KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY
(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.Chidambara Nadar - C.Nagammal Campus
S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

MINUTES OF THE MEETING OF THIRD BOARD OF STUDIES MEETING HELD ON 10-11-2021 AT 2:30 PM IN ONLINE TOWARDS CONSIDERING THE PROPOSED R2020 UG PROGRAMME, B.E. - ECE CURRICULUM & SYLLABI (V SEMESTER AND VI SEMESTER), UG AND PG REGULATION RELATED AMENDMENTS AND DISCUSSIONS, COMMON CURRICULUM FOR FIRST YEAR (R2021) AND PROPOSED UG PROGRAMME B.E. - ELECTRONICS AND COMPUTER ENGINEERING CURRICULUM IN THE DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING.

Platform: Microsoft Teams

Meeting Link: https://tinyurl.com/ECE-Kamaraj-BoS-3

Dr. R. Suresh Babu, Dean (Academic Courses) and HoD (Department of Electronics & Communication Engineering) welcomed all the members of the Board of Studies, Special Invitees and Faculty members of ECE department to the 3rd BOS meeting. The following members were present:

S.No	Name of the Expert	Designation	Capacity
1	Dr.H.Umma Habiba, Ph.D.,	Professor, ECE, Sri Venkateswara College of Engineering, Irungattukottai - 602117. Sriperumbudur Taluk.	Anna University Nominee
2	Dr.D.Sriram Kumar, Ph.D.,	Professor, ECE, National Institute of Technology, Tiruchirappalli - 620015.	Academic Council Nominee
3	Dr.A.Amalin Prince, Ph.D.,	Associate Professor, Department of EEE, BITS Pilani, K.K.Birla Goa Campus, Zuarinagar, Goa – 403726.	Academic Council Nominee

4	Mr.M.Chinnathambi, M.E.,	Technical Lead, Viasat India, Global Infocity, Module 1 & 2, 5th Floor, Block C,No. 40, MGR Salai, Perungudi, Chennai - 600097.	Industrialist Nominee
5	Dr.R.Preetha, Ph.D.,	Assistant Professor, ECE, SRM Institute of Science and Technology, Ramapuram, Chennai - 600089.	Alumni Nominee

S.No	Name	Designation	Capacity
1	Dr.V Ramachandran	Advisor, Kamaraj College of Engineering and Technology (Autonomous), Virudhunagar. Former Vice-Chancellor, Anna University, Trichy and Founder Director, NIT, Nagaland.	Special Invitee
2	Dr.Jeyadevi	HOD/EIE, Kamaraj College of Engineering and Technology (Autonomous), Virudhunagar.	Special Invitee
3	Mr.Mahesh Bhatkal	Director – Technical, Applied Digital Microsystems Pvt. Ltd., Mumbai.	Special Invitee
4	Mrs.K.Sathya	Project Manager, Cognizant Technology Solutions (CTS), Chennai.	Special Invitee
5	Mr.N.Vignesh Jeyanthan	Tessolve Semiconductor Pvt. Ltd., Bangalore.	Special Invitee

Internal Members of BoS – ECE Department		
S.No	**Name**	**Designation**
1.	Dr.R.Suresh Babu, M.E., M.B.A., Ph.D.,	Professor and Head / ECE, Chairman of BoS – ECE
2.	Dr.C.Geetha Priya, M.E., Ph.D.,	Professor / ECE
3.	Dr.A.Geetha, M.E., Ph.D.,	Associate Professor / ECE

4.	Dr.R.S.Venkatesan, M.E., Ph.D.,	Assistant Professor / ECE
5.	Dr.V.Jeyalakshmi, M.E., Ph.D.,	Assistant Professor / ECE
6.	Dr.T.Pandiselvi, M.E., Ph.D.,	Assistant Professor / ECE
7.	Dr.N.M.Mary Sindhuja, M.E., Ph.D.,	Assistant Professor / ECE
8.	Dr.T.Prathiba, M.E., Ph.D.,	Assistant Professor / ECE
9.	Mrs.C.Nagavani, M.E., (Ph.D.,)	Assistant Professor / ECE
10.	Mr.M.Ramesh, M.E., (Ph.D.,)	Assistant Professor / ECE
11.	Mr.R.Ashok, M.E., (Ph.D.,)	Assistant Professor / ECE
12.	Mrs.S.Nisharani, M.E., (Ph.D.,)	Assistant Professor / ECE
13.	Mr.P.Aravind, M.E.,	Assistant Professor / ECE
14.	Mrs.P.Ramalakshmi, M.E., (Ph.D.,)	Assistant Professor / ECE
15.	Mrs.M.Stella Mercy, M.E., (Ph.D.,)	Assistant Professor / ECE
16.	Mr.S.Alwyn Rajiv, M.E., (Ph.D.,)	Assistant Professor / ECE
17.	Mrs.M.Gokila, M.E.,	Assistant Professor / ECE
18.	Mrs.P.Muthumari, M.E.,	Assistant Professor / ECE
19.	Mr.R.Raj Prabu, M.E., (Ph.D.,)	Assistant Professor / ECE

After brief introduction by the Dr. R. Suresh Babu, Dean (Academic Courses) and HoD (Department of Electronics & Communication Engineering) about the participants from industries, alumni, faculty from the Departments of Electronics and Communication Engineering and Electronics and Instrumentation Engineering , the agenda items were taken up for discussion. The discussion starts with R2020 UG Programme curriculum and syllabi of 5th and 6th semester of Electronics and Communication Engineering and then continues with the suggestions and recommendations received from all stake holders.

Discussions:

BOS 003.01

HOD/ECE gave a brief presentation for the Approval of the Minutes of the Second BoS and Special BoS.

HOD/ECE pointed out the Actions Taken for the Previous BoS and mentioned that the bridge courses were conducted for the following subjects.

- Technical English
- Engineering Mathematics
- Circuit Analysis

BOS 003.02

HOD/ECE presented the R2020 UG Curriculum, B.E. - Electronics and Communication Engineering for the following.

a. B.E. - ECE (5^{th} and 6^{th} semester)

Semester V

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1	EC1501	Communication Networks (Theory Cum Lab)	PC	5	3	0	2	4
2	EC1502	Digital Communication	PC	3	3	0	0	3
3	EC1503	Electronic Circuits - II	PC	3	3	0	0	3
4	EC1504	Transmission Lines and RF Systems	PC	3	3	0	0	3
5		Professional Elective - I	PE	3	3	0	0	3
6		Open Elective – I	OE	3	3	0	0	3
PRACTICALS								
7	EC1511	Circuits Design and Simulation Laboratory	PC	4	0	0	4	2
8	EC1512	Communication Systems Laboratory	PC	4	0	0	4	2
			Total	31	21	0	10	23

Semester VI

S.No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
THEORY								
1	EC1601	Antennas and Microwave Engineering	PC	3	3	0	0	3
2	EC1602	Microprocessors and Microcontrollers Interfacing	PC	3	3	0	0	3
3	EC1603	VLSI Design (Theory Cum Lab)	PC	5	3	0	2	4
4	EC1604	Wireless Communication	PC	3	3	0	0	3
5		Professional Elective - II	PE	3	3	0	0	3
6		Online Course - I	OL	3	3	0	0	3
PRACTICALS								
7	EC1611	Microprocessors and Microcontrollers Interfacing Laboratory	PC	4	0	0	4	2
8	EC1621	Mini Project	EEC	4	0	0	4	2
9	HS1521	Professional Communication	EEC	2	0	0	2	1
			Total	28	18	0	12	24

b. List of Professional Elective Courses

Professional Elective I (Semester V)

S. No	Course Code	Course Name	Credits			
			L	T	P	C
1	IT1371	Computer Organization and Architecture	3	0	0	3
2	IT1301	Object Oriented Programming	3	0	0	3
3	IT1402	Operating Systems	3	0	0	3
4	EC1531	Human Rights	3	0	0	3

5	EC1532	Medical Electronics	3	0	0	3
6	EC1533	RF System Design	3	0	0	3
7	EC1534	Signal Integrity for High Speed Design	3	0	0	3
8	GE1571	Intellectual Property Rights	3	0	0	3

Professional Elective II (Semester VI)

S. No	Course Code	Course Name	Credits			
			L	T	P	C
1.	EC1631	Advanced Digital Signal Processing	3	0	0	3
2.	EC1632	Advanced Radiation Systems	3	0	0	3
3.	EC1633	Digital Image Processing	3	0	0	3
4.	EC1634	Electromagnetic Interference and Compatibility	3	0	0	3
5.	EC1635	Machine Learning Techniques	3	0	0	3
6.	EC1636	MEMS and NEMS	3	0	0	3
7.	EC1637	Nanotechnology and Applications	3	0	0	3
8.	ME1634	Operation Research Techniques	3	0	0	3

c. List of Open Electives

Open Elective I (Semester V) - Offered to other departments

S. No	Course Code	Course Name	Credits			
			L	T	P	C
1	OEC151	Basics of Signals and Systems	3	0	0	3
2	OEC152	Digital Audio Engineering	3	0	0	3
3	OEC153	Electronics Packaging	3	0	0	3
4	OEC154	Space Time Wireless Communication	3	0	0	3
5	OEC155	Telecommunication Network Management	3	0	0	3
6	OEC156	Wavelets and its Applications	3	0	0	3

d. List of Audit Courses

Audit Courses (Offered to all departments)

S. No	Course Code	Course Name	Credits			
			L	T	P	C
1	AUD101	Constitution of India	3	0	0	0
2	AUD102	Value Education	3	0	0	0

3	AUD103	Teaching and Learning	3	0	0	0
4	AUD104	Stress Relieving Management by Yoga	3	0	0	0
5	AUD105	Developing your Personality	3	0	0	0
6	AUD106	Essence of Indian Knowledge and Tradition	3	0	0	0
7	AUD107	Appreciation of Sangam era Tamil Literature	3	0	0	0
8	AUD108	Design Thinking	3	0	0	0

List of Online Courses (NPTEL / Swayam)

Discipline: CSE

S. No	Course Id	Course Name	Institute	Duration	UG /PG	Core/ Elective	FDP	Applicable NPTEL Domain
1	noc21-cs54	Problem solving through Programming In C	IITKGP	12 Weeks	UG/ PG	Elective	Yes	
2	noc21-cs55	Programming in C++	IITKGP	8 Weeks	UG/ PG	Core	Yes	Programming
3	noc21-cs56	Programming in Java	IITKGP	12 Weeks	UG	Elective	Yes	Programming
4	noc21-cs58	Data Base Management System	IITKGP	8 Weeks	UG/ PG	Core	Yes	Programming
5	noc21-cs62	Cloud computing	IITKGP	8 Weeks	UG	Elective	Yes	Programming Systems
6	noc21-cs63	Introduction to internet of things	IITKGP	12 Weeks	UG/ PG	Elective	Yes	Programming Systems
7	noc21-cs08	Embedded Systems Design	IIT KGP	12 Weeks	UG	Core	No	
8	noc21-cs09	Embedded System Design with ARM	IIT KGP	8 Weeks	UG	Elective	yes	

Discipline: EEE

S.No	Course Id	Course Name	Institute	Duration	UG /PG	Core/ Elective	FDP	Applicable NPTEL Domain
1	noc21-ee65	Principles of Communication Systems: Part – II	IITK	8 Weeks	UG	Core	No	Communication and Signal Processing
2	noc21-ee66	Introduction to Wireless and Cellular Communications	IITM	12 Weeks	PG	Elective	Yes	Communication and Signal Processing
3	noc21-ee74	Analog communication	IITKGP	12 Weeks	UG	Core	No	
4	noc21-ee75	Digital Circuits	IITKGP	12 Weeks	UG	Core	No	VLSI design
5	noc21-ee78	Digital Image Processing	IITKGP	12 Weeks	UG/ PG	Elective	Yes	Communication and Signal Processing Robotics
6	noc21-ee83	Electromagnetic Theory	IITK	12 Weeks	UG	Core/ Elective	Yes	
7	noc21-ee85	Design for internet of things	IISc	8 Weeks	PG	Elective	Yes	Control and Instrumentation
8	noc21-ee99	Basic Electrical Circuits	IIT Hyderabad (IITM)	12 Weeks	UG	Core	No	Control and Instrumentation VLSI design Power Systems and Power Electronics
9	noc21-ee59	Introduction to Semiconductor Devices	IIT Hyderabad	12 Weeks	UG	Core	No	VLSI design
10	noc21-ee100	Image Signal Processing	IITM	12 Weeks	UG/ PG	Elective	Yes	Communication and Signal Processing
11	noc21-ee07	Analog Circuits	IITB	8 Weeks	UG	Core	No	VLSI design, Control and Instrumentation
12	noc21-ee10	Digital Electronic Circuits	IIT KGP	12 Weeks	UG	Core	No	VLSI design
13	noc21-ee08	Antennas	IITB	12 Weeks	UG/ PG	Elective	Yes	
14	noc21-ee18	Microprocessors and Microcontrollers	IIT KGP	12 Weeks	UG	Core	No	VLSI design, Control and Instrumentation
15	noc21-	Digital Signal Processing and its	IITB	12 Weeks	UG/ PG	Core/Elective	Yes	Communication and Signal Processing

	ee20	Applications						
16	noc21-ee28	Signals and Systems	IISER Bhopal	12 Weeks	UG	Core	No	Communication and Signal Processing, Control and Instrumentation
17	noc21-ee42	Optical Communications	IITK	12 Weeks	UG	Core/Elective	Yes	Photonics
18	noc21-ee54	Discrete Time Signal Processing	IIT KGP	8 Weeks	UG	Core	No	Communication and Signal Processing
19	noc21-ee55	Basic Electronics	IITB	12 Weeks	UG	Core	No	
20	noc21-ee58	Introduction to Embedded System Design	Netaji Subhas University of Technology and IIT Jammu	12 weeks	UG/PG	Core	Yes	

List of Value Added Courses

Year	Course Name
II	Value added course on Printed Circuit Board Design
III	Basic Programming in NodeMCU Microcontroller
	1D and 2D signal Processing using MATLAB and GUI
	Value added course on LabView (CLAD)
IV	Tessolve Semiconductor Test Engineering - Skill Development Course
	Image, Audio and Video Processing using Python
	Value added course on OCJP
	Value added course on PLC SCADA

The following suggestions were given by the BOS Members

- Dr. H. Umma Habiba , Ph.D., suggested that Antenna Design and RF Circuits Design can be included in Value Added Courses using ADS and HSFS software because MNC and Core Companies have

separate Antenna and R&D Department in which they are expecting Electronics and Communication Engineers with the above skills.

- HOD/ECE also informed that Value added course should be an industry offered certificate.
- Dr.V.Ramachandran, Advisor, suggested that Industry Persons, Academicians and Internal Faculty members can handle Value Added Courses.
- Dr. R. Preetha, Ph.D., Suggested that VLSI based courses can be included in Value Added Courses - HOD/ECE answered VLSI subject is included in VI semester curriculum itself and also pointed out Machine learning, Deep Learning and Block chain (Advanced technologies) are recommended in Academic Council Meeting.
- Mrs.K.Sathya, Appreciated the curriculum that covered advanced technologies such as Artificial Intelligence and Machine Learning - HoD/ECE also informed that our students are motivated to do projects based on Advanced Technologies. So that 40/92 students are placed in MNC till now. Mock interview is conducted by Mr. M. Chinnathambi, Industrialist. Skill rack training is provided to students for soft skills improvement.
- Dr.V.Ramachandran, Advisor, Mentioned that Advanced technologies can be included in Professional Elective or Value Added Courses at any time as per students requirements and this facility available in Autonomous colleges.
- Dr. H. Umma Habiba, Ph.D., suggested that advanced technologies can be included syllabus also in autonomous curriculum. She mentioned that students should have knowledge about C and C++ before study the Machine Learning and also pointed out Elective should be offered as per students willingness.
- Dr.D.Sriram Kumar, Ph.D., suggested Design thinking can be offered in coming semester. He mentioned don't restrict list of

courses in value added programme and offer courses as per industry requirements such as Cognitive Radio also. Industries can be invited to take value added courses. For example, QMAX Company, Chennai offer lot of VLSI based courses such as VLSI Testing. He appreciated and mentioned our college offer content beyond syllabus to students.

- Dr. H. Umma Habiba, Ph.D., suggested Entuple Technologies, they have provided HFSS and Antenna & RF design Industry based Certification.
- Mr.M.Chinnathambi, M.E., suggested Open Source software can be included in Core or Elective syllabus.
- Dr.A.Amalin Prince, Ph.D., suggested Corel technologies, they provide VLSI Certification courses. So that we can invite them to take value Added Courses. We can motivate students to do online courses. Analytics and Data science course can be included in value added courses, that provide opportunities in Banking sector - HOD/ECE Answered Tessolve Semiconductor Test Engineering - Skill Development Course and Labview Courses are conducted Every year as a value added courses.

BOS 003.03

HOD/ECE gave a brief presentation about the UG & PG Syllabus Related Amendments and Discussions which has the following.

- **UG Online Courses** - Students can study the NPTEL / Swayam Online courses in the seventh semester itself since the result publication may get delayed if they study in eighth semester. (As per Regulation Guideline R2020 under R4.9)
- **PG Open Electives** - Can be offered in Semester II and III as few departments are having open elective in Second Semester.

- All members have given approval.
- Dr. D. Sriram Kumar, Ph.D., suggested NPTEL Courses may be taken by students in Sixth semester also. He suggested Remove the courses during third semester for PG students and also Project can be allotted third and fourth semester. Students can be allowed to industries for projects at last year. Students not allowed doing same project in 3rd and 4th semester. Few Open electives can be offered for PG.
- Dr. D. Sriram Kumar, Ph.D., suggested that next regulation revision in PG, The overall credits may be reduced to 70 Credits.
- Advisor suggested that Open Elective no need for PG students as per time concern.

BOS 003.04

HOD/ECE presented and discussed the curriculum of B.E-ECP (Electronics and Computer Engineering) from 1st semester to 8th semester including Professional Elective Courses, Common Courses, Open Elective courses and Audit Courses.

Accordingly, the credit requirement for the programme B.E. Electronics and Computer Engineering (as per Regulations) is outlined below:

Sl. No.	Category of Courses	Credits
1.	**Foundation Courses** (Humanities and Social Sciences including Management Courses, Basic Science and Engineering Science Courses)	60
2.	**Professional Core Courses**	60
3.	**Professional Elective Courses**	18
4.	**Open Elective Courses**	9

5.	**Employability Enhancement Courses**	27
6.	**Online Courses**	6
7.	**Audit Courses***	---

***Note:** Audit Courses such as Life Science, Indian History, Motivational programmes, etc., shall be introduced as it mandates the requirement of Outcome Based Education.

The following curriculum design for the first year is proposed and suggestions are invited from the Stake Holders.

SEMESTER I

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	SH101	Technical English	3	0	0	3
2	MA101	Matrices and Differential Calculus	3	1	0	4
3	PH101	Engineering Physics	3	0	0	3
4	GE101	Principles of Engineering	3	0	0	3
5	EM101	Coding Techniques - I	3	0	0	3
6	GE102	Biology for Engineers	3	0	0	3
Practicals						
7	MA102	Mathematics Laboratory (using MATLAB)	0	0	2	1
8	PH102	Physics Laboratory	0	0	2	1
9	EM102	Coding Techniques - I Laboratory	0	0	3	1

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
		Total Credits	18	1	7	22

SEMESTER II

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	SH151	Technical Communication Skill Development	3	0	2	4
2	MA151	Vector Calculus and Laplace Transforms	3	0	0	3
3	CY151	Engineering Chemistry	3	0	0	3
4	GE151	Design Thinking	3	0	0	3
5	EM151	Coding Techniques - II	3	0	0	3
6	GE152	Engineering Graphics	3	0	2	4
Practicals						
7	GE153	MATLAB & LabVIEW Simulation Laboratory	0	0	4	2
8	CY152	Chemistry Laboratory	0	0	3	1
9	EM152	Coding Techniques – II Laboratory	0	0	3	1
		Total Credits	18	0	14	24

The semester-wise breakup of credits is given in the following table and the total number of credits shall be 180, as per the credit requirement of each category of courses. It provides a more flexible system to the students to choose their learning curve on their areas of interest. Almost, 60 credits are in the hands of the students to choose their career path, except 8 credits in the first and second semesters together and 12 credits for projects in the seventh and eighth semesters.

Sl. No.	Category of Courses	Credits	I	II	III	IV	V	VI	VII	VIII
1.	**Foundation Courses**	60	18	20	7	4	3	5	3	0
2.	**Professional Core Courses**	60	0	0	17	15	9	6	13	0
3.	**Professional Elective Courses**	18	0	0	0	0	6	6	6	0
4.	**Open Elective Courses**	9	0	0	0	3	3	3	0	0
5.	**Employability Enhancement Courses**	27	4	4	0	3	2	2	4	8
6.	**Online Courses**	6	0	0	0	0	0	3	0	3
7.	**Audit Courses**	---	-	-	-	-	-	-	-	-

The proposed curriculum for higher semesters is listed below.

SEMESTER III

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	MA201	Multivariate Calculus and Linear Algebra	3	1	0	4
2	EC201	Signals and Systems	3	0	0	3
3	GE201	Environmental Engineering and Science	3	0	0	3
4	EC202	Data Structures and Algorithms	3	0	0	3
5	EC203	Electronic Devices and Circuits	3	0	0	3
6	EC204	Digital Systems Design	3	0	0	3
Practicals						
7	EC205	Digital Systems Design Laboratory	0	0	4	2
8	EC206	Data Structures and Algorithms Laboratory	0	0	3	1
9	EC207	Electronic Devices and Circuits Laboratory	0	0	4	2
		Total Credits	18	1	11	24

SEMESTER IV

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	MA251	Discrete Mathematics	3	1	0	4
2	EC251	Data Communication and Networking	3	0	0	3
3	EC252	Microprocessors and Microcontrollers	3	0	0	3
4	EC253	Computer Architecture	3	0	0	3
5	EC7XX	Open Elective - I	3	0	0	3
6	EC254	Control Systems	3	0	0	3
Practicals						
7	EC255	Microprocessors and Microcontrollers Laboratory	0	0	4	2
8	EC256	Data Communication Laboratory	0	0	3	1
9	EM251	Internship / Practical Training / Value Added Courses	0	0	3	3
		Total Credits	18	1	10	25

SEMESTER V

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	MA301	Mathematical Concepts for Data Analytics	3	0	0	3
2	EC301	Linear Integrated Circuits	3	0	0	3
3	EC7XX	Open Elective – II	3	0	0	3
4	EC302	Digital Signal Processing	3	0	0	3
5	EC9XX	Elective I	3	0	0	3
6	EC9XX	Elective II	3	0	0	3
Practicals						
7	EC303	Linear Integrated Circuits Laboratory	0	0	3	1
8	EC304	Digital Signal Processing Laboratory	0	0	4	2
9	EM301	Value Added Course(s)	2	0	0	2
		Total Credits	20	0	7	23

SEMESTER VI

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	MA351	Forecasting Methods and Applications	3	0	0	3
2	EC351	Modern Operating Systems	3	0	0	3
3	EC352	Cyber Security	3	0	0	3
4	EC7XX	Open Elective – III	3	0	0	3
5	EC9XX	Elective III	3	0	0	3
6	EC9XX	Elective IV	3	0	0	3
7	EC8XX	Online Course - I	3	0	0	3
Practicals						
7	MA352	Data Analytics Laboratory	0	0	3	1
8	EM351	Skill Development in IoT / Value Added Courses	1	0	2	2
		Total Credits	22	0	7	25

SEMESTER VII

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	EC401	Machine Learning Techniques	3	0	0	3
2	EC402	Instrumentation and Control	3	0	0	3
3	EC403	VLSI Design	3	0	2	4
4	EC9XX	Elective V	3	0	0	3
5	EC9XX	Elective VI	3	0	0	3
6	GE351	Professional Ethics	3	0	0	3
Practicals						
7	EC404	Applied Machine Learning Laboratory	0	0	4	2
8	EC405	Instrumentation and Control Laboratory	0	0	3	1
9	EM401	Project Phase - I	0	0	8	4
		Total Credits	18	0	17	26

SEMESTER VIII

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	EC8XX	Online Course - II	3	0	0	3
Practicals						
2	EM451	Project Phase - II	0	0	16	8
		Total Credits	3	0	16	11

The number of credits (totaling to 180) in each semester is summarized as follows:

Course	I	II	III	IV	V	VI	VII	VIII
B.E. Electronics and Computer Engineering	22	24	24	25	23	25	26	11

Professional Elective Courses (Odd Semester)

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	EC901	Networks and Linear Systems	3	0	0	3
2	EC902	Python for Data Science	3	0	0	3
3	EC903	Fundamentals of Internet of Things	3	0	0	3
4	EC904	Electronic System Level Design and Verification	3	0	0	3
5	EC905	Electric and Hybrid Vehicles	3	0	0	3
6	EC906	Applied Power Electronics	3	0	0	3
7	EC907	Nano Technology	3	0	0	3
8	EC908	Computational Intelligence	3	0	0	3
9	EC909	Embedded Systems Automation	3	0	0	3
10	EC910	Wireless Sensor Networks	3	0	0	3
11	EC911	Block Chain Technology	3	0	0	3
12	EC912	Introduction to Filter Synthesis	3	0	0	3
13	EC913	Sensors and Instrumentation Engineering	3	0	0	3
14	EC914	Real Time Systems	3	0	0	3
15	EC915	Cloud Computing and Virtualization Fundamentals	3	0	0	3
16	EC916	Computer Vision	3	0	0	3
17	EC917	RISC Processor Design				
18	EC918	Web Technology	3	0	0	3
19	EC919	Augmented Reality and Virtual Reality	3	0	0	3
20	EC920	Nonlinear Control Systems	3	0	0	3

Professional Elective Courses (Even Semester)

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	EC951	Optimization Techniques	3	0	0	3
2	EC952	Robotics and Intelligent Systems	3	0	0	3
3	EC953	Information Theory and Coding	3	0	0	3
4	EC954	Big Data Analytics	3	0	0	3
5	EC955	Electric Vehicle Mechanics and Control	3	0	0	3
6	EC956	Mobile Application Development	3	0	0	3
7	EC956	Digital Image Processing	3	0	0	3
8	EC958	Statistical Modelling and Tools	3	0	0	3
9	EC959	Logic Design and Verification	3	0	0	3
10	EC960	Industrial Automation	3	0	0	3
11	EC961	Embedded Control Systems	3	0	0	3
12	EC962	Control of Cyber-Physical Systems	3	0	0	3
13	EC963	Automotive Electronics	3	0	0	3
14	EC964	Deep Learning Fundamentals	3	0	0	3
15	EC965	Design with PIC Microcontrollers	3	0	0	3
16	EC966	Intelligent Control Systems	3	0	0	3
17	EC967	Industrial Data Communication	3	0	0	3
18	EC968	Industrial Instrumentation for Process Control	3	0	0	3
19	EC969	Micro Electro Mechanical Systems	3	0	0	3
20	EC970	Mobile Communication Networks	3	0	0	3

Methodology to offer Open Electives

Candidates shall register for Open Electives offered by other departments of the Institute in the 4th, 5th and 6th semesters. If one or more professional electives (listed above) are offered by other departments, those courses are also registered by the candidates as open electives with the prior approval from HoD of Department of Electronics and Communication Engineering and Dean (Academic Courses) taking into account of perquisite requirement. The course codes for those courses should be changed as "EC7XX" and included in the Suggested list of Open Electives in sequence without actually removing those courses from the list of professional electives.

Suggested List of Open Electives

Sl.No.	Course Code	Course Name	Credits			
			L	T	P	C
1	EC701	Unix Shell Programming	3	0	0	3
2	EC702	Embedded Systems Design	3	0	0	3
3	EC703	Soft Computing	3	0	0	3
4	EC704	Digital Electronics	3	0	0	3
5	EC751	Database Management Systems	3	0	0	3
6	EC752	Solid State Devices	3	0	0	3
7	EC753	Medical Instrumentation	3	0	0	3
8	EC754	Smart Sensors	3	0	0	3
9	EC755	FPGA Based System Design	3	0	0	3

Additional courses shall be added to this list, when appropriate courses as approved by Dean (Academic Courses) are offered by other departments and registered by the candidates.

Methodology to offer Value Added Courses

Candidates shall register for Value Added Courses which shall be organized by the Institute or by the Department during any time from 3rd Semester onwards for a maximum of 7 credits. Value Added Courses shall be offered for 1 credit or 2 credits for the duration of 15 hours or 30 hours respectively. All Value Added Courses are considered as Employability Enhancement Courses and the credits earned are included in the 4th Semester (EM251, EM25X….) or in the 6th Semester (EM351, EM352, EM35X….). All the other Value Added Courses (more than required as well as registered after 6th Semester) are being treated as Audit Courses for which no credits will be assigned. All the Value Added Courses are to be approved by the HoD of Department of Electronics and Communication Engineering and Dean (Academic Courses).

Suggested List of Value Added Courses

Sl.No.	Course Code	Course Name	Credits (to be acquired in two or three spells or clubbed with more courses)			
			L	T	P	C
1	EM251	Hardware Description Language	2	0	2	3
2	EM25X	Pervasive and Ubiquitous Computing	3	0	0	3
3	EM351	Drone Technology	3	0	0	3
4	EM35X	Algorithmics (Practical Training)	3	0	0	3
5	EM35X	Python for Data Science	2	0	2	3
6	EM35X	Mechatronic Embedded Systems Design	2	0	2	3

Additional courses shall be added to this list, when appropriate courses as approved by Dean (Academic Courses) are offered by other departments or by the Institute and registered by the candidates.

Methodology to offer Online Courses

Candidates shall register for Online Courses offered by NPTEL, SWAYAM or other reputed institutes in the 6th and 8th semesters to a maximum of 6 credits. If one or more professional electives (listed above), approved open electives and value added courses (listed above) are offered online, those courses are also registered by the candidates as online courses with the prior approval from HoD of Department of Electronics and Communication Engineering and Dean (Academic Courses) taking into account of perquisite requirement. The course codes for those courses should be changed as "EC8XX" and included in the Suggested list of Online Courses in sequence without actually removing those courses from the list of professional electives, open electives and value added courses.

Suggested List of Online Courses

Sl.No.	Course Code	Course Name	Credits (to be acquired in two or three spells or clubbed with more courses)			
			L	T	P	C
1	EC751	Programmable Logic Controllers	3	0	0	3
2	EC752	Mobile and Sensor Computing	3	0	0	3
3	EC75X	Hardware Arithmetic for Machine Learning	3	0	0	3
4	EC75X	Electronics for Designers	3	0	0	3
5	EC75X	Introduction to Nanoelectronics	3	0	0	3
6	EC75X	Biomedical Instrumentation	3	0	0	3

Additional courses shall be added to this list, when appropriate courses as approved by Dean (Academic Courses) are offered by online and registered by the candidates.

Key Points

- Employability Enhancement Courses shall include internship, mini-projects, capstone project, value added and related skill development programmes with practicals.

- The courses pertaining to employability enhancement activities shall spread over all the semesters including first semester. Even though, there are no employability enhancement courses included in the third semester in the draft curriculum design as shown in the following table, students shall be permitted to do value added courses for 1 or 2 credits (15 hours to 30 hours of lectures). The credits thus accumulated shall be shown in the consecutive semesters where slots for value added programmes are included. Students shall be permitted to do as many value added or skill development programmes as required for their career development. The additional value added courses attended by the candidates more than 7 credits are to be treated as audit courses. For the requirement of earning 7 credits through value added courses, the students has to go through regular assessment and examination as per regulations. New value added courses shall be included every semester as per requirement to meet the current industrial needs especially in the thrust areas and to enhance the research potential of the students in their fields of interest.

Category of Courses	**Credits**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Employability Enhancement Courses	27	4	4	0	3	2	2	4	8

- The faculty advisor / mentor of each student shall suggest or recommend to register for value added courses offered by the department or by other departments or by the Institute. Further, the faculty advisor / mentor of all group of students shall support their initiative for organizing new value added courses by recommending the same to the Dean (Academic Courses) through Head of the Department. The course coordinator for each value added course shall monitor the progress of the students through continuous assessment and examination as per regulations.

- This curriculum design insists more importance to employability enhancement courses through experiential learning than the professional core or elective courses even though there are less credits considering the overall curriculum credits. The department has to play an important role in offering these type of courses and also monitoring the performance of the students as per the expected outcomes.

- The curriculum paves a pathway to improve the self-learning skills of the students on their areas of interest, especially to carry out innovative capstone projects. The courses to be registered online by each student should be with the consent of the respective faculty advisor / mentor and through the course coordinator from the department.

- If the students are having regular assessment and final examination for the registered online courses and if the course provider issues grade card, the credits earned by the candidate thus validated by a Credit Equivalence or Credit Transfer Committee as per the Institute regulations. If there is no evaluation by the course provider, the department has the responsibility to assess the candidate performance through course coordinator as per regulations.

- Students shall be permitted to register a course as online course from the Professional Elective Courses list if it not being offered in regular elective slots. Similarly if a course in the Professional Elective Courses list of the department is offered by other departments in the Institute, students shall register the same assuring the pre-requisite as open elective.

- A course in the Professional Elective Courses list shall be offered as value added course by splitting the syllabus into two or three sections appropriately so as to offer as one credit or two credit (15 hours or 30 hours) courses.

- The first year curriculum should be common and cover the maximum foundation courses not only for engineering but also for any stream like arts and science as well as to meet the requirement of industries so that a student shall become eligible to get the Certificate from the Institute along with grade cards.

- More mathematical subjects are introduced to meet the requirement of current trends in Artificial Intelligence and Data Analytics but confines to the department.

- The list of professional elective courses, open elective courses, value added courses and online courses given in the curriculum is not restricted to any limit and the contents may dynamically vary i.e., the obsolete courses shall be removed and new courses shall be included.

- The entire eight semester is for project work and for self-learning online course and hence the student has the flexibility to do the project in any industry or any other premier institutions in India or abroad.

Suggestions and Recommendations received from the Members of Pre BOS:

Mrs.K.Sathya, CTS stated that the introduction of Coding Techniques - I and II in the curriculum is very impressive and it is towards the requirement of software and hardware. She suggested that introduction of Code Error Fix and Code Debugging skills in the syllabus so as to enable the students to improve their confidence level in coding.

Mr.R.Vignesh Jeyandan, Test Engineer, Tessolve Semiconductor Pvt. Ltd., Bangalore expressed his satisfaction with the structure of curriculum from semesters 1 to 8 and suggested the following points:

- Curriculum should have project that focuses on the product development.
- Curriculum should also inculcate skills on Financial Accounting and the students should have to know the details of PF, DA and Gratuity when they are working in an MNC.
- Students should have prior knowledge in Python related concepts and coding before they study Machine Learning in seventh semester.

Mr. Mahesh Bhatkal , Director, ADM, Mumbai is impressed very much about the initiative of introducing new Programme on Electronics and Computer Engineering and suggested the following points:

- Hardware debugging may be included in Value Added Courses. He also shared a video link from www.admvlab.com which has details of hardware debugging.

- Students should have knowledge on integrating hardware and software protocols.

- Students should have necessary skills to develop embedded products using debugging tools like Logic Analyser and Patten Generator.

Dr.S.Jeyadevi, HoD, Department of Electronics and Instrumentation Engineering suggested to include Digital Control Systems instead of Nonlinear Control Systems in the curriculum and also to include Bio Medical Instrumentation and Virtual Instrumentation courses as Professional Elective Courses.

Resolution made based on the discussions made with the Stake Holders:

RESOLVED TO RECOMMEND to have 60 percent of courses in Electronics Engineering and 40 percent of courses related to Computer Engineering.

RESOLVED TO RECOMMEND to adopt National Education Policy as well as the regulations of Outcome Based Education as suggested by National Board of Accreditation while designing new curriculum and framing syllabus for the same.

RESOLVED TO RECOMMEND to have specific names for the courses on Mathematics as stated in the curriculum as it is the current trend in many premier institutions in India as well as abroad and it conveys the expected outcomes clearly.

RESOLVED TO RECOMMEND to have common curriculum for first year for all branches of Engineering and Technology to enable the students who are willing to get transfer to any branch after completion of the first year if there exists any vacancy without any hurdle to have bridge courses and also to receive Certification after completion of the first year.

RESOLVED TO RECOMMEND to include fundamentals and basic skills of Mathematics, Physics and Chemistry and their core applications in Engineering in the subject Principles of Engineering.

RESOLVED TO NOTE the introduction of Mathematical and Design Thinking Laboratories in the first and second semesters so as to face the challenges in understanding mathematical and design thinking principles in experiential way by coding with MATLAB and LabView.

RESOLVED TO RECOMMEND to frame syllabus for the courses Coding Techniques – I and II to include new programming languages considering the frequent and enormous technological changes and the immediate requirement of various industries.

RESOLVED TO SUGGEST to include as many open electives and value added courses as per requirement and to offer open electives for the other departments as per their requirement.

RESOLVED TO NOTE the introduction of Employability Enhancement Courses, which are spread over from semester 1 to semester 8 and slots for online courses to improve the self-learning skills of the students.

RESOLVED TO NOTE the total credit requirement to complete the course is 180 which is higher compared to AICTE recommendations and these 15 additional credits earned by the candidates are completely based on their skill development, which are required for their career development and growth.

RESOLVED FURTHER TO NOTE that the credits earned by the candidates through valued added courses, internships and skill development programmes and in general through all Employability Enhancement courses are all to be listed in the grade cards of respective semesters.

RESOLVED TO RECOMMEND to introduce open electives in such a way that the students of other departments as well as the students from the same department can register for those courses as per regulations requirement.

RESOLVED FURTHER TO RECOMMEND to bring all levels of Blooms Taxonomy in the design of curriculum as well as in the formation of syllabus and in the practicals.

RESOLVED TO RECOMMEND to introduce a course on Augmented Reality and Virtual Reality in all engineering programmes.

RESOLVED TO SUGGEST to have course code with five characters, first two characters represent the Department Code and for foundational courses, the first two characters are to be decided as follows:

Department / Course Code	Description
EP	Electronics and Computer Engineering
GE	General Engineering

SH	Science and Humanities
MA	Mathematics
PH	Physics
CY	Chemistry
EM	Employability Enhancement Courses

RESOLVED TO SUGGEST to have the third character for Open Elective courses, online courses and professional elective courses as "7", "8" and "9" respectively and for all other courses, the third character is the year number (1, 2, 3, and 4) and the last two characters are sequence numbers start with "01" to "49" for odd semesters and "51" to "99" for even semesters.

The following suggestions and recommendations were given during the discussion.

- Dr.H.Umma Habiba, Ph.D., Appreciated the new course proposal of Electronics and Computer Engineering and also mentioned companies expecting these types of courses. This course is great opportunity to students and also MNC need multi-disciplinary students also.
- Dr.H.Umma Habiba, Ph.D., suggested that 170 credits are fine for Electronics and Computer Engineering Course.
- Advisor justified that 165 Credit is allocated for as usual course and 15 credits is allocated for Employability Enhancement courses. So that no need of Placement training at 7^{th} and 8^{th} semester .It will useful for higher studies also.
- Dr.D.Sriram Kumar, Ph.D., and Dr.H.Umma Habiba, Ph.D., Accepted the 180 credit system and asked about Grade card details.
- Advisor/KCET explained the details of Grade Sheet and Value added course has separate grade Sheet.
- Dr.A.Amalin Prince, Ph.D., suggested Computer Archicture from IV sem ECP can move to V semester because Microprocessor and Microcontroller appear with Computer Architeture in 4^{th} sem .

BOS 003.05

- HOD/ECE Presented First year common curriculum for all Departments which will be followed from the current academic year 2021-2022.It will come under new Regulations 2021.

List of First Year Curriculum.

As per the recommendations and suggestions received from the committee, the revised curriculum is listed as below:

SEMESTER I

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	SH101	Technical English	3	0	0	3
2	MA101	Matrices and Differential Calculus	3	1	0	4
3	PH101	Engineering Physics	3	0	0	3
4	GE101	Principles of Engineering	3	0	0	3
5	EM101	Coding Techniques - I	3	0	0	3
6	GE102	Biology for Engineers	3	0	0	3
Practicals						
7	MA102	Mathematics Laboratory (using MATLAB)	0	0	2	1

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
8	PH102	Physics Laboratory	0	0	2	1
9	EM102	Coding Techniques - I Laboratory	0	0	3	1
		Total Credits	18	1	7	22

SEMESTER II

Sl.No	Course Code	Course Name	Credits			
			L	T	P	C
Theory						
1	SH151	Technical Communication Skill Development	3	0	2	4
2	MA151	Vector Calculus and Laplace Transforms	3	0	0	3
3	CY151	Engineering Chemistry	3	0	0	3
4	GE151	Design Thinking	3	0	0	3
5	EM151	Coding Techniques - II	3	0	0	3
6	GE152	Engineering Graphics	3	0	2	4
Practicals						
7	GE153	MATLAB & LabVIEW Simulation Laboratory	0	0	4	2
8	CY152	Chemistry Laboratory	0	0	3	1
9	EM152	Coding Techniques – II Laboratory	0	0	3	1
		Total Credits	18	0	14	24

- Dr. A. Amalin Prince, Ph.D., suggested no need to mention software name in subject. Advisor also accepted and suggested to change subject name Mathematics Laboratory instead of Mathematics Laboratory using Matlab and Design thinking lab instead of Matlab and Labview in second Semester .C programming and VLSI Programming should be covered before Python Programming Class.

- Advised the syllabus of coding techniques that has only Basic 'C' Programming by BOS Members.
- Dr. Preetha suggested the Basic Electronics can be introduce in First or second Semester of Electronics and Computer Engineering Curriculum. HoD / ECE informed all dept. first year has same syllabus as per AICTE recommendation.
- Advisor suggested Principles of Engineering has chapter of Electrical, Electronics and Mechanical Engineering.

BOS 003.06

HOD/ECE Presented our dept. Achievements since June 2021.

- Implemented Digital Score Board at our college sports complex.
- Placed Record of ECE current final year students:40/91.
- IETE student's forum of Kamaraj has received the Second Highest Membership Award from IETE, Sivakasi Centre, continuously for the 5th time.
- AICTE ISTE sponsored Induction Programme / Refresher Course on "Next Generation Computing and its Application (Artificial Intelligence, Machine Learning, Deep Learning & Data Science)" for Engineering / Polytechnic faculty members with a sponsorship amount Rs.93,000/-.

Date of next meeting:

- The tentative date for the Next BoS Meeting (ECE Board) is suggested May 2022 by the BoS Members.

The meeting ended with the Vote of Thanks by R. Ashok, Assistant Professor, Department of ECE, Kamaraj College of Engineering and Technology, Virudhunagar.

M. Ramyesh
BoS Incharge

UG. Coordinator

R.S — 18/11/2021
(Dr. R.SURESH BABU)
BoS Chairman – ECE
HOD / ECE