Bachelor of Engineering
Scheme of Teaching and Examinations-2025
Outcome-Based Education (OBE) and Choice-Based Credit System (CBCS)
(Effective from the academic year 2025-26) Common to All Engineering Programmes

I Semester **(Chemistry Group)**

Sl. No	Course and Course Code		Course Title	TD/PSB	Teaching Hours/Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SAAE	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	ASC	1BMATx101	Applied Mathematics-I (Stream Specific)	Maths Dept	3	2	0		03	50	50	100	04
2	ASC(IC)	1BCHEx102	Applied Chemistry (Stream Specific)	CHE Dept	3	0	2		03	50	50	100	04
3	ETC	1BAIA103	Introduction to AI and Applications	Any Dept	3	0	0		03	50	50	100	03
4	ESC	1BESC104x	Engineering Science Course- I	Respective Engg Dept	3	0	0		03	50	50	100	03
5	PLC(IC)	1BPLC105x	Programming Language Course	CSE & allied Dept	3	0	2		03	50	50	100	04
6	AEC	1BENG106	Communication Skills	Humanities Dept	1	0	0		02	50	50	100	01
7	AEC (NCMC)	1BICO107	Indian Constitution & Engineering Ethics	Humanities Dept	1	0	0		--	100	--	100	PP
8	AEC/SDC	1BIDTL158	Innovation and Design Thinking Lab **(Project-based learning)**	Any Dept	0	0	2		03	50	50	100	01
	TOTAL				**17**	**02**	**07**		**20**	**450**	**350**	**800**	**20**
9	**AICTE Activity Points** (students have to earn **100** activity points between 01 to 08 semesters)				Compulsory requirement for the award of a degree								

ASC-Applied Science Course, **ESC**- Engineering Science Courses, **IC** – Integrated Course (Practical Course Integrated with Theory Course), **PLC(IC)**- Programming Language Course (Integrated Course), **AEC**- Ability Enhancement Course, **NCMC:** Non Credit Mandatory Course, **AEC/SDC**- Ability Enhancement Course/Skill Development course, **TD/PSB**- Teaching Department / Paper Setting Board, **S- (SAAE)-**Students' Academic Activity Engagement Hours, **CIE** –Continuous Internal Evaluation, **SEE**- Semester End Examination, **PP** : (Pass/Pass) is assigned to a noncredit course. "PP" represents pass in a course provided students have successfully completed the CIE requirements. Otherwise, "NP-not pass shall be awarded. "PP" is essential for the award of the degree

Credit Definition:	
1-hour Lecture **(L)** per week=**1Credit**	04-Credit courses are designed for 50 hours of Teaching-Learning sessions
2-hoursTutorial**(T)** per week=**1Credit**	04-Credit (IC) courses are designed for 40 hours' theory and 10-12 hours of practical sessions
2-hours Practical / Drawing (**P**) per week=**1Credit**	03-Credit courses are designed for 40 hours of Teaching-Learning Session
	02- Credit courses are designed for 25 hours of Teaching-Learning Session
	01-Credit courses are designed for 12 hours of Teaching-Learning sessions

Applied Mathematics-I Courses					Applied Chemistry Courses				
Code	**Title**	**L**	**T**	**P**	**Code**	**Title**	**L**	**T**	**P**
1BMATC101	Differential Calculus and Linear Algebra: CV Stream	3	2	0	1BCHEC102	Applied Chemistry for Sustainable Structure & Material Design (CV)	3	0	2
1BMATM101	Differential Calculus and Linear Algebra: ME Stream	3	2	0	1BCHEM102	**Applied Chemistry for Advanced Metal Protection and Sustainable Energy Systems** (ME)	3	0	2
1BMATE101	Differential Calculus and Linear Algebra; EEE stream	3	2	0	1BCHEE102	**Applied Chemistry for Emerging Electronics and Futuristic Devices** (EEE, ECE)	3	0	2
1BMATS101	Calculus And Linear Algebra: CSE stream	3	2	0	1BCHES102	Applied Chemistry for Smart Systems (CSE)	3	0	2
Engineering Science Courses-I (ESC-I)					**Programming Language Courses (PLC)**				
Code	**Title**	**L**	**T**	**P**	**Code**	**Title**	**L**	**T**	**P**
1BESC104A	Building Sciences & Mechanics	3	0	0	1BPLC105E	Introduction to C Programming (For none IT programmes)	3	0	0
1BESC104B	Introduction to Electrical Engineering	3	0	0	1BPLC105B	Python Programming (for CSE and allied programmes)	3	0	0
1BESC104C	Introduction to Electronics and Communication Engineering	3	0	0					
1BESC104D	Introduction to Mechanical Engineering	3	0	0					
1BESC104E	Essentials of Information Technology	3	0	0					

Integrated courses (IC), combining theory with practical components.

(i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week.

(ii)Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE).

(iii)The practical component shall be assessed only through CIE.

The Mathematics/Chemistry courses shall be taught by a single faculty member per session, with no sharing of the course (subject) modules. The **tutorial sessions** for the **mathematics course** shall be conducted in the laboratory environment using **Maxima/Mathematica/ Python/Scilab/MATLAB software** to enhance computational understanding and application skills.

All students admitted to the engineering program have to complete **Applied Mathematics-I and Applied Mathematics-II** in I and II semesters by selecting the subjects prescribed for their stream, viz. CV, ME, EEE or CSE, under the heading Mathematics-I and Mathematics-II.

Those who have completed the chemistry course under the heading Applied Chemistry in I semester have to select the prescribed stream wise physics course under the heading Applied physics during II semester.

Engineering Sciences Courses-I (ESC-I): These courses are designed to broaden students' technical knowledge beyond their core area of study. These courses enable students to gain a foundational understanding of engineering principles from other stream courses. Students are required to select and complete two courses that are not belong to their admitted program/or stream. For example, a student admitted to the any programme of the Civil Engineering / Civil Engineering stream should not select Introduction to Building Sciences but any other two. One course shall be selected under ESC-I and another course under ESC-II. The two courses must be different from the other.

Communication Skills: This course shall be conducted in a laboratory environment

The **Student Induction Programme** (SIP), initiated by the All India Council for Technical Education (AICTE), is designed to help newly admitted students in technical institutions transition smoothly into the higher education environment. It aims to familiarize students with the institutional culture, foster connections with peers and faculty, and provide a foundation for holistic learning. Activities under SIP may include Physical Activities, Creative Arts, Universal Human Values, Literary Events, and Proficiency Modules. Lectures shall be by Eminent Personalities,

Local Area Visits, Department/Branch Familiarization, and Innovation-related sessions.
The first year of the Engineering programmes is composed of I semester, II semester and Summer Semester. SIP activities shall be scheduled in the afternoon sessions during the first week of class commencement of I and II semesters only.
The specific programmes to be conducted will be notified separately by the University via the academic calendar or through a separate notification.

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

As per AICTE guidelines (refer 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 is:

1. **Regular students** admitted to a 4-year degree program must earn **100 Activity Points**.
2. **Lateral entry students** (joining from the second year) must earn **75 Activity Points**.
3. **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 are **non-credit** and will not be considered for **the SGPA/CGPA** or be used 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**.

If a student completes all the semesters (eight or six) at the end of the programme but fails to earn the required Activity Points, the eighth-semester Grade Card will be withheld until the requirement is fulfilled. Also, the degree will be awarded only after the Grade Card has been released.

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.

Sl. No	Stream	UG Programmes under the stream with code
1	Civil Engineering Stream (CV)	(1) Civil engineering (CV), (2) Mining Engineering (MI)
2	Mechanical Engineering Stream ME	(1)Aeronautical Engineering (AE), (2)Aerospace Engineering (AS),(3) Agreecultural Engineering (AG),(4)Automation and Robotics (AR), (5)Automobile Engineering (AU), (6)Chemical Engineering (CH), (7) Industrial & Production Engineering (IP), (8)Industrial Engineering & Management (IM), (9) Manufacturing Science and Engineering (MS), (10) Marine Engineering (MR), (11) Mechanical & Smart Manufacturing (MM), (12) Mechanical Engineering (ME), (13)Mechatronics (MT), (14) Petrochem Engineering (PC), (15)Robotics & Automation (RA),(16) Robotics and Artificial Intelligence (RI),(17)Silk Technology (ST), (18) Textile Technology (TX),(19)Energy Engineering (ER),(20) Smart Agritech (SA).
3	Electrical and Electronics Engineering Stream (EEE)	(1)Electronics & Communication Engineering (EC), (2)Biomedical Engineering (BM), (3)Electrical & Electronics Engineering (EE), (4) Electronics & Instrumentation Engineering (EI),(5) Electronics & Telecommunication Engineering (ET),(6) Industrial IoT (IO), (7) Medical Electronics Engineering (ML),(8) Electronics Engineering (VLSI Design and Technology) (VL),(9) Electronics & Communication(Advanced Communication Technology) (EA),(10) Electronics & Computer Engineering (UE).Electronics and Computer Sciences,
4	Computer Science and Engineering Stream (CSE)	(1) Computer Science and Engineering (CS), (2)Computer Engineering (CE), (3) Artificial Intelligence and Data Science (AD), (4)Artificial Intelligence and Machine Learning (AI),(5)Biotechnology (BT),(6)Computer & Communication Engineering (CM), (7) Computer Science and Business System (CB),(8)Computer Science and Design (CG),(9)Computer Science and Engineering (IoT) (CO), (10)CSE(Artificial Intelligence and Machine Learning) (CI),(11) CSE(Artificial Intelligence) (CA),(12) CSE(Cyber Security) (CY), (13)CSE(Data Science) (CD),(14) CSE(IoT and Cyber Security including Block Chain Technology) (IC), (15) Data Science (DS), (16) Information Science & Engineering (IS),(17) Computer Science (CR). Computer science & Technology(CN), CSE(AI & DS),

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II Semester (For the students who have studied the Chemistry group in I semester)

Sl. No	Course and Course Code		Course Title	TD/PSB	Teaching Hours/Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SAAE	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	ASC	1BMATx201	Applied Mathematics -II (Stream Specific)	Maths Dept	3	2	0		03	50	50	100	04
2	ASC(IC)	1BPHYx202	Applied Physics (Stream Specific)	PHY Dept	3	0	2		03	50	50	100	04
3	ESC	1BCEDx203	Computer-Aided Engineering Drawing (Stream Specific)	ME dept	2	0	2		03	50	50	100	03
4	ESC	1Bxxx204x	Engineering Science Course-II	Respective Engg Dept	3	0	0		03	50	50	100	03
5	PSC	1Bxxx205x	Programme Specific Course	Respective Engg Dept	3	0	0		03	50	50	100	03
6	AEC (NCMC)	1BSKS206	Soft Skills	Humanities Dept	1	0	0		--	100	---	100	PP
7	PSC	1BxxxL207x	Programme-Specific Course Lab	Respective dept	0	0	2		03	50	50	100	01
8	AEC/SDC	1BPRJ258	Interdisciplinary Project-Based Learning	Combination of Departments	0	0	0	02	02	50	50	100	01
9	HSMC	1BKSK209(BKSK107)/ 1BKBK209(BKBK107)	Samskrutika Kannada/ Balake Kannada	Humanities Dept	1	0	0		01	50	50	100	01
				TOTAL	**16**	**02**	**06**		**21**	**500**	**400**	**900**	**20**

ASC-Applied Science Course, **IC** – Integrated Course (Practical Course Integrated with Theory Course), **ESC**- Engineering Science Courses, **PSC**-Programme Specific Course, **ESC**- Engineering Science Courses, **ETC**- Emerging Technology Course, **AEC**- Ability Enhancement Course, **NCMC:** Non Credit Mandatory Course, **PP** : (Pass/Pass) is assigned to a non credit course. "PP" represents pass in course provided students have successfully completed the CIE requirements. Otherwise, "NP-not pass shall be awarded. "PP" is essential for the award of the degree **HSMC**-Humanity, Social Science and management Course, **AEC/SDC**- Ability Enhancement Course/Skill Development course, **TD/PSB**- Teaching Department / Paper Setting Board, **CIE** –Continuous Internal Evaluation, **SEE**- Semester End Examination, **S- (SAAE)-**Students' Academic Activity Engagement Hours,

Applied Mathematics-II Courses					Applied Physics Courses				
Code	**Title**	**L**	**T**	**P**	**Code**	**Title**	**L**	**T**	**P**
1BMATC201	Differential Calculus and Numerical Methods: CV stream	3	2	0	1BPHYC202	Physics for Sustainable Structural Systems (CV stream)	3	0	2
1BMATM201	Multivariable Calculus and Numerical Methods: ME stream	3	2	0	1BPHYM202	Physics of Materials (Mech stream)	3	0	2
1BMATE201	Calculus, Laplace Transform, and Numerical Techniques: EEE stream	3	2	0	1BPHEC202	Quantum Physics and Electronic Sensors (ECE stream)	3	0	2
1BMATS201	Numerical Methods: CSE Stream	3	2	0	1BPHEE202	Physics of Electrical Engineering Materials (EEE Stream –only for EEE Students)	3	0	2
					1BPHYS202	Quantum Physics and Applications (CSE stream)	3	0	2
Programme Specific Courses (PSC)					**Programme Specific Course Labs (PSCL)**				
1BCIV205	Engineering Mechanics	3	0	0	1BMEML207	Mechanics and Materials Lab	0	0	3
1BEME205	Elements of Mechanical Engineering	3	0	0	1BEMEL207	Elements of Mechanical Engineering Lab	0	0	3
1BBEE205	Basics of Electrical Engineering	3	0	0	1BBEEL207	Basic Electrical Lab	0	0	3
1BECE205	Fundamentals of Electronics & Communication Engineering	3	0	0	1BECEL207	Fundamentals of Electronics & Communication Engineering Lab	0	0	3
1BEIT205	Programming in C	3	0	0	1BPOPL207	C Programming Lab	0	0	3
1BEBT205	Elements of Biotechnology and Biomimetics	3	0	0	1BSSAL207	Soil Science and Agronomy Field Lab	0	0	3
1BSSA205	Principles of Soil Science and Agronomy	3	0	0	1BEBTL207	Elements of Biotechnology Lab	0	0	3
1BEAE205	Elements of Aeronautical Engineering	3	0	0	1BEAEL207	Elements of Aeronautical Engineering Lab	0	0	3
1BECHE205	Elements of Chemical Engineering	3	0	0	1BECHEL207	Elements of Chemical Engineering Lab	0	0	3
Engineering Science Courses-II (ESC-II)					**Computer-Aided Engineering Drawing Courses**				
1BESC204A	Building Sciences & Mechanics	3	0	0	**Code**	**Title**	**L**	**T**	**P**
1BESC204B	Introduction to Electrical Engineering	3	0	0	1BCEDC203	Computer-Aided Engineering Drawing for CV Stream	2	0	2
1BESC204C	Introduction to Electronics & Communication Engineering	3	0	0	1BCEDM203	Computer-Aided Engineering Drawing for ME stream	2	0	2
1BESC204D	Introduction to Mechanical Engineering	3	0	0	1BCEDEEC203	Computer-Aided Engineering Drawing for ECE stream	2	0	2
1BESC204E	Essentials of Information Technology	3	0	0	1BCEDE203	Computer-Aided Engineering Drawing for EEE stream (Only for EEE Students)	2	0	2
					1BCEDS203	Computer-Aided Engineering Drawing for CSE stream	2	0	2

Integrated courses (IC), combining theory with practical components.

(i)Theory sessions will be conducted for 3 hours per week, while the practical sessions will be conducted for 2 hours per week.

(ii)Theory component shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE).

(iii)The practical component will be assessed only through CIE.

The Mathematics/Physics courses shall be taught by a single faculty member per session, with no sharing of the course (subject) modules. The **tutorial sessions** for the **mathematics course** shall be conducted in a laboratory environment using **Maxima/Mathematica/ Python/Scilab/MATLAB software** to enhance computational understanding and application skills.
Students admitted to a specific engineering stream are required to select and successfully complete **Applied Mathematics-I** and **Applied Physics courses** that are aligned to their program stream.

Programme Specific Courses (PSC): Programme Specific Courses (PSC) are a set of core courses tailored to a specific branch or discipline of engineering in which a student is enrolled (e.g., Mechanical Engineering, Computer Science, Civil Engineering, etc.). These courses are intended to provide students with in-depth knowledge and specialized skills essential for professional competence in the chosen field. Students must select and complete the course from this group that **corresponds to their admitted program stream**. Similarly, students are also required to choose and pass laboratory courses that are specific to their stream from the **Programme Specific Courses Laboratory (PSCL)** group.
Computer-Aided Engineering Drawing: The courses under this category are stream-specific. Students must select and complete the course that corresponds to their admitted engineering stream**.**
Engineering Sciences Courses-II (ESC-II): These courses are designed to broaden the technical knowledge of students beyond their core area of study. These courses enable students to gain a foundational understanding of engineering principles from other disciplines. Students are required to select and complete a course that does not belong to their admitted program /stream. Students should select a course other than that was selected under ESC-I and other than course not belonging to their stream.
For the course ***Interdisciplinary Project*** **(BPRJ259)**, it is mandatory to form a team comprising students from multiple engineering disciplines. For example, a project team may include students from Mechanical Engineering, Electronics and Communication Engineering (ECE), and Computer Science and Engineering (CSE), working collaboratively to design and implement the project.