ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ
ವಿಟಿಯು ಅಧಿನಿಯಮ ೧೯೯೪ರ ಅಡಿಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರದಿಂದ ಸ್ಥಾಪಿತವಾದ ರಾಜ್ಯವಿಶ್ವವಿದ್ಯಾಲಯ
VISVESVARAYA TECHNOLOGICAL UNIVERSITY
State University of Government of Karnataka Established as per the VTU Act, 1994"JnanaSangama" Belagavi-590018, Karnataka, India

Dr. Prasad B. Rampure , M.E., Ph.D
REGISTRAR

Phone: (0831) 2498100
Fax: (0831) 2405467

REF: VTU/BGM/879/CVFeedback/2025-26/ 5212 DATE: 31 DEC 2025

CIRCULAR

Subject: Seeking Feedback on Draft Scheme (III–VIII Semesters) – Electronics & Communication Engineering and its allied Branches

Reference: Chairperson's email dated: 30.12.2025

Dear Sir/Madam,

The Board of Studies (BoS) in Electronics and Communication Engineering, VTU Belagavi, has prepared the draft scheme of studies for III to VIII semesters of the Electrical & Electronics Engineering programme and its allied branches.

In this regard, the University invites constructive feedback from faculty members of all affiliated colleges. Your valuable insights and suggestions will play a crucial role in refining the schemes to ensure alignment with contemporary academic standards, industry requirements, and the evolving needs of students.

You are kindly requested to:

- Review the draft schemes thoroughly.
- Provide specific comments, suggestions, or recommendations on the scheme structure, course content, and examination framework.
- Submit consolidated feedback from your institution to the University on or before **10.01.2026**.

The feedback may be sent electronically to **sbhvtuso2022@gmail.com** or submitted in hard copy to the undersigned.

We sincerely appreciate your cooperation and contribution to this important academic exercise. Your active participation will help strengthen the teaching–learning process and uphold the quality benchmarks of VTU.

Thank you for your continued support.

Sd/-
Registrar

To,

1. The Principals / Heads of Department, Electronics & Communication Engineering, and their allied Departments, all Affiliated Colleges of VTU Belagavi
2. The Chairpersons/ Programme Coordinator, University Departments at Kalaburgi, Mysuru, and Bengaluru (Muddenhalli)

Copy to:

- The Hon'ble Vice-Chancellor, through the Secretary to the VC, for information
- The Dean, Faculty of Engineering, VTU, for information
- The Registrar (Evaluation) for information
- Chairperson BoS in ECE for UG programmes, VTU, Belagavi, for information
- The Director ITI SMU, VTU Belagavi, for information and request to make the arrangement to upload the circular on VTU's web portal
- Office file

Paul/31/12/25
REGISTRAR

1/1

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangam, Machhe, Belagavi-590018

Scheme of Teaching and Examinations 2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS)

B.E. in Electronics & Communication Engineering

(Effective from the academic year 2025-26)

B.E. in Electronics and Communication Engineering, Scheme of Teaching and Examinations 2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BMAT301	**Transform Techniques and Optimization Theory**	TD /PSB: Mathematics/ Specific department	3	0	0	0	3	50	50	100	4
2	IPCC	1BXX302	**Digital System Design Using Verilog**	TD/PSB	3	0	2	0	5	50	50	100	4
3	PCC	1BXX303	**Analog Electronics and Linear Integrated Circuits**	TD/PSB	3	0	0	0	3	50	50	100	4
4	PCC	1BXX304	**Network Analysis**	TD/PSB	3	2	0	0	3	50	50	100	3
5	PCC	1BXX305	**Sensors and Measurement Techniques**	TD/PSB	3	0	0	0	3	50	50	100	3
6	PCCL	1BXXL306	**Analog Electronics and Linear Integrated Circuits Lab**	TD/PSB	0	0	2	1	3	50	50	100	1
7	AEC	1BXXL307x	Ability Enhancement Course Laboratory**	TD/PSB	0	0	2	1	3	50	50	100	1
8	SDC	1BCP308	Community Project (Project-Based Learning)	Any Department/ Respective Engineering Dept.	0	0	0	2	2	50	50	100	1
9		1BNSS309	National Service Scheme (NSS)	Campus NSS coordinator									

	NCMC	1BPE309	Physical Education (PE) (Sports and Athletics)		Physical Education Director	0	0	2		--	100	---	100	PP
		1BYOG309	Yoga		Yoga Teacher									
		1BMUK309	Music		Music Teacher									
10	NCMC	1BMATDIP310	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE		3	0	0	3	3	100	---	100	PP
Total											**600**	**400**	**1000**	**21**

Ability Enhancement Course (Laboratory) 1BxxL307x			
1BxxL307A	**Introduction to Data structures**	**1BxxL307C**	**Sensors and Instrumentation Lab**
1BxxL307B	**Programming in JAVA**	**1Bxx307D**	**Analog Electronic Circuit Simulations Lab**

** The course 1BXXL307 – Ability Enhancement Course Laboratory can be offered either as a single compulsory course. Alternatively, the course 1BXXL307 – Ability Enhancement Course Laboratory shall be offered as multiple elective options under the course codes 1BXXL307x (where *x = A, B, C, D*).

Note to Chairpersons: If only one course is selected, the title of the course may please be entered at serial number 7 of the Scheme of Teaching and Examinations and the above table along with this row shall be deleted. In case, multiple courses are selected the above table shall be filled with the course titles and this row shall be deleted.

Integrated Professional Core Course (IPCC): Is a theory course integrated with laboratory of the same subject. The theory component of the IPCC shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). The laboratory part shall be assessed exclusively through CIE, with no SEE. However, questions derived from the laboratory part may be included in the SEE question paper to ensure comprehensive evaluation.

1BCP308-Community Project: The Community Project can be carried out **individually** or in a **group of 4 to 6 students**.

CIE: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide. The CIE marks awarded for the project work shall be based on the evaluation of the project work report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

SEE: SEE will be conducted by the two examiners appointed by the University. The SEE marks awarded for the project work shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25.

National Service Scheme / Physical Education / Yoga/Music (NSS / PE / YOG/MUK): All students are required to register for any one of the following courses: National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), Yoga (YOG) or Music (MUK)—with the respective course coordinator during the first week of the third semester.

- Colleges shall submit Continuous Internal Evaluation (CIE) marks for each semester based on the activities completed by students under the selected course.
- Students may opt for different activities/options across semesters. For instance, a student participating in PE during 3rd semester may choose NSS in the 4th semester or Yoga.
- Activities shall be conducted over two semesters (III & IV), and successful completion of the registered course / or courses along with the required CIE score is mandatory for the award of the degree.
- Institutions must ensure that events are appropriately scheduled and reflected in the semester-wise calendar for NSS, PE, Music, and Yoga activities.

These courses shall not be considered for the calculation of SGPA or CGPA and for vertical progression. However, completion of course(s) is compulsory for degree eligibility.

Non-Credit Mandatory Courses (NCMC): Successful completion of the NCMC is compulsory for fulfilling the requirements of the academic program. It shall not be considered for the computation of SGPA, CGPA and vertical progression. Each student shall register for the prescribed NCMC(s) in the prescribed semester. A student who fails to qualify in the prescribed NCMC shall not be eligible for the conferment of the degree.

1BMATDIP310 – Bridge Course on Mathematics for Lateral Entry Students: This course can be taught in the **offline** mode by the faculty of the mathematics department of the college as per the normal procedure to the students. The students can attend the class at their college or the can choose the VTU **online mode,** conducted by Centre for Online Education (COE) of VTU. Only CIE is only prescribed for this course and the CIE assessment is only by VTU online COE, and not at the institution level.
All lateral entry students are required to **register** compulsorily for this course in the 3rd semester and must appear for **CIE.** Passing in this course is **mandatory** for the award of
the degree. Those who fail to secure the passing CIE marks, have to appear for the summer semester of the academic year or during subsequent odd semester. However, this course will not be considered for vertical progression, SGPA, and CGPA calculation.

AICTE Activity Points Requirement for BE/B.Tech. Programmes

As per AICTE guidelines (refer to Chapter 6 – *AICTE Activity Point Program, Model Internship Guidelines*), in addition to academic requirements, students must earn a specified number of **Activity Points** to be eligible for the award of the degree. The points to be earned are as follows:

Regular students admitted to a 4-year degree program must earn **100 Activity Points**.

Lateral entry students (joining from the second year) must earn **75 Activity Points**.

Students transferred from other universities directly into the fifth semester must earn **50 Activity Points** from the date of entry into VTU.

These Activity Points do not carry any credits, and therefore, the points are not considered for **the SGPA/CGPA** or for **vertical progression**. However, earning Activity Points is mandatory for the **award of the degree**, and the points earned will be reflected on the **eighth semester Grade Card**.

The hours spent earning the activity points will not be counted for regular attendance requirements. Students can accumulate these points at any time during their program period, including weekends, holidays, and vacations, starting from the year of admission, provided they meet the minimum hours of engagement prescribed for each activity by AICTE.

If a student completes all the semesters (eight/six) successfully, but fails to earn the required Activity Points, the eighth-semester Grade Card will be withheld until the Activity

points requirement is fulfilled. Also, the degree will be awarded only after the Grade Card has been released.

B.E. in Electronics and Communication Engineering, Scheme of Teaching and Examinations-2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BXX401	**Mathematics for Machine Learning**	TD/PSB:	3	0	0	0	3	50	50	100	3
2	IPCC	1BXX402	**Computer Organization and Microcontroller**	TD/PSB	3	0	2	0	5	50	50	100	4
3	PCC	1BXX403	**Signals and Systems**	TD/PSB	3	0	0	0	3	50	50	100	4
4	PCC	1BXX404	**Control Systems**	TD/PSB	3	0	0	0	3	50	50	100	3
5	PCCL	1BXXL405	**Signals and Control Lab**	TD/PSB	0	0	2	1	3	50	50	100	1
6	AEC	1BxxL406	**Ability Enhancement Course Laboratory****		0	0	2	1	3	50	50	100	1
7	BSC	1Bxx407	Programme Specific Biology	TD / PSB	2	0	0	1	3	50	50	100	2
8	SDC	1BEP408	Environmental Science Project (Interdisciplinary Project Based Learning)	TD/PSB	0	0	0	2	3	50	50	100	1
9	NCMC	1BNSK409	National Service Scheme (NSS)	Campus – NSS coordinator	0	0	2		--	100	---	100	PP
		1BPEK409	Physical Education (PE) (Sports and Athletics)	Campus – Physical Education Director									
		1BYOK409	Yoga	Campus – Yoga Teacher									
		1BMUS409	Music	Campus – Music Teacher									
10	NCMC	1BMATDIP410	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE					--	100	--	100	PP
				Total						**600**	**400**	**1000**	**19**

Ability Enhancement Course (Laboratory) 1BxxL406x			
1BxxL406A	**Basics of Machine Learning**	1BxxL406C	**IOT lab**
1BxxL406B	**System design using Verilog**	1BxxL406D	**Microcontroller Lab**

** The course 1BXXL406x – Ability Enhancement Course Laboratory can be offered either as a single compulsory course. Alternatively, the Ability Enhancement Course Laboratory course can be offered with multiple elective options under the course codes 1BXXL406x (where *x = A, B, C, D*).

Note to Chairpersons: If only one course is selected, the title of the course may please be entered at serial number 6 of the Scheme of Teaching and Examinations and the above table along with this row shall be deleted. In case, multiple courses are selected the above table shall be filled with the course titles and this row shall be deleted.

Environmental Science project: The evaluation shall be done as per the following;

CIE: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide. The CIE marks awarded for the project work, shall be based on the evaluation of the project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

SEE: SEE will be conducted by the two examiners appointed by the University. The SEE marks awarded for the project work shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25.

1BMATDIP410 – Bridge Course on Mathematics for Lateral Entry Students: All lateral entry students are required to **register** compulsorily for this course in the 4th semester and must appear for **CIE.** Passing in this course is **mandatory** for the award of the degree. Those who fail to secure the passing CIE marks have to appear for the summer semester of the academic year or during the subsequent even semester. However, this course will not be considered for vertical progression, SGPA, and CGPA calculation.

B.E. in Electronics and Communication Engineering, Scheme of Teaching and Examinations-2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

V SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self – Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	HSMC	1BXX501	This course must be pertaining to economics and management of the concerned degree program. The course syllabus should have both economics and management topics and the course title should bear the word Management.	TD/PSB:	3	0	0	0	3	50	50	100	3
2	IPCC	1BXX502	**Digital Signal Processing**	TD/PSB	3	0	2	0	5	50	50	100	4
3	PCC	1BXX503	**Engineering Electromagnetics**	TD/PSB	3	2	0	0	3	50	50	100	3
4	PCC	1BXX504	**Introduction to VLSI Design**	TD/PSB	3	0	0	0	3	50	50	100	3
5	PEC	1BXX505x	**Professional Elective Course-I**	TD/PSB					3	50	50	100	3
6	BSC	1BRM506	Research Methodology and IPR (**Online**)	VTU online CoE CIE and SEE by COE	2	0	0	0	2	50	50	100	2
7	PCCL	1BxxL507	**VLSI Lab**	TD/PSB	0	0	2	1	3	50	50	100	1
8	SDC	1BXX508	**Hackathon-Based Project**	CIE: By Departments SEE: Evaluation by industry experts	0	0	0	2	--	50	50	100	2
								Total		**400**	**400**	**800**	**21**

Professional Elective Course-I

1BXX505A	**Machine Learning for Communication systems**	1BXX505C	**Bio-medical Instrumentation and Signal Processing**
1BXX505B	**Real Time Systems**	1BXX505D	**Semiconductor Process and Manufacturing Techniques**

1Bxx508 - Hackathon-Based Project: These projects shall be evaluated by industry experts, based on creativity, problem-solving approach, teamwork, and possible implementation, as far as possible, as and when the project is completed.

For the attention of students:

Option -1: Swappable Semester Scheme - A

To ensure equitable access to internship opportunities, provision has been made to swap seventh and eighth semesters under Scheme A. The details of the Scheme – A are as follows:

Option – 1:

(i) Students who have an offer to enroll for a minimum of 15 weeks (90 working days) internship at the start of the final(4^{th}) academic year shall register for VIII semester instead of VII semester. At the end of the VIII semester, they shall appear for the VIII semester SEE. Subsequently, they shall register for the VII semester and attend the SEE at the end of that semester.

(ii) Those who have no offer to enroll to a minimum of 15-week (90 working days) internship, at the start of the final(4^{th}) academic year, shall register VII and VIII semesters in the chronological manner and complete the programme. In this case the internship shall be carried out during the VIII semester.

Option -2: Two-Semester Internship Scheme – B

(i) Students who have cleared all the courses up to VI semester in the first attempt only (i.e., students having no backlogs) and have an internship offer for a minimum period of 180 working days or 30 working weeks, are only eligible for Scheme – B. The internship commencement date should coincide with the 4^{th} year academic calendar of VTU. Such students, shall produce the confirmed internship letter, to the Principal/Academic Authority to get permission to register for the summer semester to opt for Scheme - B.

(ii) Such eligibles students shall register for the course 1Bxx701 in the summer semester of the same academic year (i.e., after their VI semester) and complete the said course in first attempt only.

(iii) In case, they absent for the examination or fails in the course 1Bxx701, they shall not be considered eligible for the Scheme-B. However, they shall register for Scheme – A.

(iv) After completing the course 1Bxx701, students with a confirmed internship letter to carry out the internship for a minimum of 180 working days or 30 working weeks, shall register for the Scheme – B.

(v) In case students cannot commence the internship for various reasons, they will not be considered for Scheme – B. In such cases, they shall register for Scheme – A. However, they will be exempted from studying the course 1Bxx701 again.

(vi) A request letter with an internship permission letter must be submitted to the Registrar, VTU through the concerned authorities of the institution. Only after receiving the approval from the Registrar, students proceed with the internship as mentioned in Option Scheme B.

***** Capstone Project Guidelines for Students who have opt for Scheme - B:**

(i) In cases where students have undertaken the capstone project phase -I, before enrolling to Scheme – B in VI semester, they shall appear for the prescribed evaluation of phase -I during VI semester. During IV year of the program, they shall undertake both phase -II of the capstone project and the internship. At the end of VII semester as per University Calander, they shall appear for phase – II examination and at the end of VIII semester, they shall appear for internship examination.

(ii) In case students wish to undertake up a capstone project during IV year of the program along with the internship on the same topic as the capstone project, they shall do so, without registering for VI semester capstone project phase -I. In such cases, students shall complete Phase -I in the VII semester and phase – II in the VIII semester. The earned credits shall be reflected in the respective semesters as specified in the Scheme of Teaching and Examinations. At the end of VIII semester, they shall appear for internship examination.

B.E. in Electronics and Communication Engineering, Scheme of Teaching and Examinations-2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

VI SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX601	**Computer Networking and Communication**	TD/PSB-	3	0	2	0	5	50	50	100	4
2	PCC	1BXX602	**Antenna and Wireless Communication**	TD/PSB-	3	0	2	0	3	50	50	100	3
3	PCC	1BXX603	**Analog & Digital Communication**	TD/PSB-	3	0	0	0	3	50	50	100	3
4	PCC	1Bxx604	**FPGA Based System Design**	TD/PSB-	3	0	0	0	3	50	50	100	3
5	PEC	1BXX605x	**Professional Elective Courses-II**	TD/PSB-	3	0	0	0	3	50	50	100	3
6	PCCL	1BxxL606	**Communications lab**	TD/PSB-	0	0	2	1	3	50	50	100	1
7	AEC	1BxxL607x	**Ability Enhancement Course Laboratory**	TD/PSB-	0	0	2	1	3	50	50	100	1
8	SDC	1BXX608	Capstone Project - Phase I	TD/PSB-	0	0	0	6	3	100	--	100	3
9	NCMC	1Bxx609	**Universal Human Value (VTU ONLINE Course)**	CIE: By VTU online COE	1	0	0	0		100	---	100	PP
				Total						**550**	**350**	**900**	**21**

Professional Elective Course-II

1BXX605A	**5G & 6G Communication Standards**	1BXX605C	**Artificial Neural Networks & Deep Learning**
1BXX605B	**Embedded Secure Element**	1BXX605D	**Analog and Mixed Mode VLSI Design**

Ability Enhancement Course Laboratory

1BxxL607A	**FPGA Computing Lab**	1BxxL607C	**Tools for Machine Learning and Deep Learning**
1BxxL607B	**Design of Sensor Boards for Applications**	1BxxL607D	**PCB Design and Simulation using EDA tools**

** The course 1BXXL607 – Ability Enhancement Course Laboratory can be offered either as a single compulsory course. Alternatively, the course 1BXXL307 – Ability Enhancement Course Laboratory shall be offered as multiple elective options under the course codes 1BXXL307x (where x = A, B, C, D).

Note to Chairpersons: If only one course is selected, the title of the course may please be entered at serial number 7 of the Scheme of Teaching and Examinations and the above table along with this row shall be deleted. In case, multiple courses are selected the above table shall be filled with the course titles and this row shall be deleted.

B.E. in Electronics and Communication Engineering, Scheme of Teaching and Examinations-2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

VII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self – Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX701	**Edge computing with Tiny ML**	TD/PSB-	3	0	2	0	5	50	50	100	4
2	PEC	1BXX702x	Professional Elective Course-III	TD/PSB-	3	0	0	0	3	50	50	100	3
3	PEC	1BXX703x	Professional Elective Course -IV	TD/PSB-	3	0	0	0	3	50	50	100	3
4	OEC	1BXX704x	Open Elective Course-I	TD/PSB-	3	0	0	0	3	50	50	100	3
5	SDC	1BXX705	Capstone Project - Phase-II	TD/PSB-	0	0	0	14	3	100	100	200	7
6	NCMC	1BIKS706	Indian Knowledge System (VTU online Course)	VTU Online CoE, CIE: By COE	1	0	0	0	---	100	--	100	PP
				Total					**15**	**400**	**300**		
												Total	**20**

Professional Elective Course-III

1Bxx702A	**RF Electronics**	1Bxx702C	**Image Processing and Pattern Recognition**
1Bxx702B	**IoT Device Security**	1Bxx702D	**Low Power VLSI**

Professional Elective Course-IV

1BXX703A	**Digital Logic Verification**	1BXX703C	**Automotive Technology**
1BXX703B	**Cloud computing**	1BXX703D	**Cryptography & Network Security**

Open Elective Course-I

1BXX704A	**Sensors and actuators**	1BXX704C	**Consumer Electronics**
1BXX704B	**Automotive Electronics**	1BXX704D	**Foreign Language (NPTEL/SWAYAM/online VTU)**

Open Elective Courses: Students belonging to a particular stream of Engineering and Technology are **not entitled** to the open electives offered by their parent Department. On the other hand, they have to opt for an elective offered by other Departments, provided they satisfy the prerequisite conditions, if any, for a course. Registration to open electives
shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor/Proctor.

Capstone Project Phase-II:
CIE of Phase shall be evaluated as indicated with phase -I evaluation. The SEE shall be conducted by university-appointed examiners. The assessment should focus on technical depth, innovation, problem-solving ability, implementation quality, and presentation skills.
SEE Marks awarded for phase-II shall be based on the evaluation of the phase-II project Report, presentation skill, and question and answer session in the ratio 50:25:25 respectively. The marks awarded for the phase-II project report shall only be the same for all the batchmates.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangam, Machhe, Belagavi-590018

Scheme of Teaching and Examinations 2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS)
(Effective from the academic year 2025-26)

B.E. in Advanced Communication Technology,
Scheme of Teaching and Examinations 2025
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BMAT301	**Transform Techniques and Optimization Theory**	ECE /ECE	3	2	0		3	50	50	100	4
2	IPCC	1BXX302	**Digital System Design using Verilog**	Electrical Cluster	3	0	2		3	50	50	100	4
3	PCC	1BXX303	**Network Analysis**	Electrical Cluster	3	2	0		3	50	50	100	4
TD/PSB	PCC	1BXX304	**Analog Electronics and Linear Integrated Circuits**	Electrical Cluster	3	0	0		3	50	50	100	3
TD/PSB	PCC	1BXX305	**Introduction to IoT**	ECE/ECE	3	0	0		3	50	50	100	3
6	PCCL	1BXXL306	**Analog Electronics and Linear Integrated Circuits Lab**	Electrical Cluster	0	0	2		2	50	50	100	1
7	AEC	1BXXL307x	**Ability Enhancement Course Laboratory****	ECE/ECE	0	0	2		2	50	50	100	1
8	SDC	1BCP308	Community Project (Project-Based Learning)	Any Department/ Respective Engineering Dept.	0	0	0	2	2	50	50	100	1
		1BNSS309	National Service Scheme (NSS)	Ca NSS coordinator		0	2						

9	NCMC	1BPE309	Physical Education (PE) (Sports and Athletics)	m pu s	Physical Education Director	0				--	100	---	100	PP
		1BYOG309	Yoga		Yoga Teacher									
		1BMUK309	Music		Music Teacher									
10	NCMC	1BMATDIP310	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE		3	0	0	3	3	100	---	100	PP
					Total						**600**	**400**	**1000**	**21**

Ability Enhancement Course (Laboratory) 1BxxL307x			
1BxxL307A	**Data Structure and Algorithms Lab**	1BxxL307C	**Linux Fundamentals**
1BxxL307B	**Fundamentals of Operating Systems**	1Bxx307D	**Analog Electronic Circuits Simulation**

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IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self - Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BXX401	**Analog Communication Systems**	ECE/ECE	3	0	0		3	50	50	100	3
2	IPCC	1BXX402	**Signals and Systems**	ECE/ECE	3	0	2		3	50	50	100	4
3	PCC	1BXX403	**Control Systems**	Electrical Cluster	3	2	0		3	50	50	100	4
4	PCC	1BXX404	**Computer Organization and Microcontroller**	Electrical Cluster	3	0	0		3	50	50	100	3
5	PCCL	1BXXL405	**Analog Communication Lab**	ECE/ECE	0	0	2		2	50	50	100	1
6	AEC	1BxxL406	**Ability Enhancement Course Laboratory****	ECE/ECE	0	0	2		2	50	50	100	1
7	BSC	1Bxx407	Programme Specific Biology	TD / PSB	2	0	0		3	50	50	100	2
8	SDC	1BEP408	Environmental Science Project	TD/PSB	0	0	0	2	3	50	50	100	1
9	NCMC	1BNSK409	National Service Scheme (NSS)	Campus: NSS coordinator	0	0	2		--	100	---	100	PP
		1BPEK409	Physical Education (PE) (Sports and Athletics)	Campus: Physical Education Director									
		1BYOK409	Yoga	Campus: Yoga Teacher									
		1BMUS409	Music	Campus: Music Teacher									
10	NCMC	1BMATDIP410	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE					--	100	--	100	PP
				Total						**600**	**400**	**1000**	**19**

Ability Enhancement Course (Laboratory) 1BxxL406x			
1BxxL406A	**Python for understanding random processes**	1BxxL406C	**Micro controller Programming**
1BxxL406B	**Communication Systems using Simulink**	1BxxL406D	**Introduction to Machine Learning**

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V SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self – Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	HSMC	1BXX501	Entrepreneurship and Management	TD/PSB:	3	0	0		3	50	50	100	3
2	IPCC	1BXX502	**Digital Signal Processing**	ECE/ECE	3	0	2		3	50	50	100	4
3	PCC	1BXX503	**Digital Communication Systems**	ECE/ECE	3	0	0		3	50	50	100	3
4	PCC	1BXX504	**Engineering Electromagnetics**	ECE/ECE	3	0	0		3	50	50	100	3
5	PEC	1BXX505x	**Professional Elective Course-I**	TD/PSB	3	0	0		3	50	50	100	3
6	BSC	1BRM506	Research Methodology and IPR (Online)	VTU online CoE CIE and SEE by COE	2	0	0	0	02	50	50	100	2
7	PCCL	1BxxL507	Digital Communication Lab	ECE/ECE	0	0	2	0	02	50	50	100	1
8	SDC	1BXX508	Hackathon-Based Project	CIE: By Departments SEE: Evaluation by industry experts	0	0	0	2	--	50	50	100	2
								Total		**400**	**400**	**800**	**21**

Professional Elective Course-I

1BXX505A	**Real life applications of signal processing (speech, image, biomedical signals)**	1BXX505C	**Satellite Communication**

1BXX505B	**Error Control Coding**	1BXX505D	**Advance Multimedia**

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VI SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX601	**Antenna and Wireless Communication**	ECE/ECE	3	0	2		3	50	50	100	4
2	PCC	1BXX602	**Cryptography and Network Security**	ECE/ECE	3	0	0		3	50	50	100	3
3	PCC	1BXX603	**Introduction to VLSI Design**	ECE/ECE	3	0	0		3	50	50	100	3
4	PCC	1Bxx604	**Computer Communication Networks**	ECE/ECE	3	0	0		3	50	50	100	3
5	PEC	1BXX605x	**Professional Elective Courses-II**	ECE/ECE	3	0	0		3	50	50	100	3
6	PCCL	1BxxL606	**VLSI Lab**	ECE/ECE	0	0	2		2	50	50	100	1
7	AEC	1BxxL607x	**Ability Enhancement Course Laboratory'**	ECE/ECE	0	0	2	0	2	50	50	100	1
8	SDC	1BXX608	Capstone Project - Phase I	ECE/ECE	0	0	0	6	3	100	--	100	3
9	NCMC	1Bxx609	Universal Human Value (VTU ONLINE Course)	CIE: By VTU online COE	1	0	0	0		100	---	100	PP
				Total						**550**	**350**	**900**	**21**

Professional Elective Course-II

1BXX605A	**Computer Vision**	1BXX605C	**Optical fiber communication**
1BXX605B	**Signal Detection and Estimation**	1BXX605D	**Fundamentals of Deep Learning and Data Science**

Ability Enhancement Course Laboratory**

1BxxL607A	**Structures Query Language**	1BxxL607C	**Antenna and Propagation Lab**
1BxxL607B	**Python for deep learning**	1BxxL607D	**Cryptography and network security using C/Python**

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VII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self – Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX701	**RF and Microwave Engineering**	ECE/ECE	3	0	2		3	50	50	100	4
2	PEC	1BXX702x	**Professional Elective Course-III**	ECE/ECE	3	0	0		3	50	50	100	3
3	PEC	1BXX703x	**Professional Elective Course -IV**	ECE/ECE	3	0	0		3	50	50	100	3
4	OEC	1BXX704x	Open Elective Course-I	ECE/ECE	3	0	0		3	50	50	100	3
5	SDC	1BXX705	Capstone Project - Phase-II	ECE/ECE	0	0	0	14	3	100	100	200	7
6	NCMC	1BIKS706	Indian Knowledge System (VTU online Course)	VTU Online CoE, CIE: By COE	1	0	0	0	---	100	--	100	PP
				Total					**15**	**400**	**300**	**700**	**20**

Professional Elective Course-III			
1Bxx702A	**System on Chip**	1Bxx702C	**MIMO Wireless Communication**
1Bxx702B	5G and 6G Communication Technologies	1Bxx702D	**Wireless Sensor Networks**
Professional Elective Course-IV			
1BXX703A	**Synthetic Timing and Analysis**	1BXX703C	**Radar Engineering**
1BXX703B	Optimization Techniques in advanced communication	1BXX703D	**Edge and Cloud Computing**
Open Elective Course-I			
1BXX704A	**Smart and Wearable Sensors**	1BXX704C	**Drone Technology**
1BXX704B	**Consumer Electronics**	1BXX704D	**Foreign Language (NPTEL/SWAYAM/online VTU)**

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VIII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	PEC	1Bxx801x	Professional Elective-V (NPTEL/VTU Online Course)	Online Evaluation					3	50	50	100	3
2	OEC	1Bxx802x	Open Elective-II (NPTEL/VTU Online Course)	Online Evaluation					3	50	50	100	3
3	SDC	1Bxx803x	Internship (15 weeks or 90 working days)	--	--	--	--	--	3	100	100	200	12
				Total					9	**200**	**200**	**400**	**18**

Professional Elective Course (Online courses)-V			
1Bxx801A	NPTEL/VTU Online Course	1Bxx801C	NPTEL/VTU Online Course
1Bxx801B	NPTEL/VTU Online Course	1Bxx801D	NPTEL/VTU Online Course
Open Elective Courses -II (Online Courses)			
1Bxx802A	NPTEL/VTU Online Course	1Bxx802C	NPTEL/VTU Online Course
1Bxx802B	NPTEL/VTU Online Course	1Bxx802D	**Foreign Language** (NPTEL/SWAYAM/online VTU)

Types of Internships (Course Code: 1Bxx803x)

Students shall undertake one of the following internship types during the eighth semester, as per academic guidelines:

1. **1Bxx803A – Industry Internship**: Shall involve practical exposure and training within an industrial or corporate setting.

2. **1Bxx803B – Research Internship**: Shall focus on academic or applied research under the guidance of faculty or research institutions.
3. **1Bxx803C – Post-Placement Internship**: Shall be undertaken by students who have secured placement, aligning with their future employment domain.
4. **1Bxx803D – Societal Internship**: Shall engage students in community-based or social impact projects with NGOs, government bodies, or civic organizations.
5. **1Bxx803E – Online Internship**: Shall be conducted through recognized digital platforms offering structured internship modules.
6. **1Bxx803F – Skill Enhancement Internship:** Shall be opted by students unable to secure internships, offering credit equivalence through curated online courses available at http:// www.online.vtu.ac.in

To ensure uniformity, quality, and transparency in the internship process, **VTU has launched a centralized web portal** that serves as a **single platform** for all internship opportunities. Reputed **industries, Centres of Excellence, Research Laboratories**, and other recognized bodies will be registered on this portal. **Students must choose internships exclusively through this portal**. **No other mode of internship selection will be permitted**

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangam, Machhe, Belagavi-590018

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B.E. in Electronics & Computer Engineering
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Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BMAT301	Transform Calculus, Fourier Series and Numerical Techniques	Mathematics / Specific department	3	2	0		3	50	50	100	4
2	IPCC	1BXX302	Digital System Design using Verilog	Electrical Cluster	3	0	2		3	50	50	100	4
3	PCC	1BXX303	Object Oriented Programming using C++	Electrical/ CSE Cluster	3	2	0		3	50	50	100	4
4	PCC	1BXX304	Nanoelectronics: Materials, Devices and Fabrication Overview	Electrical/ CSE Cluster	3	0	0		3	50	50	100	3
5	PCC	1BXX305	Analog Electronics and Linear Integrated Circuits	Electrical/ CSE Cluster	3	0	0		3	50	50	100	3
6	PCCL	1BXXL306	Analog Electronics and Linear Integrated Circuits Lab	Electrical Cluster	0	0	2		2	50	50	100	1
7	AEC	1BXXL307x	Ability Enhancement Course Laboratory**	Electrical/ CSE Cluster	0	0	2		2	50	50	100	1
8	SDC	1BCP308	Community Project (Project-Based Learning)	Any Department/ Respective Engineering Dept.	0	0	0		2	50	50	100	1
9	NCMC	1BNSS309	National Service Scheme (NSS)	Campus: NSS coordinator	0	0	2		--	100	---	100	PP
		1BPE309	Physical Education (PE) (Sports and Athletics)	Campus: Physical Education Director									
		1BYOG309	Yoga	Campus: Yoga Teacher									
		1BMUK309	Music	Campus: Music Teacher									
10	NCMC	1BMATDIP310	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE	3	0	0		3	100	---	100	PP
								Total		**600**	**400**	**1000**	**21**

Ability Enhancement Course (Laboratory) 1BxxL307x			
1BxxL307A	Programming using C++	1BxxL307C	**Lab View**
1BxxL307B	Python Programming Laboratory	1Bxx307D	**Circuit Simulation using P-Spice**
** The course 1BXXL307 – Ability Enhancement Course Laboratory can be offered either as a single compulsory course. Alternatively, the course 1BXXL307 – Ability Enhancement Course Laboratory shall be offered as multiple elective options under the course codes 1BXXL307x (where *x = A, B, C, D*).			

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IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)		Teaching Hours /Week				Examination				Credits
						Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
						L	T	P	SL					
1	ASC/PCC	1BXX401	Mathematics for Machine Learning	Electrical Cluster		3	0	0		3	50	50	100	3
2	IPCC	1BXX402	Computer Organization and Microcontroller Programming	Electrical /CSE Cluster		3	0	2		3	50	50	100	4
3	PCC	1BXX403	Network Analysis	Electrical Cluster		3	2	0		3	50	50	100	4
4	PCC	1BXX404	Data Structures and Algorithms	CSE / Electrical Cluster		3	0	0		3	50	50	100	3
5	PCCL	1BXXL405	Data Structures and Algorithms Lab	CSE/ Electrical Cluster		0	0	2		2	50	50	100	1
6	AEC	1BxxL406	Ability Enhancement Course Laboratory**	CSE / Electrical Cluster		0	0	2		2	50	50	100	1
7	BSC	1Bxx407	Program Specific Biology	Electrical Cluster		2	0	0		3	50	50	100	2
8	SDC	1BEP408	Environmental Science Project	Electrical Cluster		0	0	0		3	50	50	100	1
9	NCMC	1BNSK409	National Service Scheme (NSS)	Campus	NSS coordinator	0	0	2		--	100	---	100	PP
		1BPEK409	Physical Education (PE) (Sports and Athletics)		Physical Education Director									
		1BYOK409	Yoga		Yoga Teacher									
		1BMUS409	Music		Music Teacher									
10	NCMC	1BMATDIP410	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE						--	100	--	100	PP
										Total	**600**	**400**	**1000**	**19**

Ability Enhancement Course (Laboratory) 1BxxL406x

1BxxL406A	Scripting using Python	1BxxL406C	Internet of Things (IoT) Lab
1BxxL406B	Signal Processing Lab using MATLAB	1BxxL406D	Electrical Networks Lab using P-Spice

** The course 1BXXL406x – Ability Enhancement Course Laboratory can be offered either as a single compulsory course. Alternatively, the Ability Enhancement Course Laboratory course can be offered with multiple elective options under the course codes 1BXXL406x (where *x = A, B, C, D*). **Note to Chairpersons: If only one course is selected, the title of the course may please be entered at serial number 6 of the Scheme of Teaching and Examinations and the above table along with this row shall be deleted. In case, multiple courses are selected the above table shall be filled with the course titles and this row shall be deleted.**

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V SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self–Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	HSMC	1BXX501	Technological Innovation and Management Entrepreneurship	MBA/ Electrical/CSE Cluster	3	0	0		3	50	50	100	3
2	IPCC	1BXX502	Design & Analysis of Algorithms	CSE / Electrical Cluster	3	0	2		3	50	50	100	4
3	PCC	1BXX503	Introduction to VLSI Design	Electrical Cluster	3	0	0		3	50	50	100	3
4	PCC	1BXX504	Applied Machine Learning	Electrical Cluster	3	0	0		3	50	50	100	3
5	PEC	1BXX505x	Professional Elective Course-I	ECE/CSE Streams	3	0	0		3	50	50	100	3
6	BSC	1BRM506	Research Methodology and IPR (Online)	VTU online CoE CIE and SEE by COE	2	0	0		02	50	50	100	2
7	PCCL	1BxxL507	VLSI Lab	Electrical Cluster	0	0	2		02	50	50	100	1
8	SDC	1BXX508	Hackathon-Based Project	CIE: By Departments SEE: Evaluation by industry experts	0	0	0		--	50	50	100	2
								Total		400	400	800	21

Professional Elective Course-I

1BXX505A	Database Management System	1BXX505C	Fundamentals of Electromagnetic Waves and Antennas
1BXX505B	Unix and Shell Programming	1BXX505D	Basics of Signal Processing

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VI SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self - Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX601	Deep Learning	Electrical/CSE Cluster	3	0	2	-	3	50	50	100	4
2	PCC	1BXX602	Advanced VLSI Design and Testing	Electrical Cluster	3	0	0	-	3	50	50	100	3
3	PCC	1BXX603	Embedded System Design	Electrical Cluster	3	0	0	-	3	50	50	100	3
4	PCC	1Bxx604	Basics of Data Communication	Electrical/CSE Cluster	3	0	0	-	3	50	50	100	3
5	PEC	1BXX605x	Professional Elective Courses-II	Electrical/CSE Cluster	3	0	0	-	3	50	50	100	3
6	PCCL	1BxxL606	VLSI Design and Testing Laboratory	Electrical Cluster	0	0	2	-	2	50	50	100	1
7	AEC	1BxxL607x	Ability Enhancement Course Laboratory	Electrical/CSE Cluster	0	0	2	-	2	50	50	100	1
8	SDC	1BXX608	Capstone Project - Phase I	Electrical/CSE Cluster	0	0	0	6	3	100	--	100	3
9	NCMC	1Bxx609	Universal Human Value (VTU ONLINE Course)	CIE: By VTU online COE	1	0	0	0		100	---	100	PP
									Total	**550**	**350**	**900**	**21**

Professional Elective Course-II

1BXX605A	Computer Graphics and Fundamentals of Image Processing	1BXX605C	Microwave and Antennas
1BXX605B	Cloud Computing	1BXX605D	Computer Communication and Networking

Ability Enhancement Course Laboratory**

1BxxL607A	DBMS Lab	1BxxL607C	PCB Design Lab
1BxxL607B	R-Programming	1BxxL607D	Data Communication Lab

** The course 1BXXL607x – Ability Enhancement Course Laboratory can be offered either as a single compulsory course. Alternatively, the course 1BXXL307 – Ability Enhancement Course Laboratory shall be offered as multiple elective options under the course codes 1BXXL307x (where x = A, B, C, D).

Note to Chairpersons: If only one course is selected, the title of the course may please be entered at serial number 7 of the Scheme of Teaching and Examinations and the above table, along with this row shall be deleted. In case, multiple courses are selected the above table shall be filled with the course titles, and this row shall be deleted.

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Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

VII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self – Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX701	Quantum Computing with Machine Learning	Electrical/ CSE Cluster	3	1	1		3	50	50	100	4
2	PEC	1BXX702x	Professional Elective Course-III	TD/PSB-	3	0	0		3	50	50	100	3
3	PEC	1BXX703x	Professional Elective Course -IV	TD/PSB-	3	0	0		3	50	50	100	3
4	OEC	1BXX704x	Open Elective Course-I	TD/PSB-	3	0	0		3	50	50	100	3
5	SDC	1BXX705	Capstone Project - Phase-II	TD/PSB-	0	0	0	14	3	100	100	200	7
6	NCMC	1BIKS706	Indian Knowledge System (VTU online Course)	VTU Online CoE, CIE: By COE	1	0	0	0	---	100	--	100	PP
				Total					**15**	**400**	**300**	**700**	**20**

Professional Elective Course-III			
1Bxx702A	Software Project Management	1Bxx702C	5G and Wireless Sensor Networks
1Bxx702B	Artificial Intelligence	1Bxx702D	Data science and Visualization
Professional Elective Course-IV			
1BXX703A	Big Data Analytics	1BXX703C	Cryptography and Network Security
1BXX703B	Blockchain Technology	1BXX703D	Multimedia Communication
Open Elective Course-I			
1BXX704A	**System Software**	1BXX704C	**Fundamentals of Quantum Computing**
1BXX704B	**Computer Organization and Microcontroller Programming**	1BXX704D	**Foreign Language** (NPTEL/SWAYAM/online VTU)

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Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

VIII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					L	T	P	SL	Duration in hou	CIE Marks	SEE Marks	Total Marks	
1	PEC	1Bxx801x	Professional Elective-V (NPTEL/VTU Online Course)	Online Evaluation					3	50	50	100	3
2	OEC	1Bxx802x	Open Elective-II (NPTEL/VTU Online Course)	Online Evaluation					3	50	50	100	3
3	SDC	1Bxx803x	Internship (15 weeks or 90 working days)	--	--	--	--	--	3	100	100	200	12
				Total					9	**200**	**200**	**400**	**18**

Professional Elective Course (Online courses)-V

1Bxx801A	NPTEL/VTU Online Course	1Bxx801C	NPTEL/VTU Online Course
1Bxx801B	NPTEL/VTU Online Course	1Bxx801D	NPTEL/VTU Online Course

Open Elective Courses -II (Online Courses)

1Bxx802A	NPTEL/VTU Online Course	1Bxx802C	NPTEL/VTU Online Course
1Bxx802B	NPTEL/VTU Online Course	1Bxx802D	**Foreign Language** (NPTEL/SWAYAM/online VTU)

Types of Internships (Course Code: 1Bxx803x)

Students shall undertake one of the following internship types during the eighth semester, as per academic guidelines:

1. **1Bxx803A – Industry Internship**: Shall involve practical exposure and training within an industrial or corporate setting.
2. **1Bxx803B – Research Internship**: Shall focus on academic or applied research under the guidance of faculty or research institutions.
3. **1Bxx803C – Post-Placement Internship**: Shall be undertaken by students who have secured placement, aligning with their future employment domain.
4. **1Bxx803D – Societal Internship**: Shall engage students in community-based or social impact projects with NGOs, government bodies, or civic organizations.
5. **1Bxx803E – Online Internship**: Shall be conducted through recognized digital platforms offering structured internship modules.
6. **1Bxx803F – Skill Enhancement Internship:** Shall be opted by students unable to secure internships, offering credit equivalence through curated online courses available at http:// www.online.vtu.ac.in

To ensure uniformity, quality, and transparency in the internship process, **VTU has launched a centralized web portal** that serves as a **single platform** for all internship opportunities. Reputed **industries, Centres of Excellence, Research Laboratories**, and other recognized bodies will be registered on this portal. **Students must choose internships exclusively through this portal**. **No other mode of internship selection will be permitted**

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangam, Machhe, Belagavi-590018

B.E. in Electronics Engineering (VLSI Design & Technology)

Scheme of Teaching and Examinations 2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS)
(Effective from the academic year 2025-26)

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

B.E. in Electronics Engineering (VLSI Design & Technology) Scheme of Teaching and Examinations 2025

Outcome Based Education (OBE) and Choice Based Credit System (CBCS) (Effective from the academic year 2025-26)

B.E. in Electronics Engineering (VLSI Design & Technology)

Scheme of Teaching and Examinations 2025

Outcome-Based Education (OBE) and Choice-Based Credit System(CBCS) (Effective from the academic year 2025-26)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week				Examination				Credits
					Theory Lecture	Tutorial	Practical	Self - Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BMAT301	**Transform Techniques and Optimization Theory**	TD /PSB: Mathematics / Specific department					3	50	50	100	4
2	IPCC	1BXX302	**Digital System Design using Verilog**	Electrical Cluster	3	0	2	0	3	50	50	100	4
3	PCC	1BXX303	**Network Analysis**	Electrical Cluster	3	2	0	0	3	50	50	100	4
4	PCC	1BXX304	**Analog Electronics and Linear Integrated Circuits**	Electrical Cluster	3	0	0	0	3	50	50	100	3
5	PCC	1BXX305	**Introduction to Analog and Digital Communication**	Electrical Cluster	3	0	0		3	50	50	100	3
6	PCCL	1BXXL306	**Analog Electronics and Linear Integrated Circuits Lab**	Electrical Cluster	0	0	2	0	2	50	50	100	1
7	AEC	1BXXL307x	**Ability Enhancement Course Laboratory****	TD/PSB	0	0	2		2	50	50	100	1
8	SDC	1BCP308	Community Project (Project-Based Learning)	Any Department/ Respective Engineering Dept.	0	0	0	2	2	50	50	100	1
9	NCMC	1BNSS309	National Service Scheme (NSS)	Campus: NSS coordinator	0	0	2		--	100	---	100	PP
		1BPE309	Physical Education (PE) (Sports and Athletics)	Campus: Physical Education Director									
		1BYOG309	Yoga	Campus: Yoga Teacher									
		1BMUK309	Music	Campus: Music Teacher									
10	NCMC	1BMATDIP310	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE				3	3	100	---	100	PP
				Total						**600**	**400**	**1000**	**21**

Ability Enhancement Course (Laboratory) 1BxxL307x			
1BxxL307A	**Simulation of Circuits and Devices**	1BxxL307C	**Linux Fundamentals and Introduction to Python Programming**
1BxxL307B	**MATLAB**	1Bxx307D	**Introduction to Data structures**

** The course 1BXXL307 – Ability Enhancement Course Laboratory can be offered either as a single compulsory course. Alternatively, the course 1BXXL307 – Ability Enhancement Course Laboratory shall be offered as multiple elective options under the course codes 1BXXL307x (where *x = A, B, C, D*).

B.E. in Electronics Engineering (VLSI Design & Technology)													
Scheme of Teaching and Examinations 2025													
Outcome-Based Education (OBE) and Choice-Based Credit System(CBCS) (Effective from the academic year 2025-26)													
IV SEMESTER													
Sl. No	**Course**	**Course Code**	**Course Title**	**Teaching Department (TD) and Question Paper Setting Board (PSB)**		**Teaching Hours/Week**				**Examination**				**Credits**
						Theory Lecture	**Tutorial**	**Practical**	**Self - Learning**	**Duration in hours**	**CIE Marks**	**SEE Marks**	**Total Marks**	
						L	T	P	SL					
1	PCC	1BXX401	**Computer Organization and Microcontroller Programming**	TD/PSB:		3	0	0	0	3	50	50	100	3
2	IPCC	1BXX402	**CMOS Digital VLSI Design**	Electrical Cluster		3	0	2	0	3	50	50	100	4
3	PCC	1BXX403	**Control Systems**	Electrical Cluster		3	2	0	0	3	50	50	100	4
3	PCC	1BXX404	**Design for Test**	Electrical Cluster		3	0	0	0	3	50	50	100	3
	PCC	1BXX401	**Computer Organization and Microcontroller Programming**	TD/PSB:		3	0	0	0	3	50	50	100	3
5	PCCL	1BXXL405	**Design for Test Lab**	Electrical Cluster		0	0	2	0	2	50	50	100	1
6	AEC	1BXXL406x	**Ability Enhancement Course Laboratory****	Electrical Cluster		0	0	2	0	2	50	50	100	1
	BSC	1BEP407	Programme Specific Biology	TD/PSB		2	0	0	0	3	50	50	100	2
8	SDC	1BCP408	Environmental Science Project	Any Department/ Respective Engineering Dept.		0	0	0	2	3	50	50	100	1
7	NCMC	1BNSS409	National Service Scheme (NSS)	Campus	NSS coordinator	0	0	2		--	100	---	100	PP
		1BPE409	Physical Education (PE) (Sports and Athletics)		Physical Education Director									
		1BYOG409	Yoga		Yoga Teacher									
		1BMUK409	Music		Music Teacher									
8	NCMC	1BMATDIP410	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE) CIE by VTU online COE					3	3	100	---	100	PP
					Total						**600**	**400**	**1000**	**19**

Ability Enhancement Course (Laboratory) 1BxxL406x			
1BxxL406A	**RTL to GDS Flow**	1BxxL406C	**Python for Measurement & Data Analysis**
1BxxL406B	**SPICE Programming for Electronic Circuits**	1BxxL406D	**Internet of Things**

B.E. in Electronics Engineering (VLSI Design & Technology)													
Scheme of Teaching and Examinations 2025													
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)													
V SEMESTER													
Sl. No	**Course**	**Course Code**	**Course Title**	**Teaching Department (TD) and Question Paper Setting Board (PSB)**	**Teaching Hours/Week**				**Examination**				**Credits**
					Theory Lecture	**Tutorial**	**Practical**	**Self - Learning**	**Duration in hours**	**CIE Marks**	**SEE Marks**	**Total Marks**	
					L	T	P	SL					
1	HSMC	1BMAT501	This course must be pertaining to economics and management of the concerned degree program. The course syllabus should have both economics and management topics and the course titles should bear the word Management	TD /PSB: Mathematics					3	50	50	100	3
2	IPCC	1BXX502	**Verification using System Verilog**	Electrical Cluster	3	0	2		3	50	50	100	4
3	PCC	1BXX503	**CMOS Analog VLSI Design**	Electrical Cluster	3	2	0		3	50	50	100	4
4	PCC	1BXX504	**VLSI Technology and Fabrication**	Electrical Cluster	2	1	0		3	50	50	100	3
5	PEC	1BXX505	**Professional Elective Course-I**	Electrical Cluster	3	0	0		3	50	50	100	3
6	BSC	1BXX506	Research Methodology and IPR (Online)	VTU online CoE CIE and SEE by COE	2	0	0		2	50	50	100	2
7	PCCL	1BXXL307	**Analog VLSI Lab**	Electrical Cluster	0	0	2		2	50	50	100	1
8	SDC	1BXXL308x	Mini Project	TD/PSB	0	0	2		2	50	50	100	2
				Total						**600**	**400**	**1000**	**21**

Professional Elective Course-I			
1BXX505A	**Introduction to Analog and Digital Communication**	**1BXX505C**	**Synthesis and Static Timing Analysis**
1BXX505B	**Art of Analog Layout**	**1BXX505D**	**Object Oriented using C++**

B.E. in Electronics Engineering (VLSI Design & Technology)

Scheme of Teaching and Examinations 2025

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

VI SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week				Examination				Credits
					Theory Lecture	Tutorial	Practical	Self - Learning	Duration inhours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX601	**Analog and Mixed Signal IC Design**	Electrical Cluster	3	0	2		3	50	50	100	4
2	PCC	1BXX602	**Embedded System Design**	Electrical Cluster	3	0	0		3	50	50	100	3
3	PCC	1BXX603	**Basics of Physical Design and Verification**	Electrical Cluster	3	0	0		3	50	50	100	3
4	PCC	1BXX604	**Digital Signal Processing**	Electrical Cluster	3	0	0		3	50	50	100	3
5	PEC	1BXX605	**Professional Elective Course-II**	Electrical Cluster	3	0	0		3	50	50	100	3
6	PCCL	1BXXL607	**DSP Lab**	Electrical Cluster	0	0	2	0	2	50	50	100	1
7	AEC	1BxxL608x	Ability Enhancement Course Laboratory	Electrical Cluster	0	0	2	0	2				1
8	SDC	1BXXL609x	Capstone Project Phase- I	TD/PSB	0	0	0	6	3	50	50	100	3
9	NCMC	1Bxx610	Universal Human Value (VTU ONLINE Course)	CIE: By VTU online COE	1	0	0	0		50	50	100	PP
				Total						**600**	**400**	**1000**	**21**

Professional Elective Course-II			
1BXX605A	**Data Structures and OOPs using C++**	1BXX605C	**An introduction to UVM**
1BXX605B	**VLSI Data Conversion Circuits**	1BXX605D	**Phase-locked loops (PLLs)**

Ability Enhancement Course Laboratory**			
1BxxL607A	**Embedded System Design**	1BxxL607C	**Industrial Protocols & Cloud Integration**
1BxxL607B	**Data Structures and OOPs using C++ Lab**	1BxxL607D	**Dynamic System Modeling**

B.E. in Electronics Engineering (VLSI Design & Technology)												
Scheme of Teaching and Examinations 2025												
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)												
VII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)												
Sl. No	**Course**	**Course Code**	**Course Title**	**Teaching Department (TD) and Question Paper Setting Board (PSB)**	**Teaching Hours/Week**				**Examination**				**Credits**
					Theory Lecture	**Tutorial**	**Practical**	**Self - Learning**	**Duration inhours**	**CIE Marks**	**SEE Marks**	**Total Marks**	
					L	T	P	SL					
1	IPCC	1BXX701	**Artificial Intelligence and Machine Learning**	TD/PSB-	3	0	0		3	50	50	100	4
2	PEC	1BXX702x	**Professional Elective Course-III**	TD/PSB-	3	0	0		3	50	50	100	3
3	PEC	1BXX703x	**Professional Elective Course -IV**	TD/PSB-	0	0	0	14	3	50	50	100	3
4	OEC	1BXX704x	Open Elective Course-I	Offered by Other Departments					3	50	50	100	3
5	SDC	1BXX705	Capstone Project Phase-II	TD/PSB-					3	100	100	200	7
6	NCMC	1BIKS706	Indian Knowledge System (VTU online Course)	VTU Online CoE,	1	0	0	0	---	100	--	100	PP
				Total						**600**	**400**	**1000**	**20**

Professional Elective Course-III			
1Bxx702A	**Software Engineering**	**1Bxx702C**	**Low Power IC Design**
1Bxx702B	**Power Management Techniques for Integrated Circuit Design**	**1Bxx702D**	**Digital Image Processing**
Professional Elective Course-IV			
1BXX703A	**Operating Systems**	**1BXX703C**	**Scripting Languages for VLSI Design Automation**
1BXX703B	**RF Circuit Design**	**1BXX703D**	**Real Time Operating Systems (RTOS)**
Open Elective Course-I			
1BXX704A	Digital VLSI Design	1BXX704C	Verification using SystemVerilog
1BXX704B	Analog VLIS Design	1BXX704D	Universal Verification Methodology

Scheme of Teaching and Examinations 2025													
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)													
VIII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)													
Sl. No	**Course**	**Course Code**	**Course Title**	**Teaching Department (TD) and Question Paper Setting Board (PSB)**	**Teaching Hours/Week**				**Examination**				**Credits**
					Theory Lecture	**Tutorial**	**Practical**	**Self - Learning**	**Duration in hours**	**CIE Marks**	**SEE Marks**	**Total Marks**	
					L	T	P	SL					
1	PEC	1Bxx801x	Professional Elective-V (NPTEL/VTU Online Course)	TD/PSB-					3	50	50	100	3
2	OEC	1Bxx802x	Open Elective-II (NPTEL/VTU Online Course)	TD/PSB-					3	50	50	100	3
3	SDC	1Bxx803x	Internship (15 weeks or 90 Working days)	TD/PSB-					3	100	100	200	12
Total										**200**	**200**	**400**	**18**

Professional Elective Course-V			
1Bxx801A	NPTEL/VTU Online Course	1Bxx801C	NPTEL/VTU Online Course
1Bxx801B	NPTEL/VTU Online Course	1Bxx801D	NPTEL/VTU Online Course
Open Elective Courses-II (Online Courses)			
1Bxx802A	NPTEL/VTU Online Course	1Bxx802C	NPTEL/VTU Online Course
1Bxx802B	NPTEL/VTU Online Course	1Bxx802D	NPTEL/VTU Online Course

Types of Internships (Course Code: 1Bxx803x)

Students shall undertake one of the following internship types during the eighth semester, as per academic guidelines:

1. 1Bxx803A – Industry Internship: Shall involve practical exposure and training within an industrial or corporate setting.
2. 1Bxx803B – Research Internship: Shall focus on academic or applied research under the guidance of faculty or research institutions.
3. 1Bxx803C – Post-Placement Internship: Shall be undertaken by students who have secured placement, aligning with their future employment domain.
4. 1Bxx803D – Societal Internship: Shall engage students in community-based or social impact projects with NGOs, government bodies, or civic organizations.
5. 1Bxx803E – Online Internship: Shall be conducted through recognized digital platforms offering structured internship modules.
6. 1Bxx803F – Skill Enhancement Internship: Shall be opted by students unable to secure internships, offering credit equivalence through curated online courses available at http:// www.online.vtu.ac.in

To ensure uniformity, quality, and transparency in the internship process, VTU has launched a centralized web portal that serves as a single platform for all internship opportunities. Reputed industries, Centres of Excellence, Research Laboratories, and other recognized bodies will be registered on this portal. Students must choose internships exclusively through this portal. No other mode of internship selection will be permitted

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangam, Machhe, Belagavi-590018

Scheme of Teaching and Examinations 2025

Electronics and Instrumentation Engineering

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS)

(Effective from the academic year 2025-26)

B.E. in Electronics and Instrumentation Engineering
Scheme of Teaching and Examinations 2025
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BMAT301	**Transform Techniques and Optimization Theory**	TD /PSB: Mathematics / Specific department					3	50	50	100	4
2	IPCC	1BXX302	**Digital System Design using Verilog**	Electrical Cluster	3	0	2	0	3	50	50	100	4
3	PCC	1BXX303	**Network Analysis**	Electrical Cluster	3	2	0	0	3	50	50	100	4
4	PCC	1BXX304	**Analog Electronics and Linear Integrated Circuits**	Electrical Cluster	3	0	0	0	3	50	50	100	3
5	PCC	1BXX305	**Sensors and Measurement Techniques**	EI/EI	3	0	0	0	3	50	50	100	3
6	PCCL	1BXXL306	**Analog Electronics and Linear Integrated Circuits Lab**	EI/EI	0	0	2	0	2	50	50	100	1
7	AEC	1BXXL307x	**Ability Enhancement Course Laboratory****	TD/PSB	0	0	2	0	2	50	50	100	1
8	SDC	1BCP308	Community Project (Project-Based Learning)	Any Department/ Respective Engineering Dept.	0	0	0	2	2	50	50	100	1
9	NCMC	1BNSS309	National Service Scheme (NSS)	Campus: NSS coordinator	0	0	2	0	--	100	---	100	PP
		1BPE309	Physical Education (PE) (Sports and Athletics)	Campus: Physical Education Director									
		1BYOG309	Yoga	Campus: Yoga Teacher									
		1BMUK309	Music	Campus: Music Teacher									
10	NCMC	1BMATDIP310	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE	3	0	0	3	3	100	---	100	PP
				Total	**15**	**2**	**8**	**5**	**24**	**600**	**400**	**1000**	**21**

Ability Enhancement Course (Laboratory) 1BxxL307x			
1BxxL307A	Python for Measurement	1BxxL307C	Virtual Labs
1BxxL307B	Power Electronics Lab	1Bxx307D	Circuit Simulation and PCB

B.E. in Electronics and Instrumentation Engineering
Scheme of Teaching and Examinations 2025
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IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self - Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BXX401	**Mathematics for Machine Learning**	TD/PSB:	3	0	0	0	3	50	50	100	3
2	IPCC	1BXX402	**Computer Organization & Microcontroller**	TD/PSB	3	0	2	0	3	50	50	100	4
3	PCC	1BXX403	**Control Systems**	TD/PSB	3	2	0	0	3	50	50	100	4
4	PCC	1BXX404	**Transducers and Instrumentation**	TD/PSB	3	0	0	0	3	50	50	100	3
5	PCCL	1BXXL405	**Signal Conditioning and Virtual Instrumentation**	TD/PSB	0	0	2	0	2	50	50	100	1
6	AEC	1BxxL406	**Ability Enhancement Course Laboratory****	TD/PSB	0	0	2	0	2	50	50	100	1
7	BSC	1Bxx407	**Programme Specific Biology**	TD / PSB	2	0	0	0	3	50	50	100	2
8	SDC	1BEP408	Environmental Science Project	TD/PSB	0	0	0	2	3	50	50	100	1
9	NCMC	1BNSK409	National Service Scheme (NSS)	Campus: NSS coordinator	0	0	2	0	--	100	---	100	PP
		1BPEK409	Physical Education (PE) (Sports and Athletics)	Campus: Physical Education Director									
		1BYOK409	Yoga	Campus: Yoga Teacher									
		1BMUS409	Music	Campus: Music Teacher									
10	NCMC	1BMATDIP410	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE	3	0	0	3	--	100	--	100	PP
				Total	**14**	**2**	**8**	**5**	**22**	**600**	**400**	**1000**	**19**

Ability Enhancement Course (Laboratory) 1BxxL406x

1BxxL406A	**Fundamentals of Signals**	**1BxxL406C**	**Control Systems**
1BxxL406B	**Internet of Things (IoT)**	**1BxxL406D**	**Intelligent Sensing & Edge Instrumentation**

B.E. in Electronics and Instrumentation Engineering
Scheme of Teaching and Examinations 2025
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V SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	HSMC	1BXX501	This course must be pertaining to economics and management of the concerned degree program. The course syllabus should have both economics and management topics and the course title should bear the word Management.	TD/PSB:					3	50	50	100	3
2	IPCC	1BXX502	**Process Control Systems**	TD/PSB	3	0	2	0	3	50	50	100	4
3	PCC	1BXX503	**Digital Signal Processing and Applications**	TD/PSB	2	2	0	0	3	50	50	100	3
4	PCC	1BXX504	**Communication Systems**	TD/PSB	3	0	0	0	3	50	50	100	3
5	PEC	1BXX505x	**Professional Elective Course-I**	TD/PSB	3	0	0	0	3	50	50	100	3
6	BSC	1BRM506	Research Methodology and IPR (**Online**)	VTU online CoE CIE and SEE by COE	2	0	0	0	2	50	50	100	2
7	PCCL	1BxxL507	Digital Signal Processing Lab	TD/PSB	0	0	2	0	2	50	50	100	1
8	SDC	1BXX508	Hackathon-Based Project	CIE: By Departments SEE: Evaluation by industry experts	0	0	0	2	--	50	50	100	2
				Total	**13**	**2**	**4**	**2**	**19**	**400**	**400**	**800**	**21**

Professional Elective Course-I

1BXX505A	**C++ and Data Structures**	1BXX505C	**Advanced Control System**
1BXX505B	**Operating Systems**	1BXX505D	**Analytical Instrumentation**

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VI SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX601	**Introduction to VLSI Design**	TD/PSB-	3	0	2	0	3	50	50	100	4
2	PCC	1BXX602	**PLC and SCADA**	TD/PSB-	2	2	0	0	3	50	50	100	3
3	PCC	1BXX603	**Industrial Data Networks and Safety**	TD/PSB-	3	0	0	0	3	50	50	100	3
4	PCC	1Bxx604	**Embedded System Design**	TD/PSB-	3	0	0	0	3	50	50	100	3
5	PEC	1BXX605x	**Professional Elective Courses-II**	TD/PSB-	3	0	0	0	3	50	50	100	3
6	PCCL	1BxxL606	**PLC Programming and SCADA Lab**	TD/PSB-	0	0	2	0	2	50	50	100	1
7	AEC	1BxxL607x	**Ability Enhancement Course Laboratory**	TD/PSB-	0	0	2	0	2	50	50	100	1
8	SDC	1BXX608	Capstone Project - Phase I	TD/PSB-	0	0	0	6	3	100	--	100	3
9	NCMC	1Bxx609	Universal Human Value (VTU ONLINE Course)	CIE: By VTU online COE	1	0	0	0		100	---	100	PP
				Total	**15**	**2**	**6**	**6**	**22**	**550**	**350**	**900**	**21**

Professional Elective Course-II

1BXX605A	**Sensor Analytics and Edge Devices**	1BXX605C	**Robotics and Automation**
1BXX605B	**FPGA Based System Design**	1BXX605D	**Biomedical Instrumentation**

Ability Enhancement Course Laboratory**

1BxxL607A	**Embedded System Design**	**1BxxL607C**	**Robot Operating System**
1BxxL607B	**Industrial Protocols & Cloud Integration**	**1BxxL607D**	**Dynamic System Modelling**

B.E. in Electronics and Instrumentation Engineering
Scheme of Teaching and Examinations 2025
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

VII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self – Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX701	Artificial Intelligence and Machine Learning	TD/PSB-	3	0	2	0	3	50	50	100	4
2	PEC	1BXX702x	Professional Elective Course-III	TD/PSB-	3	0	0	0	3	50	50	100	3
3	PEC	1BXX703x	Professional Elective Course -IV	TD/PSB-	3	0	0	0	3	50	50	100	3
4	OEC	1BXX704x	Open Elective Course-I	TD/PSB-	3	0	0	0	3	50	50	100	3
5	SDC	1BXX705	Capstone Project - Phase-II	TD/PSB-	0	0	0	14	3	100	100	200	7
6	NCMC	1BIKS706	Indian Knowledge System (VTU online Course)	VTU Online CoE, CIE: By COE	1	0	0	0	---	100	--	100	PP
				Total	**13**	**0**	**2**	**14**	**15**	**400**	**300**	**700**	**20**

Professional Elective Course-III			
1Bxx702A	**Digital Image Processing & Computer Vision**	1Bxx702C	**Industrial Safety and Standards**
1Bxx702B	**Wireless Sensor Networks & Industrial IoT (IIoT)**	1Bxx702D	**Product Design & Optical Instrumentation.**
Professional Elective Course-IV			
1BXX703A	**Cyber Physical Systems & Data Science**	1BXX703C	**MEMS and Microsystems**
1BXX703B	**Quantum Computing**	1BXX703D	**Power Plant Instrumentation**
Open Elective Course-I			
1BXX704A	**Industrial Automation**	1BXX704C	**Automotive Electronics**
1BXX704B	**Smart Sensors technologies for IoT**	1BXX704D	**Foreign Language** (NPTEL/SWAYAM/online VTU)

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VIII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	PEC	1Bxx801x	Professional Elective-V (NPTEL/VTU Online Course)	Online Evaluation	3	0	0	0	3	50	50	100	3
2	OEC	1Bxx802x	Open Elective-II (NPTEL/VTU Online Course)	Online Evaluation	3	0	0	0	3	50	50	100	3
3	SDC	1Bxx803x	Internship (15 weeks or 90 working days)	--	--	--	--	--	3	100	100	200	12
			Total		**6**	**0**	**0**	**0**	**9**	**200**	**200**	**400**	**18**

Professional Elective Course (Online courses)-V			
1Bxx801A	NPTEL/VTU Online Course	1Bxx801C	NPTEL/VTU Online Course
1Bxx801B	NPTEL/VTU Online Course	1Bxx801D	NPTEL/VTU Online Course
Open Elective Courses -II (Online Courses)			
1Bxx802A	NPTEL/VTU Online Course	1Bxx802C	NPTEL/VTU Online Course
1Bxx802B	NPTEL/VTU Online Course	1Bxx802D	**Foreign Language** (NPTEL/SWAYAM/online VTU)

Types of Internships (Course Code: 1Bxx803x)

Students shall undertake one of the following internship types during the eighth semester, as per academic guidelines:

1. **1Bxx803A – Industry Internship**: Shall involve practical exposure and training within an industrial or corporate setting.
2. **1Bxx803B – Research Internship**: Shall focus on academic or applied research under the guidance of faculty or research institutions.
3. **1Bxx803C – Post-Placement Internship**: Shall be undertaken by students who have secured placement, aligning with their future employment domain.
4. **1Bxx803D – Societal Internship**: Shall engage students in community-based or social impact projects with NGOs, government bodies, or civic organizations.
5. **1Bxx803E – Online Internship**: Shall be conducted through recognized digital platforms offering structured internship modules.
6. **1Bxx803F – Skill Enhancement Internship:** Shall be opted by students unable to secure internships, offering credit equivalence through curated online courses available at http:// www.online.vtu.ac.in

To ensure uniformity, quality, and transparency in the internship process, **VTU has launched a centralized web portal** that serves as a **single platform** for all internship opportunities. Reputed **industries, Centres of Excellence, Research Laboratories**, and other recognized bodies will be registered on this portal. **Students must choose internships exclusively through this portal**. **No other mode of internship selection will be permitted**

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

Jnana Sangam, Machhe, Belagavi-590018

Scheme of Teaching and Examinations 2025

Electronics and Telecommunication Engineering

Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS)

(Effective from the academic year 2025-26)

B.E. in Electronics and Telecommunication Engineering ,
Scheme of Teaching and Examinations 2025
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BMAT301	**Transform Techniques and Optimization Theory**	TD /PSB: Mathematics / Specific department	3				3	50	50	100	4
2	IPCC	1BXX302	**Digital System Design using Verilog**	TD: ECE PSB: ECE	3	0	2		3	50	50	100	4
3	PCC	1BXX303	**Network Analysis**	TD: ECE PSB: ECE	3	2	0		3	50	50	100	4
4	PCC	1BXX304	**Analog Electronics and Linear Integrated Circuits**	TD: ECE PSB: ECE	3	0	0		3	50	50	100	3
5	PCC	1BXX305	**Introduction to Machine Learning**	TD: ECE PSB: ECE	3				3	50	50	100	3
6	PCCL	1BXXL306	**Analog Electronics and Linear Integrated Circuits Lab**	TD: ECE PSB: ECE	0	0	2		2	50	50	100	1
7	AEC	1BXXL307x	**Ability Enhancement Course Laboratory****	TD: ECE PSB: ECE	0	0	2		2	50	50	100	1
8	SDC	1BCP308	Community Project (Project-Based Learning)	Any Department/ Respective Engineering Dept.	0	0	0	2	2	50	50	100	1
9	NCMC	1BNSS309	National Service Scheme (NSS)	Campus: NSS coordinator	0	0	2		--	100	---	100	PP
		1BPE309	Physical Education (PE) (Sports and Athletics)	Campus: Physical Education Director									
		1BYOG309	Yoga	Campus: Yoga Teacher									
		1BMUK309	Music	Campus: Music Teacher									
10	NCMC	1BMATDIP310	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE	3	0	0	3	3	100	---	100	PP

			Total						**600**	**400**	**1000**	**21**
Ability Enhancement Course (Laboratory) 1BxxL307x												
1BxxL307A	**Linux Programming**	**1BxxL307C**	**Data structures**									
1BxxL307B	**Introduction to MATLAB and SIMULINK**	**1Bxx307D**	**LabVIEW Programming Basics**									

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IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	ASC/PCC	1BXX401	**Analog Communication Systems**	TD/PSB:	3				3	50	50	100	3
2	IPCC	1BXX402	**Signals and Systems**	TD: ECE PSB: ECE	3		2		3	50	50	100	4
3	PCC	1BXX403	**Control Systems**	TD: ECE PSB: ECE	3			1	3	50	50	100	4
4	PCC	1BXX404	**Computer organization and Microcontroller**	TD: ECE PSB: ECE	3				3	50	50	100	3
5	PCCL	1BXXL405	**Analog Communication Lab**	TD: ECE PSB: ECE	0	0	2	0	2	50	50	100	1
6	AEC	1BxxL406	**Ability Enhancement Course Laboratory****	TD: ECE PSB: ECE	0	0	2	0	2	50	50	100	1
7	BSC	1Bxx407	Programme Specific Biology	BT, CHE, PHY	2	0	0	0	3	50	50	100	2
8	SDC	1BEP408	Environmental Science Project	TD/PSB	0	0	0	2	3	50	50	100	1
9	NCMC	1BNSK409	National Service Scheme (NSS)	Campus: NSS coordinator	0	0	2		--	100	---	100	PP
		1BPEK409	Physical Education (PE) (Sports and Athletics)	Campus: Physical Education Director									
		1BYOK409	Yoga	Campus: Yoga Teacher									
		1BMUS409	Music	Campus: Music Teacher									
10	NCMC	1BMATDIP410	Mathematics course for Lateral Entry Students	TD -Maths Dept/ VTU Online (COE). CIE by VTU online COE					--	100	--	100	PP
				Total						**600**	**400**	**1000**	**19**

Ability Enhancement Course (Laboratory) 1BxxL406x

1BxxL406A	Communication Systems using SIMULINK	1BxxL406C	32 bit Microcontroller Lab
1BxxL406B	Virtual Lab for Control Systems	1BxxL406D	Advanced Verilog Lab

B.E. in Electronics and Telecommunication Engineering

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Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS) (Effective from the academic year 2025-26)

V SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	HSMC	1BXX501	This course must be pertaining to economics and management of the concerned degree program. The course syllabus should have both economics and management topics and the course title should bear the word Management.	TD: ECE PSB: ECE	3				3	50	50	100	3
2	IPCC	1BXX502	**Digital signal processing**	TD: ECE PSB: ECE	3		2		3	50	50	100	4
3	PCC	1BXX503	**Digital Communication Systems**	TD: ECE PSB: ECE	3				3	50	50	100	3
4	PCC	1BXX504	**Engineering Electromagnetics**	TD: ECE PSB: ECE	3				3	50	50	100	3
5	PEC	1BXX505x	**Professional Elective Course-I**	TD: ECE PSB: ECE	3				3	50	50	100	3
6	BSC	1BRM506	Research Methodology and IPR (Online)	VTU online CoE CIE and SEE by COE	2	0	0	0	02	50	50	100	2
7	PCCL	1BxxL507	**Digital Communication Lab**	TD/PSB	0	0	2	0	02	50	50	100	1
8	SDC	1BXX508	Hackathon-Based Project	CIE: By Departments SEE: Evaluation by industry experts	0	0	0	2	--	50	50	100	2
								Total		**400**	**400**	**800**	**21**

Professional Elective Course-I

1BXX505A	Network Security	1BXX505C	Introduction to Machine Learning
1BXX505B	Operating Systems	1BXX505D	IOT and Networks

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VI SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX601	**Microwave Theory and Antennas**	TD: ECE PSB: ECE	3		2		3	50	50	100	4
2	PCC	1BXX602	**Computer Communication Networks**	TD: ECE PSB: ECE	3				3	50	50	100	3
3	PCC	1BXX603	**Introduction to VLSI Design**	TD: ECE PSB: ECE	3				3	50	50	100	3
4	PCC	1Bxx604	**Embedded system Design**	TD: ECE PSB: ECE	3				3	50	50	100	3
5	PEC	1BXX605x	**Professional Elective Courses-II**	TD: ECE PSB: ECE	3				3	50	50	100	3
6	PCCL	1BxxL606	**VLSI Lab**	TD: ECE PSB: ECE	0	0	2	0	2	50	50	100	1
7	AEC	1BxxL607x	**Ability Enhancement Course Laboratory**	TD: ECE PSB: ECE	0	0	2	0	2	50	50	100	1
8	SDC	1BXX608	Capstone Project - Phase I	TD: ECE PSB: ECE	0	0	0	6	3	100	--	100	3
9	NCMC	1Bxx609	Universal Human Value (VTU ONLINE Course)	CIE: By VTU online COE	1	0	0	0		100	---	100	PP
				Total						**550**	**350**	**900**	**21**

Professional Elective Course-II

1BXX605A	Operating System	1BXX605C	Satellite Communication
1BXX605B	Cryptography	1BXX605D	Radar Engineering

Ability Enhancement Course Laboratory**

1BxxL607A	Advanced Verilog Lab	1BxxL607C	Computer Communications Networks Lab
1BxxL607B	Embedded systems Lab	1BxxL607D	IOT Lab

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VII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	IPCC	1BXX701	5G Wireless Communication	TD: ECE PSB: ECE	3		2		3	50	50	100	4
2	PEC	1BXX702x	Professional Elective Course-III	TD: ECE PSB: ECE	3				3	50	50	100	3
3	PEC	1BXX703x	Professional Elective Course -IV	TD: ECE PSB: ECE	3				3	50	50	100	3
4	OEC	1BXX704x	Open Elective Course-I	TD: ECE PSB: ECE	3				3	50	50	100	3
5	SDC	1BXX705	Capstone Project - Phase-II	TD: ECE PSB: ECE	0	0	0	14	3	100	100	200	7
6	NCMC	1BIKS706	Indian Knowledge System (VTU online Course)	VTU Online CoE, CIE: By COE	1	0	0	0	---	100	--	100	PP
				Total					**15**	**400**	**300**	**700**	**20**

Professional Elective Course-III			
1Bxx702A	Deep Learning	1Bxx702C	ASIC Design
1Bxx702B	VLSI Testing and verification	1Bxx702D	Optical Fiber Communication
Professional Elective Course-IV			
1BXX703A	Multimedia communication	1BXX703C	Cyber Security
1BXX703B	Radio frequency Integrated circuits	1BXX703D	Digital switching systems
Open Elective Course-I			
1BXX704A	Automotive Electronics	1BXX704C	Smart and Wearable Sensors
1BXX704B	MEMS and NEMS	1BXX704D	**Foreign Language** (NPTEL/SWAYAM/online VTU)

B.E. in Electronics and Telecommunication Engineering
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VIII SEMESTER (Swappable VII and VIII SEMESTER) (SCHEME-A)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Learning	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	SL					
1	PEC	1Bxx801x	Professional Elective-V (NPTEL/VTU Online Course)	Online Evaluation	3				3	50	50	100	3
2	OEC	1Bxx802x	Open Elective-II (NPTEL/VTU Online Course)	Online Evaluation	3				3	50	50	100	3
3	SDC	1Bxx803x	Internship (15 weeks or 90 working days)	--	--	--	--	--	3	100	100	200	12
				Total					9	**200**	**200**	**400**	**18**

Professional Elective Course (Online courses)-V			
1Bxx801A	NPTEL/VTU Online Course	1Bxx801C	NPTEL/VTU Online Course
1Bxx801B	NPTEL/VTU Online Course	1Bxx801D	NPTEL/VTU Online Course
Open Elective Courses -II (Online Courses)			
1Bxx802A	NPTEL/VTU Online Course	1Bxx802C	NPTEL/VTU Online Course
1Bxx802B	NPTEL/VTU Online Course	1Bxx802D	**Foreign Language** (NPTEL/SWAYAM/online VTU)

Types of Internships (Course Code: 1Bxx803x)

Students shall undertake one of the following internship types during the eighth semester, as per academic guidelines:

1. **1Bxx803A – Industry Internship**: Shall involve practical exposure and training within an industrial or corporate setting.
2. **1Bxx803B – Research Internship**: Shall focus on academic or applied research under the guidance of faculty or research institutions.
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