

Dr. Vasantrodada Patil Shetkari Shikshan Mandal's
Padmabhooshan Vasantrodada Patil Institute of Technology,
Budhgaon, Sangli (MS) – 416304
(An Autonomous Institute)

Affiliated to
Dr. Babasaheb Ambedkar Technological University,
Lonere, Raigad

(Accredited by NAAC)



Department of Basic Sciences and Engineering

First Year Structure Undergraduate Degree Programme

Common to all Branches

In accordance with National Education Policy (NEP – 2020)

w. e. f.
Academic Year: 2025-26



Dr. Vasantrodada Patil Shetkari Shikshan Mandal's
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BUDHGAON, SANGLI
An Autonomous Institute, affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere, Raigad
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Department of Basic Sciences and Engineering
Curriculum Structure and Evaluation Scheme
To be implemented from Academic Year 2025-26

Institute Vision and Mission

• **Vision:**

To be a premier autonomous institute known for academic excellence, research innovation, and transformative engineering education.

• **Missions:**

Mission 1: Academic Excellence

Providing quality engineering education through an outcome-based curriculum, effective teaching–learning processes, and continuous academic improvement.

Mission 2: Research and Innovation

Promoting a strong research and innovation culture by encouraging faculty and students to engage in research projects, publications, patents, and interdisciplinary collaborations.

Mission 3: Industry-Oriented learning

Strengthening industry–institute collaboration through internships, industry-supported laboratories, expert lectures, and real-world engineering projects to enhance employability.

Mission 4: Holistic and Ethical Development

Developing competent engineers with professional ethics, leadership qualities, lifelong learning ability, and commitment to societal and sustainable development.

Department Vision and Mission

• **Vision**

To build strong fundamentals in basic sciences and engineering by promoting research and innovative mindset through transformative academic excellence.

• **Mission**

- Implementing outcome-based education (OBE) and enhancing teaching–learning processes for developing strong fundamental knowledge.
- Promoting research and innovative mindset among students and faculty.
- Developing employability skills through experiential learning approaches.
- Inculcating ethical values, sustainability awareness and lifelong learning for holistic development of students.


Dr. Anushka A. Patil
HoD


Dr. K. K. Pandey
Dean Academic




Dr. S. S. Mohite
Director



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Knowledge and Attitude Profile (WK)

- WK1:** A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.
- WK2:** Conceptually-based mathematics, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.
- WK3:** A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.
- WK4:** Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.
- WK5:** Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.
- WK6:** Knowledge of engineering practice (technology) in the practice areas in the engineering discipline.
- WK7:** Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.
- WK8:** Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.
- WK9:** Ethics, inclusive behaviour and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes.

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Programme Outcome (POs)

- PO1: Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization to develop to the solution of complex engineering problems (WK1 to WK4).
- PO2: Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
- PO3: Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
- PO4: Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
- PO5: Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
- PO6: The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, & WK7).
- PO7: Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
- PO8: Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
- PO9: Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
- PO10: Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
- PO11: Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)


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**Curriculum Structure and Evaluation Scheme
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Legends Used


<i>L</i>	- Lecture Hours / Week
<i>T</i>	- Tutorial Hours / Week
<i>P</i>	- Practical Hours / Week
<i>CA</i>	- Continuous Assessment
<i>ISE 1</i>	- In Semester Evaluation – 1
<i>ISE 2</i>	- In Semester Evaluation – 2
<i>ESE</i>	- End Semester Examination
<i>MOOC</i>	- Massive Open Online Course
<i>NPTEL</i>	- National Programme on Technology Enhanced Learning
<i>FY</i>	- First Year
<i>SY</i>	- Second Year
<i>TY</i>	- Third Year
<i>B.Tech</i>	- Bachelor of Technology
<i>MDM</i>	- Multidisciplinary Minor
<i>OE</i>	- Open Elective




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Semester-wise Credit distribution for
Four Year UG Engineering Programme in INC (One Major, One Minor)

Semester		I	II	III	IV	V	VI	VII	VIII	Total Credits
Basic Science Course	BSC/ESC	8	8	--	--	--	--	--	--	16
Engineering Science Course		6	9	4	--	--	--	--	--	19
Programme Core Courses (PCC)	Program Courses	--	--	11	15	13	16	9	3	67
Programme Elective Courses (PEC)		--	--	--	--	3	3	3	3	12
Multidisciplinary Minor (MDM)	Multidisciplinary Courses	--	--	3	3	3	3	2	--	14
Open Elective (OE) Other than particular program		--	--	--	2	2	--	--	--	4
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	1	2	--	1	--	2	--	--	6
Ability Enhancement Course (AEC-01, AEC-02)	Humanities Social Science and Management (HSSM)	3	--	--	1	--	--	--	--	4
Entrepreneurship / Economics / Management Courses		--	--	2	--	1	--	3	--	6
Indian Knowledge System (IKS)		2	--	--	--	--	--	--	--	2
Value Education Course (VEC)		--	--	2	2	--	--	--	--	4
Research Methodology	Experimental Learning Courses	--	--	--	--	--	--	2	--	2
Comm. Engg. Project (CEP) / Field Project (FP)		--	--	1	--	--	--	--	--	1
Project		--	--	--	--	--	--	4	2	6
Internship / OJT		--	--	--	--	--	--	--	10	10
Co-curricular Courses (CC)	Liberal Learning Courses	--	1	--	--	--	--	--	--	1
Total Credits (Major)		20	20	23	24	22	24	23	18	174


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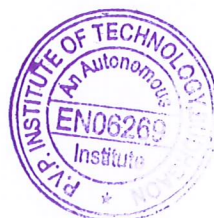
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Distribution of Credits:

Course Category	Number of Subjects	Credit as per PVPIT
Humanities, Social Science, and Management Courses + IKS(1)+VEC(2)	08	16
Basic Science Course (BSC)	04	16
Engineering Science Course (ESC)	05	19
Professional Core Course (PCC)	28	67
Professional Elective Course (PEC)	04	12
Open Elective Course (OEC)	02	04
Project work, Seminar/cep, and Internship in industry or elsewhere (PrSI) +RM	05	19
Mandatory Courses [Environmental Sciences, Induction Program , Indian Constitution, Essence of Indian Knowledge Tradition] (AUC) +CC	01	01
*VSEC	04	06
Total Credit Point		160
Minor Courses	05	14
Honours Courses	--	--


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F.Y. B.Tech SEMESTER I Physics Group Group A


Course Code	Course Name	Teaching Scheme				Evaluation Scheme				TOTAL	
		L	T	P	Credit	Scheme	Theory		Practical		
							Max	Minimum Marks for Passing	Max		Minimum Marks for Passing
Students Induction Program As Per AICTE Guidelines											
OBSBS101	Engineering Mathematics-I	3	1	0	4	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
OBSBS102	Engineering Physics	3	0	0	3	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
OBSES103	Engineering Graphics	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
OBSES104	Basic Electrical and Electronics Engineering	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
OBSIK105	Indian Epistemology	2	0	0	2	ISE	50	20	-	-	50
OBSAE106	Professional Communication Skills	2	0	2	3	ISE	-	-	50	20	50
OBSBS107	Engineering Physics Laboratory	0	0	2	1	ISE	-	-	50	20	50
OBSES108	Engineering Graphics Laboratory	0	0	2	1	ISE	-	-	50	20	50
OBSES109	Basic Electrical and Electronics Engineering Laboratory	0	0	2	1	ISE	-	-	50	20	50
OBSVS110	Workshop Practices	0	0	2	1	ISE	-	-	50	20	50
TOTAL		14	1	10	20	TOTAL MARKS				700	
Total Contact Hours Per Week		25									

Course Category	Basic Sciences Course	Engineering Science Course	Vocational and Skill Enhancement Course	Ability Enhancement Course	Indian Knowledge System	Co-curricular Courses	Total
	BS	ES	VS	AE	IK	CC	
Credit	8	6	1	3	2	-	20


ISE 1: In semester evaluation 1, ISE 2: In semester evaluation 2, MSE: Mid Semester Examination, ESE: End Semester Examination.

***Passing Criteria: ISE + MSE + ESE ≥ 40 % Marks and ESE has separate passing ≥ 40 % Marks.**


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F.Y. B.Tech SEMESTER I **Chemistry Group** Group B

Course Code	Course Name	Teaching Scheme				Evaluation Scheme					Total
		L	T	P	Credit	Scheme	Theory		Practical		
							Max	Minimum Marks for Passing	Max	Minimum Marks for Passing	
Students Induction Program As Per AICTE Guidelines											
0BSBS101	Engineering Mathematics-I	3	1	-	4	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSBS111	Engineering Chemistry	3	0	0	3	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSES112	Engineering Mechanics	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSES113	Basic Civil and Mechanical Engineering	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSCC114	Integrated Personality Development	1	0	0	1	ISE	50	20	-	-	50
0BSES115	Programming for Problem Solving in C	2	0	2	3	ISE	-	-	50	20	50
0BSVS116	Design Thinking	1	0	2	2	ISE	-	-	50	20	50
0BSBS117	Engineering Chemistry Laboratory	0	0	2	1	ISE	-	-	50	20	50
0BSES118	Engineering Mechanics Laboratory	0	0	2	1	ISE	-	-	50	20	50
0BSES119	Basic Civil and Mechanical Engineering Laboratory	0	0	2	1	ISE	-	-	50	20	50
TOTAL		14	1	10	20	TOTAL MARKS					700
Total Contact Hours Per Week		25									

Course Category	Basic Sciences Course	Engineering Science Course	Vocational and Skill Enhancement Course	Ability Enhancement Course	Indian Knowledge System	Co-curricular Courses	Total
	BS	ES	VS	AE	IK	CC	
Credit	8	9	2	-	-	1	20

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F.Y. B.Tech SEMESTER II Physics Group Group A

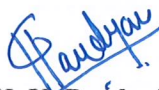
Course Code	Course Name	Teaching Scheme				Evaluation Scheme				Total	
		L	T	P	Credit	Scheme	Theory		Practical		
							Max	Minimum Marks for Passing	Max		Minimum Marks for Passing
0BSBS120	Engineering Mathematics-II	3	1	0	4	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSBS102	Engineering Physics	3	0	0	3	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSES103	Engineering Graphics	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSES104	Basic Electrical and Electronics Engineering	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSIK105	Indian Epistemology	2	0	0	2	ISE	50	20	-	-	50
0BSAE106	Professional Communication Skills	2	0	2	3	ISE	-	-	50	20	50
0BSBS107	Engineering Physics Laboratory	0	0	2	1	ISE	-	-	50	20	50
0BSES108	Engineering Graphics Laboratory	0	0	2	1	ISE	-	-	50	20	50
0BSES109	Basic Electrical and Electronics Engineering Laboratory	0	0	2	1	ISE	-	-	50	20	50
0BSVS110	Workshop Practices	0	0	2	1	ISE	-	-	50	20	50
TOTAL		14	1	10	20	TOTAL MARKS				700	
Total Contact Hours Per Week		25			20	TOTAL MARKS				700	

Course Category	Basic Sciences Course	Engineering Science Course	Vocational and Skill Enhancement Course	Ability Enhancement Course	Indian Knowledge System	Co-curricular Courses	Total
	BS	ES	VS	AE	IK	CC	
Credit	8	6	1	3	2	-	20


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F.Y. B.Tech SEMESTER II		Chemistry Group					Group B				
Course Code	Course Name	Teaching Scheme				Evaluation Scheme					Total
		L	T	P	Credit	Scheme	Theory		Practical		
							Max	Minimum Marks for Passing	Max	Minimum Marks for Passing	
0BSBS120	Engineering Mathematics-II	3	1	-	4	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSBS111	Engineering Chemistry	3	0	0	3	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSES112	Engineering Mechanics	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSES113	Basic Civil and Mechanical Engineering	2	0	0	2	ISE 1	10	40*	-	-	100
						MSE	20				
						ISE 2	10				
						ESE	60				
0BSCC114	Integrated Personality Development	1	0	0	1	ISE	50	20	-	-	50
0BSES115	Programming for Problem Solving in C	2	0	2	3	ISE	-	-	50	20	50
0BSVS116	Design Thinking	1	0	2	2	ISE	-	-	50	20	50
0BSBS117	Engineering Chemistry Laboratory	0	0	2	1	ISE	-	-	50	20	50
0BSES118	Engineering Mechanics Laboratory	0	0	2	1	ISE	-	-	50	20	50
0BSES119	Basic Civil and Mechanical Engineering Laboratory	0	0	2	1	ISE	-	-	50	20	50
TOTAL		14	1	10	20	TOTAL MARKS					700
Total Contact Hours Per Week		25									


Course Category	Basic Sciences Course	Engineering Science Course	Vocational and Skill Enhancement Course	Ability Enhancement Course	Indian Knowledge System	Co-curricular Courses	Total
	BS	ES	VS	AE	IK	CC	
Credit	8	9	2	-	-	1	20

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