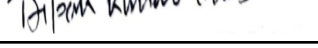
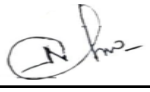
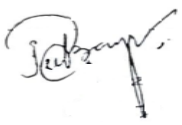
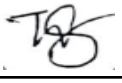
Department of ELECTRONICS and communication engineering

6th Departmental council/ board of studies meeting FOR AY 2020-21

7th APRIL, 2020

Members present:

Sl No	Name	Position in BoS	Signature
1	Dr. Dipak Kumar Ghosh, Associate Prof & HOD	Chairperson	
2	Prof. (Dr.)P. K. Biswas, Professor, E & EC, IIT Kharagpur, Kolkata	External Member	
3	Dr. Ayan Paul, Assistant General Manager, BSNL Kolkata	External Member	
4	Mrs. Rupanwita Das Mahapatra, Assistant Professor	Member	
5	Mr. Nisarga Chand, Assistant Professor	Member	
6	Mr. Jeet Banerjee, Assistant Professor	Member	
7	Mr. Tulip Kumar Saha, Assistant Professor	Member	

8	**Dr. Sulagna Chatterjee, Assistant Professor**	**Member**	S. Chatterjee
9	**Mrs. Sanchita Roy Mallick, Assistant Professor**	**Member**	

Department of ELECTRONICS and communication engineering
Adamas University

Minutes of 6th Board of Studies (BOS)/Departmental Council (DC)Meeting

07/04/2020

Dr. Dipak Kumar Ghosh, Head, Dept. of Electronics and Communication Engineering (ECE), welcomed the external members and discussed the following agenda in presence of all the Board of Studies members.

Item. 1: Implementation of Outcome Based Education (OBE) in UG Program B. Tech (Electronics and Communication Engineering)

Proposition: 100% change in the curriculum in terms of Teaching Learning Pedagogy and learning Outcome, with more focus on Skill Enhancement, Hands on Training, Employability, along with establishment of Core knowledge.

Resolution: The board unanimously agreed and welcomed the change.

Item. 2: Introduction and implementation of AICTE recommended Elective Based Curriculum in the Undergraduate Program B. Tech (Electronics and Communication Engineering) to focus on Employability, Entrepreneurship and Skill development.

Proposition: New Course Structure with total 163 credits was proposed maintaining AICTE guidelines where the following categorical credits distribution has implemented for under graduate (B.Tech in Electronics and Communication Engineering) Program.

Resolution: The board accepted and approved the overall Course Structure with the new AICTE recommended curriculum with a few modifications.

Item. 3: Introduction of New Course Code Scheme in UG Program B. Tech (Electronics and Communication Engineering)

Proposition: From 2020-21 Academic Year a new Course Code Scheme is being introduced in the University for all programs.The New Codes are embedded in the Course Structure.

Resolution: The New Course Structure got approved.

Item. 4: Introduction of Community Service Course and extend the duration of Capstone Project in UG Program B. Tech (Electronics and Communication Engineering)

Proposition: Community Service course is introduced towards social awareness and application of engineering skills to solve community issues. To further strengthen the project based learning pedagogy, Capstone project duration is extended in the Academic Year 2020-21.

Resolution: The New Courses got approved and reflected in the course structure.
The details are as follows:

a) Capstone Project-I (GEE14003) included in 1st Semester
b) Capstone Project-II (GEE14004) included in 2nd Semester
c) Capstone Project-III (GEE14005) included in 3rd Semester
d) Capstone Project-IV (GEE14006) included in 4th Semester
e) Capstone Project-V (GEE14007) included in 5th Semester
f) Community Service (SOC14100) included in 3rd Semester

Item. 5: Two New Specializations proposed to be offered in UG Program B. Tech (Electronics and Communication Engineering)

Proposition: After taking suggestions from Faculty members, Experts and keeping in mind the increasing focus of cutting-edge technologies and Interdisciplinary Research in the field of Electronics, Specializations are being addedin the bucket of ECE Vanilla Course from Semester V.In B. Tech with specialization courses student has to complete additional 25 credits in each area to acquire auxiliary knowledge. Each specialization will have 5 Theory, 3 Practical and 1 Viva based courses. The details are as follows,

SpecializationI: IoT and Embedded Systems

Theory Course 1: Introduction to Internet Of things	(ECE11101)
Theory Course 2: Embedded Programming	(ECE11103)
Theory Course 3: System on Chip Architecture	(ECE11104)
Theory Course 4: Python Basics for IoT	(ECE11106)
Theory Course 5: Cloud Computing	(ECE11108)
Practical Course 1: Introduction to Internet Of things Lab	(ECE12102)
Practical Course 2: Embedded Programming Lab	(ECE12105)
Practical Course 3: Basic Python Language Lab	(ECE12107)
Viva Course 1: Specialization Viva Voce	(ECE15109)

Specialization II: Robotics

Theory Course 1: Rapid Prototyping	(ECE11111)
Theory Course 2: Mechatronics Systems and Applications	(ECE11113)
Theory Course 3: Mobile Robots	(ECE11114)
Theory Course 4: Machine Learning	(ECE11116)
Theory Course 5: Aerial Robotics	(ECE11118)
Practical Course 1: Rapid Prototyping Lab	(ECE12112)
Practical Course 2: Mechatronics Systems and Applications Lab	(ECE12115)
Practical Course 3: Machine Learning Lab	(ECE12117)
Viva Course 1: Specialization Viva Voce	(ECE15119)

Resolution: Board approved the proposed syllabus

Item. 6: Introduction and implementation of Post Graduate Specialization Program M. Tech in IoT and Embedded Systems (Duration: 2 Years)

The program aims to enable the learners to choose to gain expertise in some of the fastest growing domains like IoT, Cloud Computing, Telecommunications, and Defense. The objective is to build a strong base and develop the required skill set in students associated with the IOT, Electronic Product Design and Embedded Systems.

Item. 7: Introduction and implementation of Post Graduate Specialization Program M. Tech in VLSI Design (Duration: 2 Years)

The educational objective of M. Tech. course in VLSI Design is to educate students to face cutting edge technology. Under this program, students will work in research careers by applying their background and knowledge towards the advancement of technology and the betterment of society by contributing to educational and social institutions.The program includes core courses like Advances in VLSI Design, VLSI for Digital Signal Processing, Electronic Design Automation Tools, as well as laboratories like ASIC – CAD Laboratory, VLSI for Digital Signal Processing Laboratory and several others.

Resolution: Board approved the proposed Course structures.

Item. 8: Changes in the content of a few Courses in UG Program B. Tech (Electronics and Communication Engineering)

Proposition: According to the recent student and faculty feedback taken by Internal Quality Assurance Cell (IQAC) and External experts' suggestion changes were made in the following courses in terms of content.

a) Applied Science(PHY11201)
b) Engineering Mathematics– III (Transform Calculus & Special functions) (MTH11526)
c) Engineering Mathematics– IV (Probability, Statistics and Numerical Methods) (MTH11527)

Resolution: The board approved the proposed new syllabus with more focus on skill enhancement.

Item. 9: Introduction of Minor and Diploma in Management Program in the Under Graduate Level as Optional to encourage the advanced learners to secure their passion, managerial and leadership skills and also proposed to amend the same for 2019-23 batch students from 3 semester onwards.

Proposition: It was proposed to introduce 20 extra credits in Minor and Diploma courses from second semester to sixth semester in the undergraduate B.Tech in Electronics and

Communication Engineering Program in the diversified areas available in the university in different schools.

Resolution: The board appreciated the initiative and approved the said proposal.
The meeting concluded with a vote of thanks by the Chair, Dr. Dipak Kumar Ghosh.
The minute is issued in concurrence with the Dean, SOET.

Issued By

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Dr. Dipak Kumar Ghosh
Associate Professor and Head
Department of ECE

Date: 07.04.2020

Enclosure: Revised and previous year course structure of B. Tech (Electronics and Communication Engineering), Specialization Programs course structures and M. Tech program course structures are mentioned in Annexure-I**.**

Annexure-I

Revised Course Structure of B. Tech (Electronics and Communication Engineering) for AY 2020-21

SEMESTER I								
S. No	**Type**	**Course Code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Theory	**MTH11501**	Engineering Mathematics-I	3	1	0	4	4
2	Theory	**PHY11201**	Applied Science	3	0	0	3	3
3	Theory	**CSE11001 / GEE11001**	Introduction to Programming / Electrical and Electronics Technology	3	0	0	3	3
4	Theory	**ENG11053**	HSSM –I (English Communication- I)	3	0	0	3	3
5	Theory	**BIT11003**	Life Sciences	3	0	0	3	3
6	Practical	**PHY12202**	Applied Science Lab	0	0	3	3	2
7	Practical	**CSE12002 / GEE12002**	Programming Lab / Electrical and Electronics Technology Lab	0	0	3	3	2
8	Practical	**CEE12001/ MEE12001**	Engineering Drawing and CAD/Engineering Workshop	0	0	3	3	2
9	Practical	**ENG11043**	Communication and Collaboration Skill -I	0	0	2	2	1
10	Project	**GEE14003**	Capstone Project-I	0	0	2	2	1
11	Theory	**DGS11001**	Design Thinking	2	0	0	2	2
			Total	**17**	**1**	**13**	**31**	**26**

SEMESTER II								
S. No	**Type**	**Course Code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1.	Theory	**MTH11502**	Engineering Mathematics– II	3	1	0	4	4
2.	Theory	**GEE11001 / CSE11001**	Electrical and Electronics Technology/ Introduction to Programming	3	0	0	3	3
3.	Theory	**MEE11002**	Engineering Mechanics	3	1	0	4	4
4.	Theory	**EVS11107**	Environmental Science	3	0	0	3	3
5.	Practical	**GEE12002/ CSE12002**	Electrical and Electronics Technology Lab/ Programming Lab	0	0	3	3	2
6.	Practical	**MEE12001/ CEE12001**	Engineering Workshop/Engineering Drawing and CAD	0	0	3	3	2
7.	Practical	**ENG12044**	Communication and Collaboration Skill -II	0	0	2	2	1
8.	Project	**GEE14004**	Capstone Project-II	0	0	2	2	1
9.	Project	**IDP14001**	Interdisciplinary Project	0	0	5	5	3
			Total	**12**	**2**	**15**	**29**	**23**

Total Credits (First Year): 49

SECOND YEAR

Semester-III								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
1.	Theory	MTH11526	Engineering Mathematics– III (Transform Calculus & Special functions)	3	0	0	3	3
2.	Theory	ECO11505	HSSM –IV (Economics for Engineers)	3	0	0	3	3
3.	Theory	ECE11001	Prof. Core- I (Electronic Devices)	3	0	0	3	3
4.	Theory	ECE11002	Prof. Core- II (Analog Electronic Circuits)	3	0	0	3	3
5.	Theory	ECE11003	Prof. Core- III (Signals and Networks)	3	0	0	3	3
6.	Theory	ECE11004	Choice of Dept. (Electromagnetic Fields)	3	0	0	3	3
7.	Practical	ECE12005	Prof. Core-II Lab (Analog Electronic Circuits Lab)	0	0	3	3	2
8.	Practical	ECE12006	Prof. Core-III Lab (Signals and Networks Lab)	0	0	3	3	2
9.	Project	**GEE14005**	Capstone Project-III	0	0	2	2	1
10.	Internship	**SOC14100**	Community Service[#]	--	--	-	--	1
11.	Theory	**EIC11001**	Venture Ideation	2	0	0	2	2
			Total	**20**	**0**	**08**	**28**	**26**

 # CS Activity will be taken up during the summer break after 2nd semester, and will be evaluated in the 3rd semester.

Semester-IV								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
1.	Theory	MTH11527	Engineering Mathematics– IV (Probability, Statistics and Numerical Methods)	3	0	0	3	3
2.	Theory	ECE11007	Prof. Core- IV (Digital Electronics)	3	0	0	3	3
3.	Theory	ECE11008	Prof. Core- V (Communication Systems-I)	3	0	0	3	3
4.	Theory	ECE11009	Prof. Core- VI (Digital Signal Processing)	3	0	0	3	3
5.	Theory	ECE11010	Prof. Core- VII (Microprocessors and Microcontrollers)	3	0	0	3	3

6.	Theory	**PSG11021**	Human Values and Professional Ethics	2	0	0	2	2
7.	Practical	ECE12011	Prof. Core- IV Lab (Digital Electronics Lab)	0	0	3	3	2
8.	Practical	ECE12012	Prof. Core- VI Lab (Digital Signal Processing Lab)	0	0	3	3	2
9.	Practical	ECE12013	Prof. Core- VII Lab (Microprocessors and microcontrollers Lab)	0	0	3	3	2
10.	Practical	**GEE14006**	Capstone Project -IV	0	0	2	2	1
			Total	**17**	**0**	**11**	**28**	**24**

Total Credits (Second Year): 50

THIRD YEAR

Semester-V								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
1.	Theory	ECE11014	Prof. Core- VIII (Communication Systems-II)	3	1	0	4	4
2.	Theory	ECE11015	Prof. Core- IX (VLSI Systems Design)	3	1	0	4	4
3.	Theory	ECE11024	Prof. Core- X (Embedded Systems Design)	3	0	0	3	3
4.	Theory	ECE11017/ ECE11018/ ECE11019	Prof. Elective- I (Data Communication and Computer Networks / Optical Fiber Communication/ Biomedical Electronics)	3	0	0	3	3
5.	Practical	ECE12020	Prof. Core- VIII Lab (Communication Systems Lab)	0	0	3	3	2
6.	Practical	ECE12021	Prof. Core- IX Lab (VLSI Systems Design Lab)	0	0	3	3	2
7.	Practical	ECE12029	Prof. Core- X Lab (Embedded System Design Lab)	0	0	3	3	2
8.	Project	**GEE14007**	Capstone Project -V	0	0	2	2	1
			Total	**12**	**2**	**11**	**25**	**21**

 # CSR Activity will be taken up during the summer break after 2th semester and will be evaluated in the 3rd semester.

Semester-VI								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
1.	Theory	ECE11023	Prof. Core- XI (Control Systems)	3	0	0	3	3

2.	Theory	ECE11024	Prof. Core- XII (Microwave Engineering)	3	0	0	3	3
3.	Theory	ECE11025/ ECE11026/ ECE11027	Prof. Elective- II (Antenna & Wave Propagation / Power Electronics / Adaptive Signal Processing)	3	0	0	3	3
4.	Theory		Open Elective- I	2	0	0	2	2
5.	Practical	ECE12028	Prof. Core- XI Lab (Control Systems Lab)	0	0	3	3	2
6.	Practical	ECE12029	Prof. Core- XII Lab (Microwave Engineering Lab)	0	0	3	3	2
7.	Practical	ECE12030/ ECE12031/ ECE12032	Prof. Elective- II Lab (Antenna & Wave Propagation Lab/ Power Electronics Lab/ Adaptive Signal Processing Lab)	0	0	3	3	2
8.	Seminar	ECE15033	Technical Seminar	0	0	2	2	1
			Total	**11**	**0**	**11**	**22**	**18**

Total Credits (Third Year): 39

FOURTH YEAR

Semester-VII								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
1.	Theory	**MGT11402**	HSSM –V (Industrial Management)	3	0	0	3	3
2.	Theory	ECE11034/ ECE11035/ ECE11036	Prof. Elective- III (Wireless Communication/ Image & Video Processing / Low Power VLSI Design)	3	0	0	3	3
3.	Theory		Open Elective- II	3	0	0	3	3
4.	Theory		Open Elective- III	3	0	0	3	3
5.	Practical	ECE12037/ ECE12038/ ECE12039	Prof. Elective- III Lab (Wireless Communication Lab/ Image & Video Processing Lab/ Low Power VLSI Design Lab)	0	0	3	3	2
6.	Internship /Training	ECE14040	#Summer Internship	--	--	--	--	2
7.	Project	ECE14041	Minor Project	0	0	6	6	3
			Total	**12**	**0**	**9**	**21**	**19**

 # Summer Internship for 30 days will be taken at the end of 6th semester, and will be evaluated in the 7th semester.

Semester-VIII								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**

1.	Project	ECE14042/ ECE14043/ ECE14044	Industry Work Experience / SIRE* / Major Project	0	0	6	6	4
2.	Viva	ECE15045	Comprehensive Viva Voce	------			------	2
			Total	**0**	**0**	**6**	**6**	**6**

***SIRE: Scientific Investigation & Research Experience**
Total Credits (Fourth Year): 25

Total Credits (Over four years): 49+50+39+25 = 163

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING & TECHNOLOGY
DEPT. OF ECE

B. Tech ECE (Hons.) with Specialization IoT and Embedded System

Semester-V								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
1.	Theory	ECE11101	Specialization Course-I (Introduction to Internet Of things)	3	1	0	4	4
2.	Practical	ECE12102	Specialization Course-I Lab (Introduction to Internet Of things Lab)	0	0	3	3	2
Semester-VI								
3.	Theory	ECE11103	Specialization Course-II (Embedded Programming)	3	1	0	4	4
4.	Theory	ECE11104	Specialization Course-III (System on Chip Architecture)	3	0	0	3	3
5.	Practical	ECE12105	Specialization Course-II Lab (Embedded Programming Lab)	0	0	3	3	2
Semester-VII								
6.	Theory	ECE11106	Specialization Course-IV (Python Basics for IOT)	3	0	0	3	3

7.	Practical	ECE12107	Specialization Course-IV Lab (Basic Python Language Lab)	0	0	3	3	2
Semester-VIII								
8.	Theory	ECE11108	Specialization Course V [Cloud Computing] (Online/Offline mode)	3	0	0	3	3
9.	Viva	ECE15109	Specialization Viva Voce	-	-	-	-	**2**

ADAMAS UNIVERSITY
SCHOOL OF ENGINEERING & TECHNOLOGY
DEPT. OF ECE

B. Tech ECE (Hons.) with Specialization Robotics

Semester-V								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
9.	Theory	ECE11111	Specialization Course-I (Rapid Prototyping)	3	1	0	4	4
10.	Practical	ECE12112	Specialization Course-I Lab (Rapid Prototyping Lab)	0	0	3	3	2
Semester-VI								
11.	Theory	ECE11113	Specialization Course-II (Mechatronics Systems and Applications)	3	1	0	4	4
12.	Theory	ECE11114	Specialization Course-III (Mobile Robots)	3	0	0	3	3
13.	Practical	ECE12115	Specialization Course-II Lab	0	0	3	3	2

			(Mechatronics Systems and Applications Lab)					
Semester-VII								
14.	Theory	ECE11116	Specialization Course-IV (Machine Learning)	3	0	0	3	3
15.	Practical	ECE12117	Specialization Course-IV Lab (Machine Learning Lab)	0	0	3	3	2
Semester-VIII								
16.	Theory	ECE11118	Specialization Course V [Aerial Robotics] (Online/Offline mode)	3	0	0	3	3
17.	Viva	ECE15119	Specialization Viva Voce	-	-	-	-	**2**

Course Structure

M. Tech. in IoT and Embedded System

SEMESTER I								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Theory	ECE21351	Core I: System Design using Embedded Processors	3	0	0	3	3
2	Theory	ECE21352	Core II: Internet of Things	3	0	0	3	3
3	Theory		Elective I	3	0	0	3	3
4	Theory		Elective II	3	0	0	3	3
5	Theory		Elective III	3	0	0	3	3
6	Practical	ECE22353	Core I lab: System Design using Embedded Processors - Laboratory	0	0	3	3	2
7	Practical	ECE22354	Core II Lab: Internet of Things Lab	0	0	3	3	2
8	Seminar	ECE25355	Seminar and Technical Writing-I	0	0	2	2	2

			Total	**15**	**0**	**8**	**23**	**21**

SEMESTER II								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Theory	ECE21356	Core III: Infrastructure Communication and Security	3	0	0	3	3
2	Theory	ECE21357	Core IV: Embedded OS & RTOS	3	0	0	3	3
3	Theory		Elective IV	3	0	0	3	3
4	Theory		Elective V	3	0	0	3	3
5	Theory		Elective VI	3	0	0	3	3
6	Practical	ECE22358	Core VI Lab: Embedded OS & RTOS Laboratory	0	0	3	3	2
7	Seminar	ECE25359	Seminar and Technical Writing-II	0	0	2	2	2
			Total	**15**	**0**	**5**	**20**	**19**

Total Credit (First Year): 40

SEMESTER III								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Dissertation	ECE25360	Thesis Part I	0	0	24	24	16
2	Seminar	ECE25361	Seminar and Technical Writing III	0	0	2	2	2
			Total	**0**	**0**	**26**	**26**	**18**

SEMESTER IV								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Dissertation	ECE25362	Thesis Part II	0	0	24	24	16
2	Seminar	ECE25363	Seminar and Technical Writing IV	0	0	2	2	2
3	Sessional	ECE25364	Grand Viva					4
			Total	**0**	**0**	**26**	**26**	**22**

Total Credit (Second Year): 40
Total Credit (over two years): 80

List of Elective Subjects (M Tech in IoT and Embedded System Design):
Elective – I to III:

1. ECE21365 Embedded Programming (3-0-0)
2. ECE21366 Advanced Digital System Design (3-0-0)
3. ECE21367 Cloud Architecture and Computing (3-0-0)
4. ECE21368 Big Data Analytics for IoT (3-0-0)
5. ECE21369 Smart Convergent Technologies (3-0-0)
6. ECE21370 Embedded Applications in Power Conversion (3-0-0)
7. ECE21371 High Speed Digital Design (3-0-0)
8. ECE21372 Advanced Networking Technologies (3-0-0)
9. ECE21373 Design of Digital Signal Processing Systems (3-0-0)

Elective – IV to VI:

10. ECE21374 RFID and Microcontrollers 3-0-0)
11. ECE21375 Embedded Control Systems (3-0-0)
12. CSE21731 Foundation of Cyber Physical Systems (3-0-0)
13. ECE21376 SDN and NFV for IOT (3-0-0)
14. ECE21377 Advanced Distributed Systems (3-0-0)
15. ECE21378 Design And Testing Of Digital Systems (3-0-0)
16. CSE21732 Cloud Storage and Computing (3-0-0)
17. CSE21733 Multimedia Compression Techniques (3-0-0)
18. CSE21826 Information Security (3-0-0)

Course Structure

M. Tech. in VLSI Design

SEMESTER I								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Theory	ECE21401	Core-I: Advances in VLSI Design	3	0	0	3	3
2	Theory	ECE21402	Core-II: VLSI for Digital Signal Processing	3	0	0	3	3
3	Theory		Elective I	3	0	0	3	3
4	Theory		Elective II	3	0	0	3	3
5	Theory		Elective III	3	0	0	3	3
6	Practical	ECE22403	Core I Lab: VHDL Programming Laboratory	0	0	3	3	2
7	Practical	ECE22404	Core II Lab: VLSI for Digital Signal Processing Laboratory	0	0	3	3	2
8	Seminar	ECE25405	Seminar and Technical Writing-I	0	0	2	2	2
			Total	**15**	**0**	**8**	**23**	**21**

SEMESTER II								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Theory	ECE21406	Core III: Electronic Design Automation Tools	3	0	0	3	3
2	Theory	ECE21407	Core IV: Low Power VLSI System Design	3	0	0	3	3
3	Theory		Elective IV	3	0	0	3	3
4	Theory		Elective V	3	0	0	3	3
5	Theory		Elective VI	3	0	0	3	3
6	Practical	ECE22408	Core III Lab: ASIC – CAD Laboratory	0	0	3	3	2
7	Seminar	ECE25409	Seminar and Technical Writing-II	0	0	2	2	2
			Total	**15**	**0**	**5**	**20**	**19**

Total Credit (First Year): 40

SEMESTER III								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Dissertation	ECE25410	Thesis Part I	0	0	24	24	16
2	Seminar	ECE25411	Seminar and Technical Writing III	0	0	2	2	2
			Total	**0**	**0**	**26**	**26**	**18**

SEMESTER IV								
Sl. No	**Type**	**Course code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1	Dissertation	ECE25412	Thesis Part II	0	0	24	24	16
2	Seminar	ECE25413	Seminar and Technical Writing IV	0	0	2	2	2
3	Sessional	ECE25414	Grand Viva					4
			Total	**0**	**0**	**26**	**26**	**22**

Total Credit (Second Year): 40
Total Credit (over two years): 80

List of Elective Subjects (M Tech in VLSI Design):
Elective – I to III:

1. ECE21415 Secured Digital System Design (3-0-0)
2. ECE21416 Modelling and Synthesis with Verilog HDL (3-0-0)
3. ECE21417 Visual Sensors and interfaces (3-0-0)
4. ECE21329 Bio Medical System Engineering (3-0-0)
5. ECE21330 CMOS Analog VLSI Design (3-0-0)
6. ECE21345 Internet of Things (3-0-0)
7. ECE21340 VLSI Signal Processing(3-0-0)
8. ECE21338 Fiber Optic Sensors(3-0-0)
9. CSE21808 Artificial Intelligence(3-0-0)

Elective – IV to VI:

10. ECE21422 Analog and Digital CMOS VLSI Design(3-0-0)
11. ECE21423 Embedded System Design (3-0-0)
12. ECE21424 High Speed System Design (3-0-0)
13. ECE21425 Mixed-Signal Circuit Design (3-0-0)
14. ECE21426 Functional Verification using Hardware Description Languages (3-0-0)
15. ECE21322 Image and Video Processing (3-0-0)
16. ECE21428 Advanced Semiconductor Device Modeling (3-0-0)
17. ECE21429 RF IC design (3-0-0)
18. CSE21803 Soft Computing (3-0-0)

Course Structure of B. Tech (Electronics and Communication Engineering) for AY 2019-20

SEMESTER I								
S. No	**Type**	**Course Code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
10.	Theory **BSC**	**SMA41101**	Engineering Mathematics-I	3	1	0	4	4.0
11.	Theory **BSC**	**SPH41109/SCY41106**	Engineering Physics /Engineering Chemistry	3	0	0	3	3.0
12.	Theory **ESC**	**ECS41101/EEE41102**	Introduction to Programming /Electrical and Electronics Technology	3	0	0	3	3.0
13.	Theory **HSSM**	**HEN41117**	HSSM –I (English Communication-I)	3	0	0	3	3.0
14.	Theory **HSSM/BSC**	**HEN41119/SBT41108**	HSSM –II (ENGINEERING ETHICS, VALUES AND THE LAWS) / Life Sciences	3	0	0	3	3.0
15.	Practical **BSC**	**SPH41209/ SCY41206**	Engineering Physics Lab/ Engineering Chemistry Lab	0	0	3	3	2.0
16.	Practical **ESC**	**ECS41201/ EEE41202**	Programming Lab/ Electrical and Electronics Technology Lab	0	0	3	3	2.0
17.	Practical **ESC**	**ECE41201/EME41202**	Engineering Drawing and CAD/ Engineering Workshop	0	0	3	3	2.0
18.	Practical **MC**	**EMC41201**	Communication and Collaboration Skill -I	0	0	2	2	1
Total				**15**	**1**	**11**	**27**	**23**

SEMESTER II								
S. No	**Type**	**Course Code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/wk**	**Credits**
1.	Theory **BSC**	**SMA41102**	Engineering Mathematics– II	3	1	0	4	4.0
2.	Theory **BSC**	**SCY41106/ SPH41109**	Engineering Chemistry / Engineering Physics	3	0	0	3	3.0
3.	Theory **ESC**	**EEE41102/ ECS41101**	Electrical and Electronics Technology / Introduction to Programming	3	0	0	3	3.0
4.	Theory **BSC/ HSSM**	**SBT41108/ HEN41119**	Life Sciences/ HSSM –II (ENGINEERING ETHICS, VALUES AND THE LAWS)	3	0	0	3	3.0
5.	Theory **ESC**	**EME41102**	Engineering Mechanics	3	0	0	3	3.0
6.	Practical **HSSM**	**HEN41212**	HSSM – III (Professional Communication in English)	0	0	3	3	2.0
7.	Practical	**SCY41206/**	Engineering Chemistry Lab	0	0	3	3	2.0

	BSC	**SPH41209**	/Engineering Physics Lab					
8.	Practical **ESC**	**EEE41202/ ECS41201**	Electrical and Electronics Technology Lab / Programming Lab	0	0	3	3	2.0
9.	Practical **ESC**	**EME41202/ ECE41201**	Engineering Workshop/ Engineering Drawing and CAD	0	0	3	3	2.0
10.	Practical **MC**	**EMC41202**	Communication and Collaboration Skill -II	0	0	2	2	1
Total				**15**	**1**	**14**	**30**	**25**

Total Credit (First Year): 48

HSSM: Humanities, Social Sciences & Management; **BSC:** Basic Science; **ESC:** Engg. Science; **PC:** Program Core

SECOND YEAR

Semester-III								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
12.	Theory	**SMA42109**	Engineering Mathematics– III (Transform Calculus & Special functions)	3	0	0	3	3
13.	Theory	**HEC42180**	HSSM –IV (Economics for Engineers)	3	0	0	3	3
14.	Theory	EEC42101	Prof. Core- I (Electronic Devices)	3	0	0	3	3
15.	Theory	EEC42103	Prof. Core- II (Analog Electronic Circuits)	3	0	0	3	3
16.	Theory	EEC42105	Prof. Core- III (Signals and Networks)	3	0	0	3	3
17.	Theory	**EEC42107**	Choice of Dept. (Electromagnetic Fields)	3	0	0	3	3
18.	Practical	EEC42203	Prof. Core-II Lab (Analog Electronic Circuits Lab)	0	0	3	3	2
19.	Practical	EEC42205	Prof. Core-III Lab (Signals and Networks Lab)	0	0	3	3	2
20.	Theory	**EMC42101**	Design Thinking for Engineers	2	0	0	2	2
21.	Project	**SET42403**	Capstone Project-A	0	0	2	2	1
			Total	**20**	**0**	**08**	**28**	**25**

Semester-IV								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
11.	Theory	**SMA42111**	Engineering Mathematics– IV	3	0	0	3	3

			(Probability, Statistics and Numerical Methods)					
12.	Theory	EEC42102	Prof. Core- IV (Digital Electronics)	3	0	0	3	3
13.	Theory	**EEC42104**	Prof. Core- V (Communication Systems-I)	3	0	0	3	3
14.	Theory	**EEC42106**	Prof. Core- VI (Digital Signal Processing)	3	0	0	3	3
15.	Theory	**EEC42108**	Prof. Core- VII (Microprocessors and Microcontrollers)	3	0	0	3	3
16.	Practical	EEC42202	Prof. Core- IV Lab (Digital Electronics Lab)	0	0	3	3	2
17.	Practical	**EEC42206**	Prof. Core- VI Lab (Digital Signal Processing Lab)	0	0	3	3	2
18.	Practical	**EEC42208**	Prof. Core- VII Lab (Microprocessors and microcontrollers Lab)	0	0	3	3	2
19.	Project	**SET42404**	Capstone Project -B	0	0	2	2	1
20.	Project	**SET42406**	Interdisciplinary Project Work	0	0	5	5	3
			Total	**15**	**0**	**16**	**31**	**25**

Total Credits (Second Year): **50**

THIRD YEAR

Semester-V								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
18.	Theory	**EEC43103**	Prof. Core- VIII (Communication Systems-II)	3	1	0	4	4
19.	Theory	**EEC43105**	Prof. Core- IX (VLSI Systems Design)	3	1	0	4	4
20.	Theory	**EEC43107**	Prof. Core- X (Embedded Systems Design)	3	0	0	3	3
21.	Theory	**EEC43111 / EEC43113 / EEC43115**	Prof. Elective- I (Data Communication and Computer Networks / Optical Fiber Communication/ Biomedical Electronics)	3	0	0	3	3
22.	Practical	**EEC43203**	Prof. Core- VIII Lab (Communication Systems Lab)	0	0	3	3	2
23.	Practical	**EEC43205**	Prof. Core- IX Lab (VLSI Systems Design Lab)	0	0	3	3	2
24.	Practical	**EEC43207**	Prof. Core- X Lab (Embedded System Design Lab)	0	0	3	3	2
25.	Theory	**SET43101**	Venture Ideation for Beginners	2	0	0	2	2

26.	Project	**SET43403**	Capstone Project -C	0	0	2	2	1
			Total	**14**	**2**	**11**	**27**	**23**

Semester-VI								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
9.	Theory	**EEC43102**	Prof. Core- XI (Control Systems)	3	0	0	3	3
10.	Theory	**EEC43104**	Prof. Core- XII (Microwave Engineering)	3	0	0	3	3
11.	Theory	**EEC43122 / EEC43124 / EEC43126**	Prof. Elective- II (Antenna & Wave Propagation / Power Electronics / Adaptive Signal Processing)	3	0	0	3	3
12.	Theory		Open Elective- I	2	0	0	2	2
13.	Practical	**EEC43202**	Prof. Core- XI Lab (Control Systems Lab)	0	0	3	3	2
14.	Practical	**EEC43204**	Prof. Core- XII Lab (Microwave Engineering Lab)	0	0	3	3	2
15.	Practical	**EEC43222 / EEC43224 / EEC43226**	Prof. Elective- II Lab (Antenna & Wave Propagation Lab/ Power Electronics Lab/ Adaptive Signal Processing Lab)	0	0	3	3	2
16.	Seminar	**EEC43302**	Technical Seminar	0	0	2	2	1
			Total	**11**	**0**	**11**	**22**	**18**

Total Credits (Third Year): 41

FOURTH YEAR

Semester-VII								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
8.	Theory	**MBA43144**	HSSM –V (Industrial Management)	3	0	0	3	3
9.	Theory	**EEC44111/ EEC44113 / EEC44115**	Prof. Elective- III (Wireless Communication/ Image & Video Processing / Low Power VLSI Design)	3	0	0	3	3
10.	Theory		Open Elective- II	3	0	0	3	3

11.	Theory		Open Elective- III	3	0	0	3	3
12.	Practical	**EEC44211 / EEC44213 / EEC44215**	Prof. Elective- III Lab (Wireless Communication Lab/ Image & Video Processing Lab/ Low Power VLSI Design Lab)	0	0	3	3	2
13.	Internship /Training	EEC44601	#Summer Internship	--	--	--	--	2
14.	Project	EEC44401	Minor Project	0	0	6	6	3
			Total	**12**	**0**	**9**	**21**	**19**

 # Summer Internship for 30 days will be taken at the end of 6th semester, and will be evaluated in the 7th semester.

Semester-VIII								
S. No	**Type**	**Course Code**	**Subject Name**	**L**	**T**	**P**	**Contact Hrs/week**	**Credits**
3.	Project	**EEC44602 / EEC44604 /EEC44404**	Industry Work Experience / SIRE* / Major Project	0	0	08	08	4
4.	Viva	EEC44502	Comprehensive Viva Voce	------			------	2
			Total	**0**	**0**	**08**	**08**	**06**

***SIRE: Scientific Investigation & Research Experience**

Total Credits (Fourth Year): 25

Total Credits (Over four years): 48+50+41+25 = 164