VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2020 - 21
M.Tech in Digital Communication & Networking (ECS)
Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination				
				Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	20ELD11	Advanced Engineering Mathematics	04	--	03	40	60	100	4
2	PCC	20ECS12	Advanced Digital Signal Processing	04	--	03	40	60	100	4
3	PCC	20EVE13	Advanced Embedded System	04	--	03	40	60	100	4
4	PCC	20ECS14	Advanced Communication Systems-1	04	--	03	40	60	100	4
5	PCC	20ECS15	Advanced Computer Communication Networks	04	--	03	40	60	100	4
6	PCC	20ECSL16	Advanced Digital Signal Processing Lab	-	04	03	40	60	100	2
7	PCC	20RMI17	Research Methodology and IPR	02	--	03	40	60	100	2
			TOTAL	**22**	**04**	**21**	**280**	**420**	**700**	**24**

Note: PCC: Professional core.

Skill Development Activities(SDA) is the responsibility of the corresponding Program (for all courses coming under **BoS ECE** purview)to train the students by providing them skills through identified mentors/facilitators with the objective of enhancing their Employment/ Self-Employment opportunities. The SDA component is a part of the CIE. It should be **defined specifically** for each theory subject of **4 credits**.To meet the objectives the following guidelines are framed:

The SDA include:

1. **Formulating and incorporating** lab experiments in specified subjects, **at least** in **one subject per semester** from first to third semester. The students have to conduct lab experiments (extra) as a part of CIE marks along with other activities.
2. **In courses with strong industry connect**, **case studies/ latest trends** should be discussed as a part of subject seminar. The student **cannot assume the same cases will be part of the SEE question paper.**
3. At least one **industrial visit** before third semester is mandatory with the relevant report.
4. **Mini-project carried out in groups** with relevant literature review based on latest trends in industry / research with report in identified subject at second semester can be taken up. The **publishing of a base paper** based on the work is recommended.

For **Sl. No. 2 & 3 above**, at least 20% of the CIE marks are to be earmarked in the concerned subject, apart from regular assignments, quiz & seminars. For **Sl. No. 1& 4**, the complete CIE evaluation can be based on the practical/ lab report.In all the Skill Development Activities, **students and course instructor/s**are to involve either individually or in groups to interact together to enhance the learning and application skills of the students.

Expected outcomes

The students shall

1) Gain confidence in modeling of systems and algorithms.
2) Work on different software/s (tools) to Simulate, analyze and authenticate the output to interpret and conclude.
3) Handle advanced instruments to enhance technical talent.
4) Involve in case studies and field visits/ field work.
5) Accustom with the use of standards/codes etc., to narrow the gap between academia and industry.

All activities should **enhance students' abilities and competencies** for employment and/or self-employment opportunities,

solving engineering problems, project management skills, individual and team work, life-long learning, etc.

Internship: All the students have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted for the same semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

Note: (i) Four credit courses are designed for 50 hours Teaching – Learning process.

(ii) Three credit courses are designed for 40 hours Teaching – Learning process.

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II SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination				
				Theory	Practical/ Field work/ Assignment/ Project	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
1	PCC	20ECS21	Advanced Communication Systems-2	04	--	03	40	60	100	4
2	PCC	20ECS22	Antenna Theory and Design	04	--	03	40	60	100	4
3	PCC	20ECS23	Error Control Coding	04	--	03	40	60	100	4
4	PEC	20ECS24X	Professional elective 1	04	--	03	40	60	100	4
5	PEC	20ECS25X	Professional elective 2	04	--	03	40	60	100	4
6	PCC	20ECSL26	Advanced CommunicationLab	--	04	03	40	60	100	2
7	PCC	20ECS27	Technical Seminar	--	02	--	100	--	100	2
		TOTAL		20	06	20	340	360	700	24

Note: PCC: Professional core, PEC: Professional Elective.

Professional Elective 1		Professional Elective 2	
Course Code under 20ECS24X	Course title	Course Code under 20ECS25X	Course title
20ECS241	Wireless Sensor Networks	20ECS251	Multimedia Over Communication links
20EVE242	Nanoelectronics	20ECS252	Statistical Signal Processing
20ECS243	Cryptography and Network Security (20EVE334)	20ELD253	Micro Electro Mechanical Systems
20ECS244	Optical communication and networking	20ECS254	Simulation, Modelling and Analysis

Note:

1. Technical Seminar: CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Participation in the seminar by all postgraduate students of the same and other semesters of the programme shall be mandatory.

The CIE marks awarded for Technical Seminar, shall be based on the evaluation of Seminar Report, Presentation skill and Question and Answer session in the ratio 50:25:25.

2. Internship: All the students shall have to undergo mandatory internship of 6 weeks during the vacation of I and II semesters and /or II and III semesters. A University examination shall be conducted during III semester and the prescribed credit shall be counted in the same semester. Internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week		Examination					Credits
				Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks	Total Marks		
1	PCC	20ECS31	LTE 4G Broadband	04	--	03	40	60	100		4
2	PEC	20ECS32X	Professional elective 3	03	--	03	40	60	100		3
3	PEC	20ECS33X	Professional elective 4	03	--	03	40	60	100		3
4	PROJ	20ECS34	Project Work phase -1	--	02	--	100	--	100		2
5	PROJ	20ECS35	Mini-Project	--	02	--	100	--	100		2
6	INT	20ECSI36	Internship	(Completed during the intervening vacation of I and II semesters and /or II and III semesters.)		03	40	60	100		6
		TOTAL		**10**	**02**	**12**	**360**	**240**	**600**		**20**
Note: PCC: Professional core, PEC: Professional Elective. PROJ-Project, INT- Internship											

Professional elective 3		Professional elective 4	
Course Code under 20ECS32X	**Course title**	**Course Code under 20ECS33X**	**Course title**
20ECS321	Advances in Image Processing	20ECS331	RF and Microwave Circuit Design
20ECS322	Array Signal Processing	20ESP332	Pattern Recognition & Machine Learning
20ECS323	Real Time Systems	20ECS333	Internet of Things
20ECS324	RF MEMS	20ECS334	Communication System design using DSP algorithm

Note:

1. **Project Work Phase-1:** Students in consultation with the guide & co-guide if any, shall pursue literature survey and complete the preliminary requirements of selected Project work. Each student shall prepare relevant introductory project phase-I report, and make a project presentation.

   CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill and Question and Answer session in the ratio 50:25:25. SEE (University examination) shall be as per the University norms.

2. **Mini-Project**: Each student shall involve in carrying out the Mini-project work in constant consultation with internal guide, prepare the project report as per the norms avoiding plagiarism. A mini project is an assignment that you try to complete at the end of semester to strengthen the understanding of his/her fundamentals through effective application of theoretical concepts.

3. **Internship:** Those, who have not pursued /completed the internship shall be declared as fail in internship course and have to complete the same during subsequent University examinations after satisfying the internship requirements. Internship SEE (University examination) shall be as per the University norms..

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IV SEMESTER

| Sl. No | Course | Course Code | Course Title | Teaching Hours /Week | | Examination | | | | |
				Theory	Practical/ Field work/ Assignment	Duration in hours	CIE Marks	SEE Marks Viva voce	Total Marks	Credits
1	Project	20ECS41	Project work phase -2	--	04	03	40	60	100	20
			TOTAL	--	**04**	**03**	**40**	**60**	**100**	**20**

Note:
1. Project Phase-2:
CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a Senior faculty of the department. The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report subjected to plagiarism check, Project Presentation skill and Question and Answer session in the ratio 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.