-Practical, Project, J- Lecture+ project

2. Professional Core courses (C)

Course Code	Course Name	Hours / Week			-
Course Code	Course Name	L	T.	P	C
19PCMC101T	Advanced Communication Networks	3	0	0	3
19PCMC102T	Wireless and Mobile Communication	3	0	0	3
19PCMC103T	Antennas and Radiating Systems	3	0	0	3
19PCMC104T	Advanced Digital Signal Processing	3	0	0	3
			Total	Credits	12

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T-Lecture + Tutorial L-Practical Project J- Lecture+ project





3. Professional Elective courses relevant to chosen specialization/branch (E)

Course Code		He	ours / W	eek	
Course Code	Course Name	L	T	P	C
	Professional Elective for I-Semes	ter			
19PCME001T	Wireless Sensor Networks	3	0	0	3
19PCME002T	Optical Networks	3	0	0	3
19PCME003T	Modern Digital Communication Techniques	3	0	0	3
19PCME004T	Cognitive Radio	3	0	0	3
19PCME005T	RF and Microwave Circuit Design	3	0	0	3
19PCME006T	DSP Architecture	3	0	0	3
19PCME007T	Communication Network Security	3	0	0	3
19PCME008T	Network Routing Algorithms	3	0	0	3
	Professional Elective for II-Semes	ter			
19PCME009T	Satellite Communication and Navigation Systems	3	0	0	3
19PCME010T	Modern Internet of Things	3	0	0	3
19PCME011T	Voice and Data networks	3	0	0	3
19PCME012T	MIMO System	3	0	0	3
19PCME013T	Programmable Networks SDN NFV	3	0	0	3
	Professional Elective for III-Semes	ster	4		
9PCME014T/ 9PVLE019T	Wireless Embedded Systems	3	0	0	3
9PCME015T	Remote Sensing	3	0	0	3
9PCME016T	PCB design Technology	3	0	0	3
9PCME017T	Communication Interfaces	3	0	0	3
trae			Total C	redits	15

T-Lecture T-Lecture+ Tutorial L-Practical, Project, J- Lecture+ project 4. Project work, minor project, seminar and internship in industry or elsewhere (P)

Course Code	Course Name	Ho	Hours / Week			
		L	T	P	C	
19PCMP101L	Communication systems Lab I	0	0	4	2	
19PCMP102L	Communication systems Lab II	0	0	4	2	
19PCMP103L	Minor Project I	0	0	4	2	
19PCMP104L	Project work Phase I	0	0	20	10	
19PCMP105L	Project work Phase II	0	0	32	16	
	COLLEGE		Total C	redits	32	

T-Lecture T-Lecture+ Tutorial

re+ project

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5. Mandatory Courses (M)

Course Code	Course Name	Но	Hours / Week		
		L	T	P	
19PATM101	Research Methodology and IPR		0	0	2
19PATM102	English for Research Paper Writing	***************************************	0	0	0
19PATM103	Pedagogy Studies	1	0	0	0
			Total (redits	2

T-Lecture T-Lecture+ Tutorial L-Practical, Project, J- Lecture+ project







Category	Course Code	Course Name	Hou	rs / W	eek	C
Category	Course Code	Course Name	L	P		
В	19PCMB101T	Applied Mathematics for Communication Engineers	3	1	0	4
C	19PCMC101T	Advanced Communication Networks	3	0	0	3
С	19PCMC102T	Wireless and Mobile Communication	3	0	0	3
Е		Professional Elective I	3	0	0	3
Е		Professional Elective II	3	0	0	3
P	19PCMP101L	Communication Systems Lab I	0	0	4	2
M	19PATM101	Research Methodology and IPR	2	0	0	2
M	19PATM102	English for Research Paper Writing	1	0	0	0

Category Course Code Course Name		Hours / Week			6	
			L	T	P	
С	19PCMC103T	Antennas and Radiating Systems	3	0	0	3
C	19PCMC104T	Advanced Digital Signal Processing	3	0	0	3
Е		Professional Elective III	3	0	0	3
Е		Professional Elective IV	3	0	0	3
P	19PCMP102L	Communication systems Lab II	. 0	0	4	2
P	19PCMP103L	Minor Project I	0	0	4	2
M	19PATM103	Pedagogy Studies	1	0	0	0







Category	Course Code	Course Name	Hou	rs / W	eek	C
Category	Course Code	Course Name	L	T	P	
Е		Professional Elective V	3	0	0	3
Е		Professional Elective VI	3	0	0	3
P	19PCMP104L	Project Work Phase I	0	0	20	10

		SEMESTER IV				
Category	tegory Course Code Course Name		Hou	rs / Wo	eek	C
			L	T	P	
P	19PCMP105L	Project Work Phase II	0	0	32	16
			T	otal Cr	edits	16

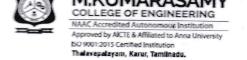






Category / Semester	1	п	Ш	IV	Category wise Total Credits
Basic Science Course(B)	4	-	21	-	4
Professional Core(C)	6	6	-	1 - 2	12
Professional Elective(E)	6	6	6	-	18
Practical / Lab (P)	2	2	(4)		4
Project Work(P)	2 5 1	2	10	16	28
Mandatory Course(M)	2	**	3	-	2
Semester Wise Total Credits	20	16	16	16	68







	Regul	ation 2019	Semester I	To	otal Hou	rs	30
Cate	gory	Course Code	Course Name		urs / We	ek	C
N	1	19PATM101	Research Methodology and IPR	L 2	T 0	P 0	2
Prere	quisite	Course (s)	2100000 on Methodology and H K	L	U	U	
Nil							
	se Obi	ective (s):					
		of learning this co	urse is to:				
1	Unde	rstand and analyse	the fundamental of research problem				-
2		rstand the Researc		8.5	-		
3	Unde	rstand that today's row world will be	world is controlled by Computer, Informuled by ideas, concept, and creativity	nation To	echnolog	y, but	
4		rstand Intellectual					-
5	Unde	stand Patents Righ	nts	Name of the second			
Cours	se Outo	come (s) (COs):					
		this course, learne	ers will be able to:				
CO1			blem formulation				
CO2		ze research related	l information	* B =			
CO3		v research ethics					
001	Under	standing that when	n IPR would take such important place in	n growth	of indivi	duals &	
CO4	nation be pro	, it is needless to e moted among stud	emphasis the need of information about I dents in general & engineering in particu	ntellectu lar	al Proper	ty Right	to
	Under	stand that IPR pro	tection provides an incentive to inventor	s for fur	ther resea	rch wor	k
CO5	and in	vestment in R & D), which leads to creation of new and bet	ter produ	icts, and	in turn	
	brings	about, economic g	growth and social benefits				
	NIT I	INTRODUC					6
Meani researc	ng of re ch prob	esearch problem- S lem- Errors in sele	Sources of research problem-Criteria Cha ecting a research problem- Scope and obj	racterist ectives o	ics of a g	ood h proble	m.
	NIT II		OF REARCH				6
Appro	aches	of investigation of	solutions for research problem- data coll	ection_ a	malveie-		_
interpr	etation-	- Necessary inst			pproache	s- anal	veie
Plagia	rism,- F	Research ethics.		and the same	pprodene	o unui,	y 513
UN	ш тв	RESEACRH	PRPOSAL AND TECHNICAL WRITIN	IG		6	
Effecti	ve tech	nical writing - hov	v to write report-Paper Developing a Res	search Pr	oposal- F		
researc	h prop	osal- a presentation	n and assessment by a review committee				
	IT IV		CUAL PROPERTY			6	
Nature	of Inte	llectual Property: 1	Patents – Designs - Trade and Copyright-	Process	of Patent		200000000000000000000000000000000000000
					COMPER	ENG	

Curriculum and Syllabus 12019 Regulation

KARUR - 639 113

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Development: technological research- innovation- patenting- And development. International Scenario: International cooperation on Intellectual Property- Procedure for grants of patents-Patenting under PCT.

	Rights: Scope of Patent Rights- Licensing and transfer of technology -Patent information	anc
lataba	es- Geographical Indications.	
Text I	ok (s)	
1	Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science engineering students".	&
2	Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007	
Refer	icc (s)	
1	Ranjit Kumar, 2 nd Edition, "Research Methodology: A Step by Step Guide for beginner	rs"
2	T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008	
3	Robert P. Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New Technological Age", 2016.	
4	Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"	0





M.KUMARASAMY COLLEGE OF ENGINEERING

NAAC Accredited Autonomous Institution

Approved by AICTE & Affiliated to Anna University ISO 9001:2015 Certified Institution

Thalavapalayam, Karur, Tamilnadu.



M.E. - COMPUTER SCIENCE AND ENGINEERING

REGULATION 2019
CURRICULUM AND SYLLABUS





CURRICULUM AND SYLLABUS

REGULATION 2019

Programme: M.E. - Computer Science and Engineering

Vision of the Department:

4 To achieve education and research excellence in computer Science and Engineering

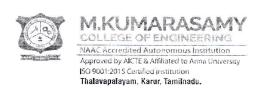
Mission of the Department:

M1: To excel in academic through effective teaching learning techniques.

M2: To promote research in the area of computer science and engineering with the focus on innovation.

M3: To transform students into technically competent professionals with societal and ethical responsibilities.







Programme Educational Objectives (PEOs):

- PEO 1: To empower graduates to identify, create and solve computing problems by applying
 their knowledge of computing principles and mathematical theory to develop sustainable
 solutions to current and future computing problems.
- PEO 2: To develop research attitude in graduates and to exploit it for higher education endeavors and constantly upgrade their skills with an attitude towards lifelong learning.
- PEO 3: To facilitate graduates to acquire skills to communicate effectively with the society and contribute to the betterment of the society as a committed technical personnel.

Programme Specific Outcomes (PSOs):

- PSO 1: Attain the ability to design and develop computer applications and provide innovative solutions.
- PSO 2: 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.







STRUCTURE OF CURRICULUM

Sl.No.	Category	Credits
1	Professional core courses (C)	11
2	Basic Science courses (B)	04
3	Professional Elective courses relevant to chosen specialization/branch (E)	20
4	Project work, Minor project**, seminar and internship in industry or elsewhere (P)	28
5	Mandatory Courses (M)	02
	Total Credits	65

1. Professional core courses (C)

		H	C		
Course Code	Course Name	Hours / Week L T P 3 0 2 3 0 2	C		
19PCSC101J	Advanced Data Structures	3	0	2	4
19PCSC102J	Advanced Algorithms	3	0	2	4
19PCSC103T	Soft Computing	3	0	σ	3
			Total	Credits	11

L-Lecture T-Tutorial P-Practical

2. Basic Science courses (B)

		Н	C		
Course Code	Course Name	L	Т	P	
19PCSB101T	Mathematical foundations of Computer Science	3	1	0	4
		-1	Total	Credits	04

L-Lecture T-Tutorial P-Practical

3. Program Elective courses relevant to chosen specialization/branch (E) (Any 6 Subjects)

	Course Name		Hours / Week			
Course Code			Т	P	С	
19PCSE001J	Machine Learning Techniques	3	0	2	4	
19PCSE002J	Web Engineering	3	0	2	4	
19PCSE003J	Agile Software Development and Usability Engineering	3	0	2	4	
19PCSE004J	IoT Architecture and Programming	3	0	2	4	
19PCSE005J	Cloud Services and Virtualization	3	0	2	4	
19PCSE006J	Data Science and Analytics	3	0	- 2	4	
19PCSE007J	Image Processing and Analysis	3	0	2	4	
19PCSE008T	Distributed Systems	3	0	0	- 3	

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Board of Computer Science On





19PCSE009T	Human and Computer Interaction	3	0	0	3
19PCSE010T	GPU Computing	3	0	0	3
19PCSE011T	Advanced Wireless Sensor Networks	3	0	0	3
19PCSE012T	Security for IoT	3	0	0	3
19PCSE013T	Software Project Management	3	0	0	3
19PCSE014T	Mobile Application Development	3	0	0	3
19PCSE015T	Software Quality Assurance	3	0	0	3
19PCSE016T	Block Chain Technology	3	0	0	3
19PCSE017T	Cyber Security and Computer Forensics	3	0	0	3
19PCSE018T	Recommender System \$	3	0	0	3
19PCSE019T	Modern Computer Architecture	3	0	0	3
19PCSE020T	Advanced Database	3	0	0	3
19PCSE021T	Optimization Techniques	3	0	0	3
19PCSE022T	Compiler for High Performance Computing	3	0	0	3
19PCSE023T	Social Network Analysis	3	0	0	3
19PCSE024T	Computer Vision	3	0	0	3
19PCSE025T	Information Retrieval Techniques	3	0	0	3
		1	Tota	Credits	20

L-Lecture

T-Tutorial

P-Practical

4. Project work, minor project, seminar and internship in industry or elsewhere (P)

		Hou	Hours / Week			
Course Code	Course Name	L	Т	P	C	
19PCSP101L	Mini Project with Seminar	2	0	0	2	
19PCSP102L	Project Phase I	0	0	20	10	
19PCSP103L	Project Phase II	0	0	32	16	
			Total (Credits	28	

L-Lecture

T-Tutorial

P-Practical

5. Mandatory Courses (M)

Harris Carlo		Но				
Course Code	Course Name	L	Т	P	С	
19PATM101	Research Methodology and IPR	2	0	0	2	
19PATM102	English for Research Paper Writing	1	0	0	Nil	
19PATM103	Pedagogy Studies	1	0	0	Nil	
		-	Total	Credits	2	

L-Lecture

T-Tutorial

P-Practical

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I to IV Semester Curriculum

		Semester I			·	
Category	Course Code	Course Name	Но	urs / W	eek	C
·		L	Т	P		
В	19PCSB101T	Mathematical foundations of Computer Science	3	1	0	4
C .	19PCSC101J	Advanced Data Structures	3	0	2	4
Е	*********J	Program Elective I	3	0	2	4
Е	*******T	Program Elective II	3	0	0	3
· M	19PATM101	Research Methodology and IPR	2	0	.0	2
М	19PATM102	English for Research Paper Writing	1	0	0	0
			Т	otal Cr	edits	17

T-Tutorial P-Practical L-Lecture

		Semester II				
Category	Course Code	* Course Name	Нои	ırs / W	eek.	С
			L	Т	P	
С	19PCSC102J	Advanced Algorithms	3	0	2	4
, C	19PCSC103T	Soft Computing	3	0	0	3
Е	********	Program Elective III	3	0	2	4
Е	********T	Program Elective IV	3	0	0	3
, M	19PATM103	Pedagogy Studies	1	0	0	0
P	19PCSP101L	Mini Project with Seminar	2	0	. 0	2
			Т	otal Cr	edits	16

T-Tutorial P-Practical L-L'ecture

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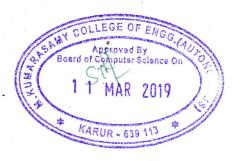


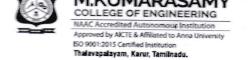
		Semester III			•	
Category	Course Code	Course Name	Hou	ırs / W	eek	C
	Course code	·	L	Т	P	
Е	********T	Program Elective V	3	0	0	3
. Е	*******T	Program Elective VI	3	0	0	3
P	19PCSP102L	Project Phase I	0	0	20	10
			T	otal Cr	edits	16

L-Lecture T-Tutorial P-Practical

		Semester IV				
Category	Course Code	Course Name	Ног	ırs / W	'eek	С
*	Course code	*	L	Т	P	
P	19PCSP103L	Project Phase II	0	0	32	16
			T	otal Cı	edits	16
		•				

Total Credits: 65*







	Regul	ation 2019	Semester I	To	tal Hou	rs	30
Cate	egory	Course Code	Course Name		urs / We	ek	C
1	М	19PATM101	Research Methodology and IPR	L 2	T 0	P	
Prere	equisite	e Course (s)	research Methodology and II K	2	U	0	2
Nil							
	se Ohi	ective (s):					
	5 (4.7)	of learning this co	urse is to:				
1	Unde	rstand and analyse	the fundamental of research problem				
2		rstand the Researc					
3	Unde	rstand that today's	world is controlled by Computer, Informative ruled by ideas, concept, and creativity	nation Te	chnolog	y, but	
4		rstand Intellectual				2"	
5		rstand Patents Rigl					
Cour	se Outo	come (s) (COs):					
		this course, learne	ers will be able to:				
CO1	Unde	rstand research pro	blem formulation				
CO2		ze research related		×			
CO3		w research ethics					_
	Under	rstanding that when	n IPR would take such important place in	n growth	of indivi	duals &	
CO4	nation	i, it is needless to e	emphasis the need of information about I	ntellectua	al Proper	ty Right	to
	Under	estand that IDD ma	lents in general & engineering in particu	lar			Etc. 14
CO5	and in	vestment in R & D	tection provides an incentive to inventor o, which leads to creation of new and bet	s for furt ter produ	her resea cts, and	rch worl in turn	K
	brings	about, economic g	growth and social benefits				
- U	NIT I	INTRODUC	TION			(6
Meani resear	ng of re	esearch problem- S lem- Errors in sele	sources of research problem-Criteria Chacting a research problem-Scope and obj	aracteristi ectives o	cs of a g	ood h proble	m.
	NIT II		OF REARCH			1	
Appro	oaches o	of investigation of	solutions for research problem- data col	lection- a	nalysis-		
interpr	etation	- Necessary inst	and the second s	udies ap	1.5	s- analy	vsis
Plagia	rism,- F	Research ethics.		" I	I saorio	- 41141,	, 515
UN	III TIN	RESEACRH	PRPOSAL AND TECHNICAL WRITIN	IG		6	;
Effecti	ive tech	nical writing - how	v to write report-Paper Developing a Res	search Pro	oposal- F	ormat o	f
	NIT IV		n and assessment by a review committee TUAL PROPERTY	•			
			Patents –Designs - Trade and Copyright-	Ducco	o C P	6	000000000000000000000000000000000000000
	0.11110		dentis Designs - Hade and Copyright-	Process	or Patent	नामि क्रीव	

Curriculum and Syllabus 2019 Regulation

KARUR - 639 113

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Development: technological research- innovation- patenting- And development. International Scenario: International cooperation on Intellectual Property- Procedure for grants of patents-

Patent	ing under P	CT.	
	NIT V	PATENTS RIGHTS	6
		ope of Patent Rights- Licensing and transfer of technology -Patent information aphical Indications.	ı and
Text I	Book (s)		
1		lville and Wayne Goddard, "Research methodology: an introduction for sciencing students".	e &
2	Halbert, "	Resisting Intellectual Property", Taylor & Francis Ltd ,2007	
Refer	ence (s)		
1	Ranjit Kui	mar, 2 nd Edition, "Research Methodology: A Step by Step Guide for beginn	ers"
2		pa, "Intellectual Property Rights Under WTO", S. Chand, 2008	×
3	Technolog	Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New gical Age", 2016.	
4	Wayne Go	oddard and Stuart Melville, "Research Methodology: An Introduction"	



M.KUMARASAMY COLLEGE OF ENGINEERING (Autonomous) - KARUR 639113

M.KUMARASAMY COLLEGE OF ENGINEERING, KARUR.

(Autonomous)

AFFILIATED TO ANNA UNIVERSITY, CHENNAI Department of Mechanical Engineering

REGULATIONS 2019

M.E. MANUFACTURING ENGINEERING

I TO IV SEMESTERS (FULL TIME) CURRICULUM AND SYLLABUS

S.	COURSE	SEMESTER I				
No	CODE	COURSE TITLE	L	Т	Р	С
THEO	RY		J			
1	19PMAB101T	Applied Probability and Statistics	3	1 1	0	4
2	19PMEC101T	Advanced Materials Technology	3	0	0	3
3	19PMEC102T	Automated Computer Integrated Manufacturing Systems	3	0	0	3
4	19PMEC103T	Modern Manufacturing Processes	3	0	0	3
5	19PMEC104T	Robot Design and Programming	3	0	0	3
6	<u>E1</u>	Elective I	3	n	0	3
7	19PATM101	Research Methodology and IPR	2	0	0	2
PRAC	TICAL					<u></u>
8	19PMEC105L	CAD/CAM Laboratory	0	0	4	2
		TOTAL	20	1	4	23

SEMESTER II

S. No	COURSE CODE	COURSE TITLE	L	Т	Р	С
THEO	RY					1
1	19PMEC106T	Optimization Techniques in Manufacturing	3	0	0	3
2	19PMEC107T	Manufacturing Metrology and Quality Engineering	3	0	n	3
3	19PMEC108T	Theory of Metal Forming	3	0	0	3
4	19PMEC109T	Material Testing and Characterization Techniques	3	0	n	3
5	E2	Elective II	3	0	0	3
6	E3	Elective III	3	0	0	3
7	19PATM102	English for Research Paper Writing	1	0	0	0
PRAC	TICAL		Commence of A. J. Co. Applications and	***************************************	Com the suppression of the suppr	A COMPANY OF THE PARTY OF THE P
8	19PMEC110L	Automation and Metal Forming Laboratory	0	0	4	2
		TOTAL	19	0	4	20

SEMESTER III

S. No	COURSE CODE	COURSE TITLE	La	T	Р	С
THEO	RY	The second secon	eritarione de la companya de la financia de la companya del la companya de la com			
1	E4	Elective IV	3	0	0	3
2	E5	Elective V		0	0	1 3
3	19PATM103	Pedagogy Studies	1	0	0	0
PRAC	TICAL	Automorphism of the second of			The same and the	A contract of a section of
4	19PMEP201L	Project Work (Phase I)	EGE OF ENG	0	12	6
		1, 5AM AD	PROTO BAL 7	0	12	12

0 5 MAR 2019

SEMESTER IV

S. No	COURSE	COURSE TITLE	L	Т	Р	C
1	19PMEP202L	Project Work (Phase II)	0	0	24	12
		TOTAL	0	0	24	12

TOTAL CREDITS TO BE EARNED FOR THE AWARD OF THE DEGREE = 67

LIST OF ELECTIVES FOR M.E. MANUFACTURING ENGINEERING

SEMESTER I (Elective I)

S. NO	COURSE CODE	COURSE TITLE	L	Т	Р	С
1.	19PMEE001T	Fluid Power Automation	3	0	0	3
2.	19PMEE002T	Design for Manufacture and Assembly	3	0	0	3
3.	19PMEE003T		3	0	0	3
4.	19PMEE004T	Metal Cutting Theory and Practice	3	0	0	3
5.	19PMEE005T	Manufacturing of Automotive Parts	3	0	0	3

SEMESTER II (Elective II & III)

S. NO	COURSE CODE	COURSE TITLE	L	Т	Р	С
1.	19PMEE006T	Finite Element Methods for Manufacturing Engineering	3	0	0	3
2.	19PMEE007T	Materials Management	3			
3.	19PMEE008T	Industrial Ergonomics	1774	0	0	3
4.	19PMEE009T	Polymers and Composite Materials	3	0	0	3
5.	19PMEE010T		3	0	0	3
6.	19PMEE011T	Lean Manufacturing	3	0	0	3
7.	19PMEE012T	Quality and Reliability Engineering	3	0	0	3
8.	19PMEE013T	MEMS and Nanatachael	3	0	0	3
9.	19PMEE014T	- Tarrete et intology	3	0	0	3
<u> </u>	19FWEEU141	Surface Engineering	3	0	0	3

SEMESTER III (Elective IV & V)

S. NO	COURSE CODE	COURSE TITLE	Τ.			
1.	19PMEE015T	Micro Manufacturing	L	Т	Р	С
2.	19PMEE016T	Computer Aided Product Design	3	0	0	3
3.	19PMEE017T	Financial Management	3	0	0	3
4.	19PMEE018T	Manufacturing Management Concepts of Green Manufacturing	3	0	0	3
5.	19PMEE019T	Concepts of Green Manufacturing	3	0	0	
6.	19PMEE020T	Nanotechnology	3	0	0	3
7.	19PMEE021T	Mechatronics	3	0		3_
8.	19PMEE022T	Manufacturing Techniques	3	0	0	3
9.	19PMEE023T	Production and Operation Management	3	0	0	3
		o por attorn Management		-0	0	3

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Ca	T	ition 2019	Semester 1		tal Hou		31
	tegory	Course Code	Course Name	Ho L	urs / We T	ek P	C
	M	19PATM101	Research Methodology and IPR	2	0	0	2
Pre	requisite	Course (s)				1	-
Nil							
Cou	rse Obio	ctive (s):					-
	*					,	
1110	purpose	of learning this co	urse is to:				
1	Under	stand and analyse	the fundamental of research problem				
2	Under	stand the Researc	h Ethics				-
3	Under	stand that today's	world is controlled by Computer, Inform	nation Tec	chnology	, but	
	tomor	ow world will be	ruled by ideas, concept, and creativity			5:	
4	Under	stand Intellectual	Property Rights				
5	Under	stand Patents Righ	nts	-			
Cour	rse Outc	ome (s) (COs):					
At th	e end of	his course, learne	re will be at the				
				•			*
COI	Unders	tand research pro	blem formulation		-		-
CO2	Analyz	e research related	information				-
CO ₃		research ethics					-
A Marie Control Provider	Unders	tanding that wher	IPR would take such important place in	growth o	f individ	uals &	-
	nation,	it is needless to e	mphasis the need of information about In	itellectual	Propert	y Right	to
CO4	1 (2)	and the second of the second o			, ,	10	
CO4	be pron	noted among stud	ents in general & engineering in particul:	ar			
	Unders	tand that IPR prot	ents in general & engineering in particulated in particulated in provides an incentive to inventors in the control of the cont	for furth	er resear	ch work	
CO4 CO5	Unders and inv	tand that IPR protestment in R & D	ents in general & engineering in particula ection provides an incentive to inventors , which leads to creation of new and bett	for furth	er resear	ch work	(
CO5	Unders and inv	tand that IPR protestment in R & D bout, economic g	ents in general & engineering in particula ection provides an incentive to inventors , which leads to creation of new and bett rowth and social benefits	for furth	er resear	ch work 1 turn	
CO5	Unders and inv brings a	tand that IPR protestment in R & D bout, economic g INTRODUCT	ents in general & engineering in particula ection provides an incentive to inventors , which leads to creation of new and bett rowth and social benefits	for furth er produc	ts, and in	ı turn	
CO5 U Meani	Unders and inv brings a	tand that IPR protestment in R & D bout, economic g INTRODUCT	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Char	for furth er produc	ts, and in	turn	
CO5 U Meani	Unders and inv brings a	tand that IPR protestment in R & D bout, economic g INTRODUCT	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Char	for furth er produc	ts, and in	turn	
CO5 U Meani eseare	Unders and inv brings a	tand that IPR protestment in R & D bout, economic g INTRODUCT	ents in general & engineering in particular ection provides an incentive to inventors , which leads to creation of new and better rowth and social benefits FION purces of research problem-Criteria Chareting a research problem-Scope and objecting a research problem-	for furth er produc	ts, and in	od proble	m.
CO5 U Meani esearc	Unders and inv brings a UNIT I ng of res ch proble	tand that IPR protestment in R & D bout, economic g INTRODUCT earch problem- Sem- Errors in select	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Charting a research problem-Scope and objects of REARCH	for furth er produc acteristic ectives of	ets, and in	turn	m.
CO5 U Meani esearc U Appre	Unders and inv brings a VNIT I ang of resect proble	tand that IPR protestment in R & D bout, economic g INTRODUCT carch problem- Som- Errors in selection ANALYSIS Of investigation of se	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Characting a research problem-Scope and object of the problem of	for furth er product acteristic ectives of ection- an	ets, and in	od probles	m.
CO5 UMeanieseare UMAppre	Unders and inv brings a INIT I ang of resect problem.	tand that IPR protestment in R & D bout, economic g INTRODUCT carch problem- Som- Errors in selection ANALYSIS Of investigation of se	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Charting a research problem-Scope and objects of REARCH	for furth er product acteristic ectives of ection- an	ets, and in	od probles	n.
CO5 U Meani esearc U Appre terpr lagiar	Unders and inv brings a INIT I ang of resect problem.	tand that IPR protestment in R & D bout, economic g INTRODUCT earch problem- Se m- Errors in select ANALYSIS Of investigation of s Necessary instract	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Characting a research problem-Scope and objecting a research problem-Scope and object of the problem of the search problem of the sea	for furth er produce facteristic ectives of ection- and dies app	ets, and in	od probler	m.
CO5 UMeani esearc UMAppre iterpr lagiar UN	Unders and inv brings a UNIT I ng of res ch proble NIT II paches of ctatron- rism,- Re	tand that IPR protestment in R & D bout, economic g INTRODUCT earch problem- Sem- Errors in select ANALYSIS Of investigation of s Necessary instractions and the search ethics. RESEACRH I	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Characting a research problem- Scope and objecting a research problem- data collections for research problem- data collections for research problem- data collections for research problem- data collections. Effective literature sturbers of the collections of the collections of the collections of the collections.	for furth er produce facteristic ectives of ection- and dies app	es of a go research alysis- proaches	od probles	m.
CO5 UMeani esearc Un Appre Herpr lagian UM	Unders and inv brings a UNIT I mg of res ch proble NIT II maches of etatronism, - Revitt III ve techni	tand that IPR protestment in R & D bout, economic g INTRODUCT earch problem- Se m- Errors in select ANALYSIS Of investigation of s Necessary instresearch ethics. RESEACRH I cal writing - how	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Characting a research problem-Scope and objecting a research problem- stope and objecting for research problem- data collections of the stope	for furth er produce facteristic ectives of ection- and dies app	es of a go research alysis- proaches	od probles	m.
CO5 UMeaning escare Uniterpression (lagiang UNiterpression) (ffective escare)	Unders and inv brings a UNIT I mg of res ch proble NIT II maches of etatronism, - Revitt III ve techni	tand that IPR protestment in R & D bout, economic g INTRODUCT earch problem- Se m- Errors in select ANALYSIS O investigation of s Necessary instract search ethics. RESEACRH I cal writing - how al- a presentation	ents in general & engineering in particular ection provides an incentive to inventors, which leads to creation of new and better owth and social benefits FION Durces of research problem-Criteria Characting a research problem- Scope and objecting a research problem- data collections for research problem- data collections for research problem- data collections for research problem- data collections. Effective literature sturbers of the collections of the collections of the collections of the collections.	for furth er produce facteristic ectives of ection- and dies app	es of a go research alysis- proaches	od probles	m.



M.KUMARASAMY COLLEGE OF ENGINEERING NAAC Accorded Author comput Involved to Accorded to Ac



Development: technological research- innovation- patenting- And development. International Scenario: International cooperation on Intellectual Property- Procedure for grants of patents-

Pater	nting under I	tional cooperation on Intellectual Property- Procedure for grants of patent PCT.	
	UNIT V	PATENTS RIGHTS	6
Pater datal	nt Rights: Sc pases- Geogr	cope of Patent Rights- Licensing and transfer of technology -Patent inform raphical Indications.	ation and
Text	Book (s)		
1		elville and Wayne Goddard, "Research methodology: an introduction for song students".	ience &
2	Halbert,	Resisting Intellectual Property", Taylor & Francis Ltd ,2007	
Refe	rence (s)		all books
1	Ranjit Ku	mar, 2 nd Edition, "Research Methodology: A Step by Step Guide for beg	inners"
2	T. Ramap	pa, "Intellectual Property Rights Under WTO", S. Chand, 2008	
3		Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New gical Age", 2016.	
4	Wayne G	oddard and Stuart Melville, "Research Methodology: An Introduction"	





M.KUMARASAMY COLLEGE OF ENGINEERING

(An Autonomous Institution and Affiliated to Anna University Chennai)

KARUR - 639 113



PG

CURRICULUM AND SYLLABUS
M.E. POWER SYSTEMS ENGINEERING

REGULATION 2019





Régulation

CURRICULUM AND SYLLABUS

REGULATION 2019

Programme: M.E. - POWER SYSTEMS ENGINEERING

Vision of the Department:

To produce smart and dynamic professionals with profound theoretical and practical knowledge comparable with the best in the field.

Mission of the Department:

M1: Produce hi-tech professionals in the field of Electrical and Electronics Engineering by inculcating core knowledge.

M2: Produce highly competent professionals with thrust on research.

M3: Provide personalized training to the students for enriching their skills.

Programme Educational Objectives (PEO's)

PEO1: Graduates of theprogramme will have excellent career in power sectors and its related disciplines.

PEO2: Graduates of the programme will have technical competency in solving challenging societal tasks in ethical and economical manner.

PEO3: Graduates of the programme will reveal lifelong learning and team work in their chosen profession.

Programme Outcomes (POs)

· PO1: Students have an ability to independently carry out research /investigation and development work to solve practical problems

PO2: Students have an ability to write and present a substantial technical report/document

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO4:Students have an ability to analyse problems related to Power Systems and be able to synthesise the domain knowledge and incorporate the principles in the state of art systems for further enrichment

PO5:Students should be able to critically investigate the prevailing complex Power System scenarios and arrive at possible solutions independently, by applying the acquired theoretical and practical knowledge

PO6:Students should be able to identify optimal solutions for improvising power transfer capability, enhancing power quality and reliability.





Structure of Curriculum

Sl.No.	Category	Credits
1	Basic Science courses (B)	04
2	Professional core courses (C)	23
3	Professional Elective courses relevant to chosen specialization/branch (E)	18
4	Project work, Minor project, seminar and internship in industry or elsewhere (P)	22
5	Mandatory Courses (M)	02
	Total Credits	69*

^{*}Minor variation is allowed as per need of the respective disciplines.

1. Basic Science courses (B)

Course Code	Course Name	Н	ours / We	ek	
Course Code	Course Name	L	T	P	
19PPSB101T	Applied Mathematics for Electrical Engineers	3	1	0	4
			Tota	Credits	04

L-Lecture T-Tutorial P-Practical

2. Professional core courses (C)

Course Code	Course Name		ours / Wo	eek	-
Course Code	Course Name	L	T	P	C
19PPSC101T	Advanced Power System Analysis	3	1	0	4
19PPSC102T	Advanced Power System Operation and Control	3	0	0	3
19PPSC103T	System Theory	3	. 0	0	3
19PPSC104L	Power System Simulation Laboratory	0	0	3	2
19PPSC105T	Power System Dynamics	3	0	0	3
19PPSC106T	Power Electronics Application to Power Systems	3	0	0	3
19PPSC107T	Restructured Power Systems	3	0	0	3
19PPSC108L	Power Electronics Application to Power Systems Laboratory	0	0	3	2
		L C Yes	Total	Credits	23

L-Lecture T-Tutorial P-Practical

MAR 2019 - 5 MAR 2019 Regulation





· 3. Professional Elective courses relevant to chosen specialization/branch (E) (Any 6 Subjects)

Course Code	Course Name		Hours / V	Veek	- c
	Course Name		T	P	
1000	SEMESTER I – Elective I				
19PPSE001T	Modeling and Analysis of Electrical Machines	3	0	0	3
19PPSE002T	Power Converters for Renewable Energy Sources	3	0	0	3
19PPSE003T	Power System Planning and Reliability	3	0	0	3
	SEMESTER II - Elective II & II	I			
19PPSE004T	Power System Economics	3	0	0	3
19PPSE005T	Control System Design	3	0	0	3
19PPSE006T	EHVAC Transmission	3	0	0	3
19PPSE007T	Electrical Transients in Power Systems	3	0	0	3
19PPSE008T	Energy Management and Auditing	3	0	0	3
19PPSE009T	Power Distribution Systems	3	0	0	3
Section 1	SEMESTER III - Elective IV, V &	VI			1
19PPSE010T	Advanced Power System Dynamics	3	0	0	3
19PPSE011T	Smart Grid	3	0	0	3
19PPSE012T	High Voltage Direct Current Transmission	3	0	0	3
19PPSE013T	Industrial Power System Analysis and Design	3	0	0	3
19PPSE014T	Optimal Control and Filtering	3	0	0	3
19PPSE015T	Solar and Energy Storage Systems	3	0	0	3
19PPSE016T	Optimization Techniques	3	0	0	3
19PPSE017T	Power System Stability	3	0	0	3
19PPSE018T	Wind Energy Conversion Systems	3	0	0	3
19PPSE019T	Power System Protection	3	0	0	3
			THE RESERVE AND THE PERSON NAMED IN	al Credits	18

L-Lecture T-Tutorial P-Practical







4. Project work, minor project, seminar and internship in industry or elsewhere (P)

		Hours / Week			
Course Code	Course Name	L	Т	P	100
19PPSP101L	Mini Project	0	0	4	2
19PPSP102L	Project Work (Phase -I)	0	0	12	6
19PPSP103L	Project work (Phase –II)	0	0	28	14
AND			Total C	redits	22

L-Lecture T-Tutorial P-Practical

5. Mandatory Courses (M)

0 0 1		Hours / Week				
Course Code	Course Name	L	Т	P	•	
19PATM101	Research Methodology and IPR	2	0	0	2	
19PATM102	English for Research Paper Writing	1	0	0	0	
19PATM103	Pedagogy Studies	1	0	0	0	
	1		Total	Credits	2	

L-Lecture T-Tutorial P-Practical







I to IV Semester Curriculum

		Semester I	14.00			
Category	Course Code	Course Name	Hou	ırs / We	eek	C
Category	Course Code	Course Name	L	T	P	C
В	19PPSB101T	Applied Mathematics for Electrical Engineers	3	1	0	4
С	19PPSC101T	Advanced Power System Analysis	3	1	0	4
С	19PPSC102T	Advanced Power System Operation and Control	3	0	0	3
С	19PPSC103T	System Theory	3	0	0	3
Е	19PPSEXXXT	Elective I	3	0	0	3
С	19PPSC104L	Power System Simulation Laboratory	0	0	3	2
M	19PATM101	Research Methodology and IPR	2	0	0	2
M	19PATM102	English for Research Paper Writing	1	0	0	0
			Т	otal Cr	edits	21

		Semester II	4					
Cotogowy	Course Code	Course Name				ırs / We	eek	
Category	Course Code	Course rvaine	L	Т	P	С		
С	19PPSC105T	Power System Dynamics	3	0	0	3		
С	19PPSC106T	Power Electronics Application to Power Systems	3	0	0	3		
С	19PPSC107T	Restructured Power Systems	3	0	0	3		
Е	19PPSEXXXT	Elective II	3	0	0	3		
Е	19PPSEXXXT	Elective III	3	0	0	3		
С	19PPSC108L	Power Electronics Application to Power Systems Laboratory	0	0	3	2,		
P	19PPSP101L	Mini Project	0	0	4	2		
M	19PATM103	Pedagogy Studies	1	0	0	0		
		COLLEGE OF ENGO	T	otal Cr	edits	19		

regulum and Syllabus | 30/8 Regulation

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M,KUMARASAMY COLLEGE OF ENGINEERING

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Approved by AICTE & Affiliated to Anna University
ISO 9001:2015 Certified Institution
Thalavapalayam, Karur, Tamilinadu,



		Semester III				
	0	Common Name	Hou	ırs / W	eek	0
Category	Course Code	Course Name	L	T	P	С
Е	19PPSEXXXT	Elective IV	3	0	0	3
Е	19PPSEXXXT	Elective V	3	0	0	3
Е	19PPSEXXXT	Elective VI	.4 3	0	0	3
P	19PPSP102L	Project Work (Phase –I)	0	0	12	6
			1	otal C	redits	15

		Semester IV					
Cotogowy	0 0 1		Course Name	Ног	ırs / W	eek	0
Category	Course Code	Course Name	L	Т	P	С	
P	19PPSP103L	Project work (Phase –II)	0	0	28	14	
			T	otal C	redits	14	

L-Lecture T-Tutorial P-Practical



TOTAL CREDITS = 69





	Regula	ation 2019	Semester I		rs	30		
Cate	gory	Course Code	Course Name	11 11 11 11 11	Hours / Week			
N	1	19PATM101	Research Methodology and IPR	<u>L</u>	0	P 0	C 2	
W. A.	SULXI	Course (s)	Research Methodology and II R					
Nil							10000	
J., N. K	se Obi	ective (s):						
		of learning this co	ourse is to:					
1	Unde	rstand and analyse	the fundamental of research problem					
2	Unde	rstand the Researc	h Ethics					
3		•	world is controlled by Computer, Informative ruled by ideas, concept, and creativity	mation T	Technolog	gy, but		
4		rstand Intellectual						
5	Unde	rstand Patents Rig	hts					
Cour	se Out	come (s) (COs):		e days				
			ers will be able to:					
CO1	Unde	rstand research pro	oblem formulation					
CO2	Anal	yze research relate	d information					
CO3	Follo	w research ethics						
CO4	natio	n, it is needless to omoted among stu	en IPR would take such important place emphasis the need of information about dents in general & engineering in partic otection provides an incentive to invento	Intellect ular	tual Prope	erty Rig	ht to	
CO5	and i	nvestment in R &	D, which leads to creation of new and be growth and social benefits					
	UNIT I	INTRODU	CTION				6	
	_	•	Sources of research problem-Criteria Clecting a research problem-Scope and ol			_	lem.	
J	II TINU	ANALYSIS	OF REARCH				6	
interp	retatio	_	f solutions for research problem- data co strumentations Effective literature s				alysi	
Plagla	NIT III	RESEACR	H PRPOSAL AND TECHNICAL WRIT	ING			6	
Tela Bill					Droposal	Г	- of	
U Effec			ow to write report-Paper Developing a Roon and assessment by a review committee		гторозаг-	· Forma	1 01	
U Effec resear		posal- a presentati			r roposar-	· Forma	6	

KARUR - 639 113





Development: technological research- innovation- patenting- And development. International Scenario: International cooperation on Intellectual Property- Procedure for grants of patents-Patenting under PCT.

UNIT V PATENTS RIGHTS

_ 0,001		7.57.71	-
	UNIT V	PATENTS RIGHTS	6
	_	cope of Patent Rights- Licensing and transfer of technology -Patent informatiographical Indications.	n and
Text	Book (s)		
1		elville and Wayne Goddard, "Research methodology: an introduction for sciening students".	ice &
2	Halbert,	"Resisting Intellectual Property", Taylor & Francis Ltd ,2007	
Refe	rence (s)		
1	Ranjit K	umar, 2 nd Edition, "Research Methodology: A Step by Step Guide for beginn	ners"
2	T. Rama	ppa, "Intellectual Property Rights Under WTO", S. Chand, 2008	
3		P. Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New ogical Age", 2016.	
4	Wayne (Goddard and Stuart Melville, "Research Methodology: An Introduction"	







CURRICULUM AND SYLLABUS

REGULATION 2019

Programme: M.E. – VLSI Design

Structure of Curriculum

Sl.No.	Category	Credits
1	Basic Science courses (B)	4
2	Professional core courses (C)	12
3	Professional Elective courses relevant to chosen specialization/branch (E)	15
4	Open Electives –Electives from other technical and /or emerging subjects (O)	3
5	Project work, Practical Minor project, seminar and internship in industry or elsewhere (P)	32
6	Mandatory Courses (M)	2
il fame! cline	Total Credits	68

^{*}Minor variation is allowed as per need of the respective disciplines.

1. Basic Science courses (B)

Course Code 19PVLB101T Applied	Course Name	H	C		
	Course Name	L	T	P	C
19PVLB101T	Applied Mathematics for Electronics Engineers	3	1	0	4
			Total	Credits	4

T-Lecture, T-Lecture+ Tutorial, L-Practical, Project, J- Lecture+ Project

2. Professional core courses (C)

Commo Codo	Course Name	He	ours / We	C	
Course Code	Course Name	L	Т	P	C
19PVLC101T	Analog and Digital CMOS VLSI Design	3	0	0	3
19PVLC102T	Advanced Digital System Design	3	0	0	3
19PVLC103T	Low Power VLSI Design	3	0	0	3
19PVLC104T	VLSI Design Verification and Testing	3	0	0	3
			Total C	Credits	12*

T-Lecture, T-Lecture+ Tutorial, L-Practical, Project, J- Lecture+ Project

Approved E Board of Electronics &





3. Professional Elective courses relevant to chosen specialization/branch (E) (Any 5 Subjects)

		Н	ours / We	eek	0
Course Code	Course Name	L	T	P	С
	Professional Elective for I-Semest	ter -			
19PVLE001T	Solid State Devices	3	0	0	3
19PVLE002T	VLSI Signal Processing	3	0	0	3
19PVLE003T	Analog Integrated Circuit Design	3	0	0	3
19PVLE004T	CMOS Circuit Design -Layout and Simulation	3	0	0	3
19PVLE005T	CAD for VLSI	3	0	0	3
19PVLE006T	ASIC Design	3	0	0	3
19PVLE007T	RTL Simulation and Synthesis with PLDs	3	0	0	3
19PVLE008T CAD of Digital System		3	0	0	3
	Professional Elective for II-Semes	ter	*		,
19PVLE009T	Testing of VLSI Circuits	3	0	0	3
19PVLE010T	SoC Design	3	0	0	3
19PVLE011T	Memory Technologies	3	0	0	3
19PVLE012T	Introduction to MEMS System Design	3	0	0	3
19PVLE013T	Mixed Signal IC Design	3	0	0	3
19PVLE014T	Network Security and Cryptography	3	0	0	3
19PVLE015T	Communication Buses and Interfaces	3	0	0	3
	Professional Elective for III-Seme	ster			
19PVLE016T	Communication Network-I	3	0	0	3
19PVLE017T	Selected Topics in Mathematics	3	0	0	3
19PVLE018T	Nano Materials and Nanotechnology	3	0	0	3
19PVLE019T/ 19 PCME014T	Wireless Embedded Systems	3	0	0	3
			Total C	redits	15

T-Lecture,

T-Lecture+ Tutorial,

L-Practical, Project,

J- Lecture+ Project

4. Open subjects - Electives from other technical and /or emerging subjects (O) (Any 1 Subjects)

6 6.		H	C		
Course Code	Course Name	L	Т	P	
19PVLO001T	Business Analytics	3	0	0	3
19PVLO002T	Industrial Safety	3	0	0	3
19PVLO003T	Composite Materials	3	0	0	3
19PVLO004T	Waste to Energy	3	0	0	3
19PVLO005T	Operations Research	3	0	0	3
19PVLO006T	Cost Management of Engineering Projects	3	0	0	3
	2 3 MAR 2019		Total (Credits	15*

T-Lecture,

T-Lecture+ Tutorial

L-Practical, Project,

J Lecture+ Project

Curriculum and Syllabus | 2019 Regulation





5. Mandatory Courses (M)

	Course Name		Hours / Week				
Course Code	Course Name	L	T	P			
19PATM101	Research Methodology and IPR	2	0	0	2		
19PATM102	English for Research Paper Writing	1	0	0	0		
19PATM103	Pedagogy Studies	1	0	0	0		
A Mar Mark			Total C	Credits	2		

T-Lecture T-Lecture+ Tutorial L-Practical, Project, J- Lecture+ project







Category	Course Code	Course Name	Hou	rs / W	eek	C	
Category	Course Code	Course Name	L	Т	P		
В	19PVLB101T	Applied Mathematics for Electronics Engineers	3	1	0	4	
С	19PVLC101T	Analog and Digital CMOS VLSI Design	3	0	0	3	
С	19PVLC102T	Advanced Digital System design	3	0	0	3	
Е		Professional Elective I	3	0	0	3	
Е		Professional Elective II	3	0	0	3	
Ý	p 19PVLP101L VLS1 Design Lab I M 19PATM101 Research Methodology and IPR		19PVLP101L	0	-0	4	2
M			2	0	0	2	
M	19PATM102	English for Research Paper Writing	1	0	0	C	
			To	tal Cr	edits	20	

			Hou	rs / W	eek	
Category	Course Code	Course Name	L	Т	P	C
С	19PVLC103T	Low power VLSI Design	3	0	0	3
С	19PVLC104T	VLSI Design Verification and Testing	3	0	0	3
E		Professional Elective III	3	0	0	3
Е		Professional Elective IV	3	0	0	3
P	19PVLP102L	VLSI Design Lab II	0	0	4	2
P	19PVLP103L	Minor Project – I	0	0	4	2
M	19PATM103	Pedagogy Studies	1	0	0	C
			To	tal Cr	edits	1







Category	Course Code	Course Name	Hou	rs / W	eek	C
Category	Course Code	The Course Name	L	T	P	C
E		Professional Elective V	3	0	0	3
0		Open Elective- I	3	0	0	3
P	19PVLP104L	Project work Phase –I	0	0	20	10
			Tot	tal Cr	edits	16

		SEMESTER IV				
Category	Course Code	Course Name	Hou	rs / W	eek	0
	Course Code	Course Name	L	T	P	·
P	19PVLP105L	Project work Phase –II	0	0	32	16
			To	otal C	redits	16







Category / Semester	1	п	m	IV	Category wise Total Credits
Basic Science courses (B)	4		1-2	-	4
Professional Core (C)	6	6	-	:#\	12
Professional Elective (E)	6	6	3		15
Open Elective (O)		-	3	-	3
Lab(L)	2	2		-	4
Project Work(P)	2	2	10	16	28
Mandatory Course(M)	2	2	-	<u>\$</u> 3	2
Semester Wise Total Credits	20	16	16	16	68







	BALLY CONTRACTOR	ation 2019	Semester I	THE REAL PROPERTY.	otal Hou	1. PMIN 2017 TO 1. PM	30
Cat	tegory	Course Code	Course Name	CALL TO THE PARTY OF THE PARTY	urs / We		C
	M	19PATM101	Research Methodology and IPR	L 2	T 0	P 0	2
Prei	requisite	e Course (s)					
Nil							
Cou	rse Obje	ective (s):				17.00	30.
Libraria.	44.5	of learning this co	urse is to:			•	(Vps)
1	Under	rstand and analyse	the fundamental of research problem			N. 100 A 200 A	
2	Under	stand the Research	1 Ethics			277	
3	Under	stand that today's row world will be	world is controlled by Computer, Information in the controlled by ideas, concept, and creativity	nation Te	chnolog	y, but	
4		stand Intellectual 1					
5		stand Patents Righ					
Cour	se Outc	ome (s) (COs):				Sastaria	
		this course, learne	rs will be able to:				
CO1	Under	stand research prol	olem formulation	Carsilla 2012			332/16
CO2		ze research related					
CO3		research ethics			·		_
	Under	standing that when	IPR would take such important place in	n growth	of indivi	duals &	
CO4	nation,	it is needless to en	nphasis the need of information about I.	ntellectua	al Proper	ty Right	t to
			ents in general & engineering in particul				
CO5	and inv	estment in R & D	ection provides an incentive to inventor, which leads to creation of new and bet rowth and social benefits	s for furt ter produ	her resea ects, and	rch wor in turn	·k
U	INIT I	INTRODUCT	The second secon				6
Meani researc	ng of reach proble	search problem- So em- Errors in selec	ources of research problem-Criteria Cha ting a research problem- Scope and obj	racteristi ectives o	cs of a go	ood h proble	m.
	NIT II	ANALYSIS O					6
Appro	aches o	finvestigation of s	olutions for research problem- data coll	ection- a	nalysis-		
nterpr	etation-				proaches	s- anal	ysis
UN	HT III	RESEACRH I	PRPOSAL AND TECHNICAL WRITIN	G	And Andrew		5
Effecti esearc	ve techn	ical writing - how	to write report-Paper Developing a Res and assessment by a review committee.	earch Pro	pposal- F	THE PROPERTY.	
	IT IV			WEST AND ST	Carry Tall		
UN	T T T A	INTERIMENT	JAL PROPERTY			6	

Approved By

Board of Computer Science On







Development: technological research- innovation- patenting- And development. International Scenario: International cooperation on Intellectual Property- Procedure for grants of patents-Patenting under PCT.

	nting under P	CT.
UNITV		PATENTS RIGHTS 6
	_	ope of Patent Rights- Licensing and transfer of technology -Patent information and aphical Indications.
Text	Book (s)	
1	Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science & engineering students".	
2	Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007	
Refe	rence (s)	
1	Ranjit Kumar, 2 nd Edition, "Research Methodology: A Step by Step Guide for beginners"	
2	T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008	
3	Robert P. Merges, Peter S. Menell, Mark A. Lemley, "Intellectual Property in New Technological Age", 2016.	
4	Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"	

