COURSE STRUCTURE AND DETAILED SYLLABUSS FOR M.TECH IN VLSI &ES

WITH EFFECTIVEFROM THE ACADEMIC YEAR

2021-2022

Principal
Sasi Institute of Technology & Engineering (A)
Tadepalligudem, W.G.Dt., A.P.

M.Tech. COURSE STRUCTURE
VLSI &ES

I SEMESTER

S.No.	Category	Course Code	Name of the Subject	L	T	P	C
1	CE	21ECVE101	Principles of Embedded Systems	3	0	0	3
2	CE	21ECVE102	CMOS Analog IC Design	3	0	0	3
Elective-I							
3	PE	21ECVE103A	Physical Design Automation	3	0	0	3
		21ECVE103B	Digital System Synthesis and Verification	3	0	0	
		21ECVE103C	Advanced Digital Design	3	0	0	
Elective-II							
4	PE	21ECVE104A	Micro controllers for Embedded System Design	3	0	0	3
		21ECVE104B	Embedded and Real Time Systems	3	0	0	
		21ECVE104C	Network Security and Cryptography	3	0	0	
5	MC	21ECVE105	Research methodology and IPR	2	0	0	2
6	CE	21ECVE151	Advanced VLSI Design Lab I	0	0	4	2
7	CE	21ECVE152	Embedded System Lab	0	0	4	2
8	AUD	21ECVE106	Audit course 1	2	0	0	-
	Total Credits						**18**

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II SEMESTER

S.No.	Category	Course Code	Name of the Subject	L	T	P	C
1	CE	21ECVE201	Internet Of Things	3	0	0	3
2	CE	21ECVE202	VLSI Testing and Testability	3	0	0	3
Elective-I VLSI design course							
3	PE	21ECVE203A	Functional Verification using Hardware VerificationLanguages	3	0	0	3
		21ECVE203B	CMOS Mixed Signal Circuit Design	3	0	0	
		21ECVE203C	Low Power VLSI Design	3	0	0	
Elective-II Embedded system course							
4	PE	21ECVE204A	Embedded System Design	3	0	0	3
		21ECVE204B	Sensors And Actuators	3	0	0	
		21ECVE204C	Micro Electro Mechanical System (MEMS) Design	3	0	0	0
5	CE	21ECVE251	Advanced VLSI Design Lab II	0	0	3	2
6	CE	21ECVE252	IOT Lab	0	0	3	2
7	MP	21ECVE253	Mini Project	0	0	0	2
8	AUD 2	21ECVE206	Audit course	2	0	0	0
Total Credits							**18**

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III SEMESTER

S.No	Category	Course Code	Name of the Subject	L	T	P	C
1	PE	21ECVE301A	VLSI Technology	3	0	-	3
		21ECVE301B	CPLD and FPGA Architectures and Applications	3	0	-	-
		21ECVE301C	Programming Languages for Embedded Systems	3	0	-	-
2	OE	21ECVE302A	Optimization Techniques	3	0	-	3
		21ECVE302B	Modeling and Simulation Techniques	3	0	-	
		21ECVE302C	Artificial Intelligence	3	0	-	
3	Dissertation	21ECVE351	Dissertation Phase -I /Industrial Project (to be continued and evaluated next semester)	-	0	20	10
		Total Credits					**16**

IV SEMESTER

S.No	Category	Course Code	Name of the Subject	L	T	P	C
1	Dissertation Project/ Dissertation Phase	21ECVE451	Project/ Dissertation Phase-II	0	0	0	16
Total Credits							**16**

Total Credits=18+18+16+16=68

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SME 21
MTECH VLSI & ES

RESEARCH METHODOLOGY & IPR

Effective from Academic Year 2021-2022

SEMESTER – I

Subject Code	21ECVE105	**IA Marks**	40
Number of Lecture Hours/Week	02	**Exam Marks**	60
Total Number of Lecture Hours	47	**Exam Hours**	03

Credits – 02

Course objectives:
The course objective is to make students to learn the basic concepts of research methodology and intellectual property rights

Unit -1	**Teaching Hours**
Meaning of research problem, sources of research problem ,criteria characteristics of a good research Scope and objectives of Research problem. Approaches of Investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations.	**10 Hours**
Unit -2	
Effective literature studies approaches, analysis Plagiarism, Research ethics. Effective technical writing. how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee.	**8 Hours**
Unit -3	
Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grantsof patents, Patenting under PCT..	**10 Hours**
Unit -4	
Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patentinformation and databases. Geographical Indications.	**10 Hours**
Unit -5	
New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.	**9 Hours**

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Course outcomes:

At the end of this course, students will be able to

1. Understand research problem formulation.
2. Analyze research related information
3. Follow research ethics
4. Understand that today"s world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.

Question paper pattern:

1. It will have 5 questions.
2. Each full question carries 12 marks.
3. Each full question will have sub questions of internal choice type covering all topics under the unit.
4. The student will have to answer all 5 full questions with the opted choice in each question.

Text Books:

1. Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science& engineering students"
2. Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"
3. Ranjit Kumar, 2nd Edition , "Research Methodology: A Step by Step Guide for beginners" Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007

Reference Books:

1. Mayall, Industrial Design", McGraw Hill, 1992.
2. Niebel, "Product Design", McGraw Hill, 1974.
3. Asimov, "Introduction to Design", Prentice Hall, 1962.
4. Robert P. Merges, Peter S. Menell, Mark A. Lemley, " Intellectual Property in New
5. Technological Age", 2016.
6. T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008

CO-PO Mapping

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	2	1	0	0	0	0	0	3
CO2	3	2	1	1	2	1	0	0	0	0	0	3
CO3	3	2	1	1	2	1	0	0	0	0	0	3
CO4	3	2	1	1	3	1	0	0	0	0	0	3
CO5	3	2	1	1	2	1	0	0	0	0	0	3

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ADVANCED VLSI DESIGN LAB I

Effective from Academic Year 2021-2022

Department Of Mechanical Engineering

COURSE STRUCTURE AND DETAILED SYLLABUS for M.Tech. CAD/CAM Regular in Effective from the Academic Year 2021-22

Principal
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I M. Tech. (CAD/CAM) I Semester Proposed Course structure for the Academic Year 2021-22

I Semester						
S.No	Course Code	Course Name	L	T	P	Credits
1	21MECC101	Geometric Modeling	3	0	0	3
2	21MECC102	Computer Aided Manufacturing	3	0	0	3
3		Program Elective – 1	3	0	0	3
	21MECC103A	Computational Methods in Engineering				
	21MECC103B	Materials Technology				
	21MECC103C	Mechanical Vibrations				
4		Program Elective – 2	3	0	0	3
	21MECC104A	Mechatronics				
	21MECC104B	Industrial Robotics				
	21MECC104C	Simulation of Manufacturing Systems				
5	21MECC155	Advanced CAD Lab	0	0	4	2
6	21MECC156	Advanced manufacturing Lab	0	0	4	2
7	21MECC157	Research Methodology and IPR	2	0	0	2
8	21MECC158	Writing Skills for Scientific Communication	2	0	0	0
Total						18

I M. Tech. (CAD/CAM) II Semester Proposed Course structure for the Academic Year 2021-22

II Semester						
S.No	Course Code	Course Name	L	T	P	Credits
1	21MECC201	Theory of Elasticity and Plasticity	3	0	0	3
2	21MECC202	Advanced Manufacturing Processes	3	0	0	3
3		Program Elective – 3	3	0	0	3
	21MECC203A	Advanced Finite Element Methods				
	21MECC203B	Fracture mechanics				
	21MECC203C	Product Design and Development				
4		Program Elective – 4	3	0	0	3
	21MECC204A	Materials Characterization Techniques				
	21MECC204B	Optimization & Reliability				
	21MECC204C	Additive Manufacturing				
5	21MECC255	Material Characterization Lab	0	0	4	2
6	21MECC256	Simulation of Manufacturing Systems Lab	0	0	4	2
7	21MECC257	Mini Project With Seminar	2	0	0	2
8	21MECC258	Personality development through life Enlightenment skills	2	0	0	0
Total						18

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II M. Tech. (CAD/CAM) III Semester Proposed Course structure for the Academic Year 2021-2022

III SEMESTER					
S.No	Course Code	Course Name	T	P	Credits
1		Program Elective - 5	3	0	3
	21MECC301A	Non Destructive Evaluation			
	21MECC301B	Quality Engineering			
	21MECC301C	Green Manufacturing			
		MOOCS/ NPTEL *			
2		Open Elective	3	0	3
	21MECC302D	Nano Technology			
	21MECC302D	Optimization Techniques			
	21MECC302D	Product Design and Manufacturing			
3		Project /Dissertation Phase-I	0	20	10
Total					16

III M. Tech. (CAD/CAM) IV Semester Proposed Course structure for the Academic Year 2021-2022

IV SEMESTER						
S.No	Course Code	Course Name	L	T	P	Credits
1		Project /Dissertation Phase-II	0	0	32	16
Total						16

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Ranked as "A" Grade by Govt. of A.P.
Department of Mechanical Engineering

RESEARCH METHODOLOGY AND IPR

Effective from the Academic Year 2021-22
I M.Tech. I Semester CAD/CAM

Subject Code		IA Marks	
Number of Lecture Hours/Week		Exam Marks	
Total Number of Lecture Hours		Exam Hours	

Credits - 03

Course objectives

1. Understand research problem formulation
2. Analyze research related information
3. Follow research ethics
4. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular
6. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

Unit -1	**Teaching Hours**
Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations	10 Hours
Unit -2	
Effective literature studies approaches, analysis Plagiarism, Research ethics, Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee	9 Hours
Unit – 3	
Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.	12 Hours
Unit – 4	
Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.	10 Hours
Unit – 5	

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New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.	9 Hours

Course outcomes

At the end of this course, students will be able to

CO1: Understand research problem formulation.

CO2: Analyze research related information

CO3: Follow research ethics

CO4: Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.

CO5: Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.

CO6: Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

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6. Niebel, —Product Design‖, McGraw Hill, 1974.
7. Asimov, —Introduction to Design‖, Prentice Hall, 1962.
8. Robert P. Merges, Peter S. Menell, Mark A. Lemley, — Intellectual Property in New Technological Age, 2016.
9. T. Ramappa, —Intellectual Property Rights Under WTO, S. Chand, 2008

Reference Books

1. Understand research problem formulation.
2. Analyze research related information
3. Follow research ethics
4. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
5. Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
6. Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.

WEB REFERENCES

1. https://iare.ac.in/sites/default/files/M.Tech-RM%20%26%20IPR%20%28ECE%29%20PPTS.pdf
2. http://svpcet.org/research-methodology-and-intellectual-property-rights-18mc0101/
3. http://www.gvpce.ac.in/syllabi/MTech19-20/infra/19HM2101 RESEARCH%20METHODOLOGY%20&%20IPR.pdf
4. https://www.cusb.ac.in/images/cusb-files/2020/el/cbs/MCCOM2003C04%20(Business%20Research%20Methods)Research_Methodology_C_R_Kothari.pdf

DEPARTMENT OF

COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE AND SYLLABUS

For

M. Tech CSE

With effect from the

Academic Year 2021-22

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Department of Computer Science & Engineering

M.Tech I Semester

S.No	Course Code	Courses	L	T	P	C
1	21CSCS101	**Program Core-1** Mathematical Foundations of Computer Science	3	0	0	3
2	21CSCS102	**Program Core-2** Advanced Data Structures & Algorithms	3	0	0	3
3	21CSCS103A 21CSCS103B 21CSCS103C	**Program Elective-1** 1. Big Data Analytics 2. Digital Image Processing 3. Advanced Operating Systems	3	0	0	3
4	21CSCS104A 21CSCS104B 21CSCS104C	**Program Elective-2** 1. Advanced Computer Networks 2. Internet of Things 3. Object Oriented Software Engineering	3	0	0	3
5	21CSCS105	**Research Methodology and IPR**	2		0	2
6	21CSCS106	**Laboratory-1** Advanced Data Structures & Algorithms Lab	0	0	4	2
7	21CSCS107	**Laboartory-2** Advanced Computing Lab	0	0	4	2
8	21CSCS108	**Audit Course-1***	2	0	0	0
		Total Credits				18

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M.Tech III Semester

S.No	Course Code	Courses	L	T	P	C
1	21CSCS301A 21CSCS301B 21CSCS301C	**Program Elective-5** 1. Deep Learning 2. Social Network Analysis 3. MOOCs-1 (NPTEL/SWAYAM) 12 Week Program related to the programme which is not listed in the course structure	3	0	0	3
2	21XXXX302N 21XXXX302N	**Open Elective** 1. MOOCs-2 (NPTEL/SWAYAM)-Any12 Week Course on Engineering/ Management/ Mathematics offered by other than parent department 2. Course offered by other departments in the college	3	0	0	3
3	21CSCS303	**Dissertation-I/ Industrial Project #**	0	0	20	10
		Total Credits				16

#Students going for Industrial Project/Thesis will complete these courses throughMOOCs

M.Tech IV Semester

S.No	Course Code	Courses	L	T	P	C
1	21CSCS401	**Dissertation-II**	0	0	32	16
		Total Credits				16

Open Electives offered by the Department of CSE

1. Python Programming
2. Principles of Cyber Security
3. Internet of Things
4. Machine Learning
5. Digital forensics
6. Next Generation Databases

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I Year - I Semester		L	T	P	C
		2	0	0	2
RESEARCH METHODOLOGY AND IPR					

UNIT 1:

Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations

UNIT 2:

Effective literature studies approaches, analysis Plagiarism, Research ethics, Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee

UNIT 3:

Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting andDevelopment: technological research, innovation, patenting, development. International Scenario:International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT. **UNIT 4:**

Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

UNIT 5:

New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs.

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(7) Asimov, "Introduction to Design", Prentice Hall, 1962.

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