Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, Tal.: Pandharpur - 413 304, Dist.: Solapur (MH)
Contact No.: 9545553888, 9545553737, E-mail : coe@sveri.ac.in, Website : www.sveri.ac.in
Approved by A.I.C.T.E., New Delhi and Afiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, NAAC A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Mechanical Engineering			
Programme Code: 1-1408968339			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	F. Y. B.Tech. Mechanical Engineering	Yes (CBCS)	2020-2021
2	S. Y. B.Tech. Mechanical Engineering	Yes (CBCS & Elective)	2021-2022
3	T. Y. B.Tech. Mechanical Engineering	Yes (CBCS & Elective)	2020-2021
4	Final Year B.Tech. Mechanical Engineering	Yes (CBCS & Elective)	2021-2022

COLLEGE OF ENGINEERING PANDHARPUR

B. Range
PRINCIPAL
SVERI's College of Engineering,
Pandharpur

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF

ENGINEERING& TECHNOLOGY

ALL BRANCHES

CBCS Syllabus for
First Year B. Tech. (All Branches)
w.e.f.
Academic Year 2020-21

PUNYASHLOK AHILYADEVI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

CBCS Curriculum for First Year B.Tech. (All Branches)

W.E.F. 2020-21

- Semester I : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C112	Engineering Mathematics-I	3			3	70	30		100
C113	Basics of Civil and Mechanical Engineering	4			4	70	30		100
C114	Engineering Mechanics	3			3	70	30		100
C115	Universal Human Values	2			2	50			50
C116	Communication Skills	1			1		25		25
	Total	**16**			**16**	**330**	**145**		**475**

- Semester I : Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $			2	1			25	25
C112	Engineering Mathematics-I		1		1			25	25
C113	Basics of Civil and Mechanical Engineering @			2	1			25	25
C114	Engineering Mechanics			2	1			25	25
C116	Communication Skills			2	1			25	25
C117	Creativity & Design Thinking			2	1			50	50
C118	Workshop Practice			2	1			50	50
	Total			**12**	**7**			**225**	**225**
	Grand Total	**16**	**1**	**12**	**23**	**330**	**145**	**225**	**700**
C119	Induction Program	*** Please see note below*							

- Semester II : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C122	Engineering Mathematics - II	3			3	70	30		100
C123	Basic Electrical & Electronics Engineering	3			3	70	30		100
C124	Programming for problem solving	2			2		25		25
C125	Engineering Graphics and CAD	2			2	70	30		100
C126	Professional Communication	1			1		25		25
Total		**14**			**14**	**280**	**170**		**450**

Semester II: Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE (POE)***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry$			2	1			25	25
C122	Engineering Mathematics- II		1		1			25	25
C123	Basic Electrical & Electronics Engineering			2	1			25	25
C124	Programming for problem solving			4	2	50#		50	100
C125	Engineering Graphics and CAD			4	2			50	50
C126	Professional Communication			2	1			25	25
	Total			**14**	**8**	**50**		**200**	**250**
Grand Total		**14**	**1**	**14**	**22**	**330**	**170**	**200**	**700**
C127	Democracy, Elections and Good Governance *					**50**			**50**

- Legends used–

L	Lecture	FA	Formative Assessment
T	Tutorial	SA	Summative Assessment
P	Lab Session	ESE	End Semester Examination
		ISE	In Semester Evaluation
		ICA	Internal Continuous Assessment

- **Notes-**

1. $ - Indicates approximately half of the total students at F. Y. will enroll under Group A and remaining will enroll under Group B.

   Group A will take up course of Engineering Physics (theory & laboratory) in Semester I and will take up course of Engineering Chemistry (theory & laboratory) in semester II.

   Group B will take up course of Engineering Chemistry (theory & laboratory) in Semester I and will take up course of Engineering Physics (theory & laboratory) in semester II.

2. # - Indicates the subject 'Programming for Problem Solving' shall have a University 'Practical and Oral Examination' at the end of the semester assessing student's programming skills.

3. @ - For the Course (C113) Basics of Civil and Mechanical Engineering, Practicals of Basics of Civil Engineering and Basics of Mechanical Engineering will be conducted in alternate weeks.

4. In Semester Evaluation (ISE) marks shall be based upon student's performance in minimum two tests & mid-term written test conducted & evaluated at institute level.

   Internal Continuous Assessment Marks (ICA) are calculated based upon student's performance during laboratory sessions / tutorial sessions.

5. *- Democracy, Elections & Good Governance is mandatory course. The marks earned by student with this course shall not be considered for calculation of SGPA/CGPA. However, student must complete End Semester Examination (ESE) of 50 marks (as prescribed by university) for fulfillment of this course. This course is not considered as a passing head for counting passing heads for ATKT. However, student must pass this subject for award of the degree.

6. Student must complete induction program of minimum five days before commencement of the regular academic schedule at the first semester.

** GUIDELINES FOR INDUCTION PROGRAM (C119)

New entrants into an Engineering program come with diverse thoughts, mind set and different social, economic, regional and cultural backgrounds. It is important to help them adjust to the new environment and inculcate in them the ethos of the institution with a sense of larger purpose.

An induction program for the new UG entrant students is proposed at the commencement of the first semester. It is expected to complete this induction program before commencement of the regular academic schedule.

Its purpose is to make new entrants comfortable in their new environment, open them up, set a healthy daily routine for them, create bonding amongst the peers as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The Induction Program shall encompass (but not limited to) below activity –

1. Physical Activities
2. Creative Arts
3. Exposure to Universal Human Values
4. Literary Activities
5. Proficiency Modules
6. Lectures by Experts / Eminent Persons
7. Visit to Local Establishments like Hospital /Orphanage
8. Familiarization to Department

Induction Program Course do not have any marks or credits however performance of students for Induction Program is assessed at institute level using below mandatory criteria –

1. Attendance and active participation
2. Report writing

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।

NAAC Accredited-
2015'B'Grade
(CGPA2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM (CBCS)

Structure of

Second Year B. Tech. (Mechanical Engineering)

w.e.f. Academic Year : 2021-2022

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
S. Y. B. Tech. Semester-III

Choice Based Credit System (CBCS) Structure w.e.f. Academic Year 2021-2022

Theory Courses

Course Code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME211	Applied Thermodynamics	3	-	-	-	3	30	70	-	100
ME212	Mechanics of Materials	3	-	-	-	3	30	70	-	100
ME213	Manufacturing Processes	3	-	-	-	3	30	70	-	100
ME214	Machine Drawing & CAD	3	-	-	-	3	30	70	-	100
ME215x	Professional Elective-I	3	-	-	-	3	30	70	-	100
	Sub Total	**15**	**-**	**-**	-	**15**	**150**	**350**		**500**
MEV21	**Environmental Sciences**	**1**	**-**	**-**	-	**-**	**-**	**-**	**-**	**-**

Laboratory / Tutorial Courses

Course Code	Name of Laboratory/Tutorial Course	Hrs./week					Examination Scheme				
		L	T	P	D	Credits	ISE	ESE		ICA	Total
								POE	OE		
ME211	Applied Thermodynamics	-	-	2	-	1	-	-	-	25	25
ME212	Mechanics of Materials	-	1	-	-	1	-	-	-	25	25
ME213	Manufacturing Processes	-	-	2	-	1	-	-	25	25	50
ME214	Machine Drawing & CAD	-	-	-	4	2	-	50	-	50	100
ME215x	Professional Elective-I	-	-	2	-	1	-	-	-	25	25
	Sub Total	-	1	6	-	6	-	75		150	200
	Grand Total	**15**	**1**	**6**	**4**	**21**	**150**	**425**		**150**	**725**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE-In Semester Examination, ESE-End Semester Examination (University Examination for Theory & / POE & / Oral), ICA Internal Continuous Assessment.

Professional Elective-I: ME2151 Microprocessors in Automation, ME2152 Internal Combustion Engines, ME2153 Composite Materials

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
S. Y. B. Tech. Semester-IV

Choice Based Credit System (CBCS) Structure w.e.f. Academic Year 2021-2022

Theory Courses

Course Code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME221	Engineering Mathematics –III	3	-	-	-	3	30	70	-	100
ME222	Manufacturing Technology	3	-	-	-	3	30	70	-	100
ME223	Fluid Mechanics & Fluid Machines	3	-	-	-	3	30	70	-	100
ME224	Kinematics & Theory of Machines	3	-	-	-	3	30	70	-	100
ME225y	Professional Elective-II	3	-	-	-	3	30	70	-	100
	Sub Total	**15**	**-**	**-**	-	**15**	**150**	**350**		**500**
MEV22	**Environmental Sciences**	**1**	**-**	**-**	-	**-**	**-**	**-**	**-**	**-**

Laboratory / Tutorial Courses

Course Code	Name of Laboratory / Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
ME221	Engineering Mathematics –III	-	1	-	-	1	-	-	-	25	25
ME222	Manufacturing Technology	-		2	-	1	-	-	-	25	25
ME223	Fluid Mechanics & Fluid Machines	-	-	2	-	1	-	-	-	25	25
ME224	Kinematics & Theory of Machines	-	-	2	-	1	-	-	25	25	50
ME225y	Professional Elective-II	-	-	2	-	1	-	-	-	25	25
ME 226	Mechanical Workshop-I	-	-	2	-	1	-	-	-	50	50
ME 227	Electrical Technology	-	-	2		1	-	-	25	25	50
	Sub Total	-	1	**12**	**-**	**7**	**-**	**50**		**200**	**250**
	Grand Total	**15**	**1**	**12**		**22**		**400**		**200**	**750**

Abbreviations: L –Lectures, P –Practical, T– Tutorial, ISE– In Semester Examination, ESE – End Semester Examination (University Examination for Theory & / POE & / Oral), ICA– Internal Continuous Assessment.

Professional Elective-II: ME2251 Mechatronic Systems, ME2252 Power Plant and Energy Engineering,ME2253 Solid Mechanics

1. Batch size for the practical / tutorial shall be of 20 students. On forming the batches, if the strength of remaining student exceeds 9, then a new batch shall be formed.

2 Student is required to study Environmental Science subject in Second Year and passing in the same to become eligible for award of degree.

3 Industrial Training/Internship (evaluated at B. Tech Semester-VII) of minimum 30 days shall be completed in any vacation after S.Y. B. Tech. Semester-III, but before B. Tech. Semester-VII & the report shall be submitted and evaluated in B. Tech. Semester-VII.

4 ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, seminars, quizzes, and laboratory books and their interaction and attendance for theory and lab sessions, as applicable.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology

*Credit System **MODIFIED** structure of T.Y. B. Tech. **Mechanical Engineering** W.E.F. 2020-21*

Semester -V

Theory Courses

Course code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME311	Machine Design –I	3	-	-	-	3	30	70	-	100
ME312	CAD-CAM & CAE	3	-	-	-	3	30	70		100
ME313	Metallurgy	3	-	-	-	3	30	70	-	100
ME314	Industrial Engineering and Operation Research	3	-	-	-	3	30	70	-	100
ME315	Professional Elective –III	3	-	-	-	3	30	70	-	100
SLH	*Self Learning: HSS*					2#		50		50
	Sub Total	**15**	**-**	**-**	-	**15**	**150**	**400**	-	**550**

Semester5 Laboratory / Tutorial Courses

Course code	*Name of Laboratory /Tutorial Course*	*Hrs./week*				*Credits*	*Examination Scheme*				
		L	*T*	*P*	D		*ISE*	*ESE*		*ICA*	*Total*
								POE	*OE*		
ME311	Machine Design –I	-	-	2	-	1	-	-	-	25	25
ME312	CAD-CAM & CAE	-	-	2	-	1		25	-	25	50
ME313	Metallurgy	-	-	2	-	1	-	-	25	25	50
ME314	Industrial Engineering and Operation Research	-	-	2	-	1	-	-	-	25	25
ME315	Professional Elective –III	-	-	2	-	1	-	-	-	25	25
ME316	Advanced ProgrammingConcepts	1		2		2	-	-	-	50	50
ME317	Mechanical Workshop –II	-	-	2	-	1	-	-	-	25	25
	Sub Total	01	-	14	-	08	-	50		200	250
	Grand Total	**16**	**-**	**14**	-	**23**	**150**	**450**		**200**	**800**

Abbreviations: L-Lectures, T-Tutorials, P-Practicals, D-Drawing, ISE- In-Semester Exam, ESE- End Semester Exam, ICA- Internal Continuous Assessment

***Professional Elective –III: A**. Gas turbines **B.** Industrial Hydraulics and Pneumatics **C.** Non Conventional Machining D. Tool Engineering*

 # indicates credits over and above.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

Faculty of Science & Technology

*Credit System **MODIFIED** structure of T.Y. B. Tech. **Mechanical Engineering** W.E.F. 2020-21*

Semester -VI

Theory Courses

Course code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME321	Machine Design –II	3	-	-	-	3	30	70	-	100
ME322	Instrumentation & Control	3	-	-	-	3	30	70	-	100
ME323	Heat Transfer	3	-	-	-	3	30	70	-	100
ME324	Industrial & Quality Management	3	-	-	-	3	30	70	-	100
ME325	Professional Elective –IV	3	-	-	-	3	30	70	-	100
ME326	Mini Project	-	-	-	-	-	-	-	-	-
ME327	Metrology	-	-	-	-	-	-	-	-	-
SLH 32	Self-Learning Technical	-	-	-	-	2#	-	50	-	50
	Sub Total	**15**	**-**	**-**	**-**	**15**	**150**	**400**	**-**	**550**

Semester 6 Laboratory / Tutorial Courses

Course code	*Name of Laboratory / Tutorial Course*	*Hrs./week*				*Credits*	*Examination Scheme*				
		L	*T*	*P*	D		*ISE*	*ESE*		*ICA*	*Total*
								POE	*OE*		
ME321	Machine Design –II	-	-	2	-	1	-	-	--	25	25
ME322	Instrumentation & Control	-	-	2	-	1	-	-		25	25
ME323	Heat Transfer	-	-	2	-	1	-	25	-	25	50
ME324	Industrial & Quality Management	-	1	-	-	1	-	-	-	25	25
ME325	Professional Elective –IV	-	-	2		1	-	-	-	25	25
ME326	Mini Project	-	1	-	-	1	-	-	-	25	25
ME327	Metrology			2		1			25	25	50
ME328	Mechanical Workshop –III	-	-	2	-	1				25	25
	Sub Total	**-**	**02**	**12**	**-**	**08**	**-**	**50**		**200**	**250**
	Grand Total	**15**	**02**	**12**	**-**	**23**	**150**	**450**		**200**	**800**

Abbreviations: L-Lectures, T-Tutorials, P-Practical, D-Drawing, ISE- In-Semester Exam, ESE- End Semester Exam, ICA- Internal Continuous Assessment , Professional Elective –IV: A.** Project Management* **B.** Industrial Product Design ***C.** Plastic Engineering **D.** Mechanical Vibrations E. Railway Transportation.* ***# indicates credits over and above

- **Note** –

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 9, then a new batch shall be formed.
2. Industrial Training (evaluated at B. Tech Sem.-VII) of minimum 15 days shall be completed in any vacation after B.Tech Sem.-III, but before B. Tech. Sem.-VII & the report shall be submitted and evaluated in B.Tech. Sem.-VII
3. Students shall select one Self Learning Module at B.Tech. Sem-V and B.Tech. Sem. VI each from Humanities and Social Sciences and Technical Groups Respectively.
4. Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology.

6. Self-Learning Subjects:

A. Semester-V (HSS): Student can select a Self Learning Course from Solapur University, Solapur HSS Course List and appear for its examination as and when conducted by Solapur University, Solapur.

OR

Student can enroll for National Programme on Technology Enhanced Learning (NPTEL) course, complete its assignments and Appear for certificate examination as and when conducted by NPTEL.

For more details about Self Learning Course (HSS) please refer to separate rule document available from Solapur University, Solapur. More details about NPTEL are available at http://nptel.ac.in

B. **Semester-VI (Technical) :** Students can select any one of the following self-learning technical subjects ;

- **a.** Manufacturing of Composites
- **b.** Design Practices
- **c.** Joining Technology for Metals
- **d.** Steam Power Engineering

7. ICA assessment shall be a continuous process based on student's performance in class tests, assignments, homework, subject Seminars, quizzes, laboratory books and their interaction..

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-
2015'B'Grade
(CGPA2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM (CBCS)

Structure

Final Year B. Tech.(Mechanical Engineering)

w.e.f. Academic Year:-2021-2022

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
Mechanical Engineering
Semester-VII

Choice Based Credit System (CBCS) Structure of Final Year B.Tech. Mechanical Engineering w.e.f. 2021-2022

Theory Courses

Course Code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME411	Refrigeration and Air Conditioning	3	-	-	-	3	30	70	-	100
ME412	Automobile Engineering	3	-	-	-	3	30	70	-	100
ME413	Robotics and Artificial Intelligence	3				3	30	70		100
ME414x	Professional Elective-V	3	-	-	-	3	30	70	-	100
ME415y	Open Elective	3	-	-	-	3	30	70	-	100
	Sub Total	**15**	**-**	**-**	-	**15**	**150**	**350**		**500**

Laboratory / Tutorial Courses

Course Code	Name of Laboratory/Tutorial Course	Hrs./week					Examination Scheme				
		L	T	P	D	Credits	ISE	ESE		ICA	Total
								POE	OE		
ME411	Refrigeration and Air Conditioning	-	-	2	-	1	-	25	-	25	50
ME412	Automobile Engineering	-	-	2	-	1	-	-		25	25
ME413	Robotics and Artificial Intelligence			2		1				25	25
ME414x	Professional Elective-V	-	-	2	-	1	-	-		25	25
ME415y	Open Elective	-	1	-	-	1	-	-	-	25	25
ME416	Project Work Stage-I Seminar	-	-	4	-	2	-	-	-	25	25
ME417	Industrial Training	-	1	-	-	1	-	-	25	50	75
	Sub Total	-	2	12	-	8	-	50		200	250
	Grand Total	**15**	**2**	**12**	**-**	**23**	**150**	**400**		**200**	**750**

Abbreviations: *L- Lectures, P –Practical, T- Tutorial, D-Drawing, ISE-In Semester Examination, ESE-End Semester Examination (University Examination for Theory & / POE & / Oral), ICA-Internal Continuous Assessment.*

Professional Elective-V:	***Open Elective:***
ME4141 Production and Operations Management	ME4151 *Costing and Cost Control*
ME4142 Computational Fluid Dynamics	ME4152 *Entrepreneurship Development*
ME4143 Process Engineering	ME4153 *Business Development*
ME4144 Finite Element Method	ME4154 *Product Life Cycle Management*
ME4145 Tribology	ME4155 Business *Economics*
ME4146 Railway Systems Management	ME4156 *Reliability Engineering*

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Punyashlok Ahilyadevi Holkar Solapur University, Solapur

Faculty of Science & Technology

Mechanical Engineering

Semester-VIII

Choice Based Credit System (CBCS) Structure of Final Year B.Tech. Mechanical Engineering w.e.f. 2021-2022

Theory Courses

Course Code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME421	Project Work Stage-II Seminar	-	-	-	-	-	-	-	-	-
ME422	Project Work Stage-III Seminar	-	-	-	-	-	-	-	-	-
ME423	Project Work (Report Submission &	-	-	-	-	-	-	-	-	-
	Sub Total	**-**	**-**	**-**	-	**-**	**-**	**-**		**-**

Laboratory / Tutorial Courses

Course Code	Name of Laboratory / Tutorial Course	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
								POE	OE		
ME421	Project Work Stage-II Seminar	-	-	2	-	1	-	-	-	50	50
ME422	Project Work Stage-III Seminar	-	-	2	-	1	-	-	-	50	50
ME423	Project Work (Report Submission & Presentation)	-	-	4	-	2	-	50	-	50	100
	Sub Total	-	-	**8**	**-**	**4**	**-**	**50**		**150**	**200**
	Grand Total			**8**		**4**		**50**		**150**	**200**

Abbreviations: *L –Lectures, P –Practical, T– Tutorial, D-Drawing, ISE– In Semester Examination, ESE – End Semester Examination (University Examination for Theory & / POE & / Oral), ICA– Internal Continuous Assessment.*

Note:

1. At Final Year B-Tech level Batch Size for the practical/tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.
2. Industrial Training (evaluated at B. Tech Semester-VII) of minimum 30 days shall be completed in any vacation after B. Tech. Semester-III, but before B. Tech. Semester-VII & the report shall be submitted and evaluated at B. Tech. Semester-VII.
3. Project group for B. Tech. Semester-VII and Semester-VIII shall not be of more than 4 students, however in exceptional cases group size may be of 5 students.
4. ICA assessment shall be a continuous process based on student's performance in–class tests, assignments, homework, seminars, quizzes, and laboratory books and their interaction and attendance for theory and lab sessions, as applicable.
5. In Semester - VIII, students/project groups are expected to undergo internship in any industry and should complete a project sponsored by the same industry. In case students are unable to get industry internship and sponsored project, such students/project groups can undergo any other project work of their choice or assigned by concerned guide. Such students are required to complete one audit course in any emerging area in the field of Engineering from the list given below.
    i. Electric Vehicles
    ii. 3-D printing
    iii. Renewable energy
    iv. Automation and Robotics
    v. CNC Programming
    vi. Artificial Intelligence
    vii. Machine Learning
    viii. CAD/CAM/CAE

    Teaching-learning process and method of assessment of such course will be decided by concerned institute. Evaluation will be done at institute level itself. Project Assessment of the concerned students be done after satisfactory completion of the course.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, Tal.: Pandharpur - 413 304, Dist.: Solapur (MH)
Contact No.: 9545553888, 9545553737, E-mail : coe@sveri.ac.in, Website : www.sveri.ac.in
Approved by A.I.C.T.E., New Delhi and Afiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, NAAC A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Computer Science & Engineering			
Programme Code: 1-1408968327			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	F. Y. B.Tech. Computer Science & Engineering	Yes (CBCS)	2020-2021
2	S. Y. B.Tech. Computer Science & Engineering	Yes (CBCS & Elective)	2021-2022
3	T. Y. B.Tech. Computer Science & Engineering	Yes (CBCS & Elective)	2020-2021
4	Final Year B.Tech. Computer Science & Engineering	Yes (CBCS & Elective)	2021-2022

COLLEGE OF ENGINEERING PANDHARPUR

B.Ponge
PRINCIPAL
SVERI's College of Engineering
Pandharpur

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF

ENGINEERING& TECHNOLOGY

ALL BRANCHES

CBCS Syllabus for
First Year B. Tech. (All Branches)
w.e.f.
Academic Year 2020-21

PUNYASHLOK AHILYADEVI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

CBCS Curriculum for First Year B.Tech. (All Branches)

W.E.F. 2020-21

- Semester I : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C112	Engineering Mathematics-I	3			3	70	30		100
C113	Basics of Civil and Mechanical Engineering	4			4	70	30		100
C114	Engineering Mechanics	3			3	70	30		100
C115	Universal Human Values	2			2	50			50
C116	Communication Skills	1			1		25		25
	Total	**16**			**16**	**330**	**145**		**475**

- Semester I : Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $			2	1			25	25
C112	Engineering Mathematics-I		1		1			25	25
C113	Basics of Civil and Mechanical Engineering @			2	1			25	25
C114	Engineering Mechanics			2	1			25	25
C116	Communication Skills			2	1			25	25
C117	Creativity & Design Thinking			2	1			50	50
C118	Workshop Practice			2	1			50	50
	Total			**12**	**7**			**225**	**225**
	Grand Total	**16**	**1**	**12**	**23**	**330**	**145**	**225**	**700**
C119	Induction Program	*** Please see note below*							

- Semester II : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C122	Engineering Mathematics - II	3			3	70	30		100
C123	Basic Electrical & Electronics Engineering	3			3	70	30		100
C124	Programming for problem solving	2			2		25		25
C125	Engineering Graphics and CAD	2			2	70	30		100
C126	Professional Communication	1			1		25		25
Total		**14**			**14**	**280**	**170**		**450**

Semester II: Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE (POE)***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry$			2	1			25	25
C122	Engineering Mathematics- II		1		1			25	25
C123	Basic Electrical & Electronics Engineering			2	1			25	25
C124	Programming for problem solving			4	2	50#		50	100
C125	Engineering Graphics and CAD			4	2			50	50
C126	Professional Communication			2	1			25	25
	Total			**14**	**8**	**50**		**200**	**250**
Grand Total		**14**	**1**	**14**	**22**	**330**	**170**	**200**	**700**
C127	Democracy, Elections and Good Governance *					**50**			**50**

- Legends used–

L	Lecture	FA	Formative Assessment
T	Tutorial	SA	Summative Assessment
P	Lab Session	ESE	End Semester Examination
		ISE	In Semester Evaluation
		ICA	Internal Continuous Assessment

- **Notes-**

1. $ - Indicates approximately half of the total students at F. Y. will enroll under Group A and remaining will enroll under Group B.

   Group A will take up course of Engineering Physics (theory & laboratory) in Semester I and will take up course of Engineering Chemistry (theory & laboratory) in semester II.

   Group B will take up course of Engineering Chemistry (theory & laboratory) in Semester I and will take up course of Engineering Physics (theory & laboratory) in semester II.

2. # - Indicates the subject 'Programming for Problem Solving' shall have a University 'Practical and Oral Examination' at the end of the semester assessing student's programming skills.

3. @ - For the Course (C113) Basics of Civil and Mechanical Engineering, Practicals of Basics of Civil Engineering and Basics of Mechanical Engineering will be conducted in alternate weeks.

4. In Semester Evaluation (ISE) marks shall be based upon student's performance in minimum two tests & mid-term written test conducted & evaluated at institute level.

   Internal Continuous Assessment Marks (ICA) are calculated based upon student's performance during laboratory sessions / tutorial sessions.

5. *- Democracy, Elections & Good Governance is mandatory course. The marks earned by student with this course shall not be considered for calculation of SGPA/CGPA. However, student must complete End Semester Examination (ESE) of 50 marks (as prescribed by university) for fulfillment of this course. This course is not considered as a passing head for counting passing heads for ATKT. However, student must pass this subject for award of the degree.

6. Student must complete induction program of minimum five days before commencement of the regular academic schedule at the first semester.

** GUIDELINES FOR INDUCTION PROGRAM (C119)

New entrants into an Engineering program come with diverse thoughts, mind set and different social, economic, regional and cultural backgrounds. It is important to help them adjust to the new environment and inculcate in them the ethos of the institution with a sense of larger purpose.

An induction program for the new UG entrant students is proposed at the commencement of the first semester. It is expected to complete this induction program before commencement of the regular academic schedule.

Its purpose is to make new entrants comfortable in their new environment, open them up, set a healthy daily routine for them, create bonding amongst the peers as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The Induction Program shall encompass (but not limited to) below activity –

1. Physical Activities
2. Creative Arts
3. Exposure to Universal Human Values
4. Literary Activities
5. Proficiency Modules
6. Lectures by Experts / Eminent Persons
7. Visit to Local Establishments like Hospital /Orphanage
8. Familiarization to Department

Induction Program Course do not have any marks or credits however performance of students for Induction Program is assessed at institute level using below mandatory criteria –

1. Attendance and active participation
2. Report writing

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science and Technology

CHOICE BASED CREDIT SYSTEM

Structure and Syllabus: Computer Science & Engineering

Name of the Course: S.Y. B. Tech. Sem III and Sem IV

(Syllabus to be implemented from w.e.f. June 2021)

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. To make students competent for professional career in Computers, IT & allied fields.
2. To build strong fundamental knowledge amongst student to pursue higher education and continueprofessional development in Computers, IT & other fields
3. To imbibe professional ethics, develop team spirit and effective communication skills to besuccessful leaders and managers with a holistic approach.
4. To nurture students to be sensitive to ethical, societal & environmental issues while conductingtheir professional work.

B. Program Outcomes Engineering Graduate will be able to –

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities withan understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7.Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. Program Specific Outcomes (PSOs)

1. Graduate has an ability to use technical skills necessary for design, maintenance, developmentand implementation of database systems and networking applications.
2. Graduate has an ability to provide IT solutions, develop mobile applications in multidisciplinaryareas using standard tools and techniques.
3. Graduate has an ability to utilize and apply software engineering tools for design and realizationof projects in various domains of Computer Science and Engineering.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
FACULTY OF SCIENCE AND TECHNOLOGY
Structure of S.Y. B.Tech.(CSE) wef. 2021-2022

Semester – III

Course Code	Theory Course Name	Engagement Hours			Credits	FA	SA		Total
		L	T	P		ESE	ISE	ICA	
CS211	Applied Mathematics-I	3	1		4	70	30	25	125
CS212	Discrete Mathematical Structures	3	1		4	70	30	25	125
CS213	Data structures	3			3	70	30		100
CS214	Computer Graphics	3			3	70	30		100
CS215	Microprocessors	3			3	70	30		100
CS216	Python Programming	2			2		25		25
	Sub Total	**17**	**2**		**19**	**350**	**175**	**50**	**575**
	Environmental studies	2				50			50
	Laboratory/Workshop					**ESE** / **POE**			
CS213	Data structures			2	1	50		25	75
CS214	Computer Graphics			2	1			25	25
CS215	Microprocessors			2	1			25	25
CS216	Python Programming			2	1	50		25	75
	Sub Total			**8**	**4**	**100**		**100**	**200**
	Grand Total	**19**	**2**	**8**	**23**	**450**	**175**	**150**	**775**

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
FACULTY OF SCIENCE AND TECHNOLOGY
Structure of S.Y. B.Tech.(CSE) wef. 2021-2022

Semester – IV

Course Code	Theory Course Name	Engagement Hours			Credits	FA	SA		Total
		L	T	P		ESE	ISE	ICA	
CS221	Applied Mathematics-II	3	1		4	70	30	25	125
CS222	Theory of Computation	3	1		4	70	30	25	125
CS223	Computer Organization and Architecture	3			3	70	30		100
CS224	Computer Networks	3			3	70	30		100
CS225	OOP using Java	2			2		25		25
	Total	**14**	**2**		**16**	**280**	**145**	**50**	**475**
	Environmental studies	2				50			50
	Laboratory/Workshop					**ESE** / **POE**			
CS223	Computer Organization and Architecture			2	1			25	25
CS224	Computer Networks			2	1	50		25	75
CS225	OOP using Java			4	2	50		25	75
	Total			**8**	**4**	**100**		**75**	**175**
	Grand Total	**16**	**2**	**8**	**20**	**380**	**145**	**125**	**650**

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

COMPUTER SCIENCE & ENGINEERING

Syllabus Structure for

First Year (All Branches) w.e.f. Academic Year 2018-19

Second Year B. Tech. (Computer Science & Engineering) w.e.f. Academic Year 2019-20

Third Year B. Tech. (Computer Science & Engineering) w.e.f. Academic Year 2020-21

Choice Based Credit System

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. Graduate will exhibit strong fundamental knowledge and technical skills in the field of Computer Science & Engineering to pursue successful professional career, higher studies and research.
2. Graduate will exhibit capabilities to understand and resolve various societal issues through their problem solving skills.
3. Graduate will be sensitive to ethical, societal and environmental issues as a software engineering professional and be committed to life-long learning.

B. Program Outcomes

Engineering Graduate will be able to –

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. Program Specific Outcomes (PSOs)

1. Apply the principles of computational mathematics, computer systems and programming paradigms to solve computational problems.

2. Design and develop application software with functionalities applicable for desktop, web and mobile applications with due consideration of system software constraints.

3. Apply software engineering methods, cutting edge technologie and ICT, using appropriate tools and FOSS alternatives for designing ,developing & testing application software

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
Credit System Structure of Third Year B.Tech. (CSE) wef. 2020-2021
Semester – I

Course Code	***Theory Course Name***	***Hrs./Week***			***Credits***		***Examination Scheme***		
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
CS311	System Programming	3	--	--	3	30	70	--	100
CS312	Operating Systems	3	--	--	3	30	70	--	100
CS313	Software Engineering	3	--	--	3	30	70	--	100
CS314	$ Database Engineering	4	--	--	4	30	70	--	100
CS315	Design and Analysis of Algorithm	3	--	--	3	30	70	--	100
CS316	Python Programming	2	--	--	2	25	--	--	25
CS317	Java Programming	2	--	--	2	25	--	--	25
SL31	Self Learning Module I (HSS)	--	--	--	2	--	50	--	50
	Sub Total	20	--	--	22	200	400	--	600
Course Code	**Laboratory Course Name**								
							ESE	**ICA**	
							POE	**OE**	
CS311	System Programming	--	--	2	1		--	--	25	25
CS313	Database Engineering	--	--	2	1		50	--	25	75
CS314	Design and Analysis of Algorithm	--	--	2	1		--	--	25	25
CS316	Python Programming	--	--	2	1		50	--	25	75
CS317	Java Programming	--	--	2	1		50	--	25	75
	Sub Total	--	--	10	5		150	--	125	275
	Grand Total	**20**	**--**	**10**	**27**	**200**	**550**		**125**	**875**

- *Abbreviations: L - Lectures, P –Practical, T - Tutorial, ISE - In Semester Exam., ESE- End Semester Exam, ICA - Internal Continuous Assessment, ISE - Internal Tests, ESE University Examination (Theory &/ POE &/Oral examination)*

$ - The theory courses for Computer Sci. and Engg. and Information Technology are same, therefore paper for ESE will be common to both.

Note :

1. Batch size for the practical/tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.

2. Vocational Training (evaluated at Final Year B.Tech. Part-I) of minimum 15 days shall be completed in vacation/s after S.Y. B.Tech. Part-II but before Final Year B.Tech. Part-I & the report shall be submitted and evaluated in Final Year B. Tech Part-I.

3. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable.

4. **Self-Learning Module-I (HSS) at T.Y. B.Tech. – I**

   Curriculum for Humanities and Social Sciences, Self Learning Module-I (HSS) is common for all under graduate engineering programs.

   A. Student can select & enroll a Self Learning Module-I (HSS) Course from P.A.H. Solapur University, Solapur Course List (SL31-A) and appear for university examination.

SL31-A: P. A. H. Solapur University, Solapur: HSS Course List

1. Economics	4. Stress and Coping
2. Intellectual Property Rights for Technology Development and Management	5. Professional Ethics & Human Value
3. Introduction to Sociology	

OR

B. Student can select and enroll for university approved minimum eight weeks NPTEL HSS course (SL31-B), complete its assignments and appear for certificate examination conducted by NPTEL. The list of courses as shown in Table SL31-B will be updated from time to time by University authorities. Latest updated list will be valid for selection of self learning Module-I (HSS) courses

More details about NPTEL are available at http://nptel.ac.in.

SL31-B: University approved NPTEL- HSS course List

1. Soft skills	15. Management of Inventory Systems
2. Introduction to Modern India Political Thought	16. Economic Growth and Development
3. Intellectual Property	17. Ethic in Engineering Practice
4. Technical English for Engineers	18. Corporate Social Responsibility
5. Developing Soft Skills and Personality	19. Marketing Management –I
6. Educational Leadership	20. Marketing Research and Analysis
7. Microeconomics: Theory & Applications	21. Selected Topics in Decision Modeling
8. Engineering Economics	22. Innovation, Business Models and Entrepreneurship
9. Human Resource Development	23. Simulation of Business Systems: An Applied Approach
10. Project Management for managers	24. Sustainability through Green Manufacturing Systems: An Applied Approach
11. Data Analysis and Decision Making - I	25. Total Quality Management - I
12. E-Business	26. Introduction to Operations Research
13. Working Capital Management	27. Knowledge Management
14. Industrial Safety Engineering	

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
Credit System Structure of Third Year B.Tech. (CSE) wef. 2020-2021
Semester – II

Course Code	***Theory Course Name***	***Hrs./Week***			***Credits***		***Examination Scheme***		
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
CS321	Compiler Construction	4	--	--	4	30	70	--	100
CS322	Unix Operating System	3	--	--	3	30	70	--	100
CS323	Computer Organization and Architecture	3	--	--	3	30	70	--	100
CS324	Artificial Intelligence	3	--	--	3	30	70	--	100
CS325	Mobile Application Development	2	--	--	2	25	--	--	25
CS326A to CS326C	Elective – I	3	--	--	3	30	70	--	100
SL32	Self Learning Module II (Technical)	--	--	--	2	--	50	--	50
	Sub Total	18	--	--	20	175	400	--	575
Course Code	***Laboratory Course Name***								
							ESE	***ICA***	
							POE	***OE***	
CS321	Compiler Construction	--	--	2	1		--	--	25	25
CS322	Unix Operating System	--	--	2	1		50	--	25	75
CS324	Artificial Intelligence	--	--	2	1		--	--	25	25
CS325	Mobile Application Development	--	--	2	1		50	--	25	75
CS326A to CS326C	Elective – I	--	--	2	1		--	--	25	25
CS327	Mini Project	--	--	2	1		--	50	25	75
	Sub Total	18	--	12	6		100	50	150	300
	Grand Total	**18**	**--**	**12**	**26**	**175**	**550**		**150**	**875**

- *Abbreviations: L - Lectures, P –Practical, T - Tutorial, ISE - In Semester Exam., ESE- End Semester Exam, ICA - Internal Continuous Assessment, ISE - Internal Tests, ESE University Examination (Theory &/ POE &/Oral examination)*

Elective-I

CS326A - Object Oriented Modelling and Design
CS326B - $ Artificial Neural Network
CS326C - $ Data Science

$ - The theory courses for Computer Sci. and Engg. and Information Technology are same, therefore paper for ESE will be common to both.

Note :

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.

2. Vocational Training (evaluated at Final Year B.Tech. Part-I) of minimum 15 days shall be completed in vacation/s after S.Y. B.Tech. Part-II but before Final Year B.Tech. Part-I & the report shall be submitted and evaluated in Final Year B. Tech Part-I.

3. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable.

4. Mini Project shall consist of developing software, based on various tools &technologies.

5. Project groups shall not be of more than **five** students.

6. **Self-Learning Module II at T.Y. B.Tech. – II (HSS)**

   A. Student can select a Self Learning Module II (Technical Course) from Course List (SL32) and appear for university examination.

SL32 : Self Learning Module-II (Technical)

SL32A - UI or UX technology
SL32B - Software Licensing and Practices

OR

B. Student can select & enroll for university approved minimum eight week technical course from various NPTEL technical courses, complete its assignments and appear for certificate examination conducted by NPTEL.

BOS Chairman / Coordinator will announce the list of approved NPTEL online courses of minimum eight weeks duration for 'Self Learning Module-II (Technical)' on commencement of the Sem-II of respective academic year from the available NPTEL courses through university system and will make available to student through University / institute website.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science and Technology

CHOICE BASED CREDIT SYSTEM

Syllabus : Computer Science and Engineering

Name of the Course: Final Year B.Tech (CSE)

(Syllabus to be implemented from w.e.f. June 2021)

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. Graduate will exhibit strong fundamental knowledge and technical skills in the field of Computer Science & Engineering to pursue successful professional career, higher studies and research.
2. Graduate will exhibit capabilities to understand and resolve various societal issues through their problem solving skills.
3. Graduate will be sensitive to ethical, societal and environmental issues as a software engineering professional and be committed to life-long learning.

B. Program Outcomes

Engineering Graduate will be able to –

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. Program Specific Outcomes (PSOs)

1. Apply the principles of computational mathematics, computer systems and programming paradigms to solve computational problems.

2. Design and develop application software with functionalities applicable for desktop, web and mobile applications with due consideration of system software constraints.

3. Apply software engineering methods, cutting edge technologie and ICT, using appropriate tools and FOSS alternatives for designing ,developing & testing application software

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOAPUR
FACULTY OF SCIENCE AND TECHNOLOGY
Credit System Structure of Final Year B.Tech.(CSE) wef. 2021-2022

Semester – I

Course Code	Theory Course Name	Hrs./Week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
CS411	Distributed Systems	3	--	--	3	30	70	--	100
CS412	Machine Learning	3	--	--	3	30	70	--	100
CS413	Modern Database System	4	--	--	4	30	70	--	100
CS 414A to CS414B	Elective-II	3	1	--	4	30	70	25	125
CS 415A to CS415B	Elective-III	3	1	--	4	30	70	25	125
CS416	# Web Technology	2	--	--	2	25	--	--	25
	Sub Total	18	2	--	20	175	350	50	575
	Laboratory / Workshop								
							ESE		
							POE		
CS413	Modern Database System	--	--	2	1		50	25	75
CS412	Machine Learning	--	--	2	1		--	25	25
CS416	# Web Technology	--	--	2	1		50	25	75
CS417	Lab-I : Project Phase I	--	--	4	2		50	25	75
	Vocational Training	--	--	--	1		--	25	25
	Sub Total				6		150	125	275
	Grand Total	**18**	**2**	**10**	**26**	**175**	**500**	**175**	**850**

Semester – II

Course Code	Theory Course Name	Hrs./Week			Credits	Examination Scheme			
		L	T	P		ISE	ESE	ICA	Total
CS421	Management Information System	4	--	--	4	30	70		100
CS422	Information & Cyber Security	4	--	--	4	30	70		100
CS423A to CS423B	Elective-IV	3	--	--	3	30	70		100
CS424A to CS424B	Elective-V	3	--	--	3	30	70		100
CS425	# Programming in C#.Net	2	--	--	2	25	--		25
	Sub Total	16	--	--	16	145	280		425
	Laboratory / Workshop								
							ESE		
							POE		
CS422	Information & Cyber Security	--	--	2	1		50	25	75
CS423	Elective-IV	--	--	2	1			25	25
CS424	Elective-V	--	--	2	1			25	25
CS425	# Programming in C#.Net	--	--	2	1		50	25	75
CS426	Lab-II : Project Phase II	--	--	6	3		100	100	200
	Sub Total			14	7		200	200	400
	Grand Total	**16**		**14**	**23**	**145**	**480**	**200**	**825**

Elective II CS414A - Internet of Things CS414B - Software Testing and Quality Assurance CS414C – Adhoc and Sensor Networks	**Elective III** CS415A - Business Intelligence CS415B - Data Mining CS415C – Real Time Systems
Elective IV CS423A - Big data Analytics CS423B –Natural Language Programming	**Elective V** CS424A - Cloud Computing CS424B - Deep Learning

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, **Tal.:** Pandharpur - 413 304, **Dist.:** Solapur (MH)
Contact No.: 9545553888, 9545553737, **E-mail :** coe@sveri.ac.in, **Website :** www.sveri.ac.in
Approved by **A.I.C.T.E.**, New Delhi and Afiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, **NAAC** A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Electronics & Tele-communication Engineering			
Programme Code: 1-1408968324			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	F. Y. B.Tech. Electronics & Tele-communication Engineering	Yes (CBCS)	2020-2021
2	S. Y. B.Tech. Electronics & Tele-communication Engineering	Yes (CBCS & Elective)	2021-2022
3	T. Y. B.Tech. Electronics & Tele-communication Engineering	Yes (CBCS & Elective)	2020-2021
4	Final Year B.Tech. Electronics & Tele-communication Engineering	Yes (CBCS & Elective)	2021-2022

B Range

COLLEGE OF ENGINEERING PANDHARPUR

PRINCIPAL
SVERI's College of Engineering,
Pandharpur

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF

ENGINEERING& TECHNOLOGY

ALL BRANCHES

CBCS Syllabus for
First Year B. Tech. (All Branches)
w.e.f.
Academic Year 2020-21

PUNYASHLOK AHILYADEVI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

CBCS Curriculum for First Year B.Tech. (All Branches)

W.E.F. 2020-21

- Semester I : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C112	Engineering Mathematics-I	3			3	70	30		100
C113	Basics of Civil and Mechanical Engineering	4			4	70	30		100
C114	Engineering Mechanics	3			3	70	30		100
C115	Universal Human Values	2			2	50			50
C116	Communication Skills	1			1		25		25
	Total	**16**			**16**	**330**	**145**		**475**

- Semester I : Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $			2	1			25	25
C112	Engineering Mathematics-I		1		1			25	25
C113	Basics of Civil and Mechanical Engineering @			2	1			25	25
C114	Engineering Mechanics			2	1			25	25
C116	Communication Skills			2	1			25	25
C117	Creativity & Design Thinking			2	1			50	50
C118	Workshop Practice			2	1			50	50
	Total			**12**	**7**			**225**	**225**
	Grand Total	**16**	**1**	**12**	**23**	**330**	**145**	**225**	**700**
C119	Induction Program	*** Please see note below*							

- Semester II : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C122	Engineering Mathematics - II	3			3	70	30		100
C123	Basic Electrical & Electronics Engineering	3			3	70	30		100
C124	Programming for problem solving	2			2		25		25
C125	Engineering Graphics and CAD	2			2	70	30		100
C126	Professional Communication	1			1		25		25
Total		**14**			**14**	**280**	**170**		**450**

Semester II: Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE (POE)***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry$			2	1			25	25
C122	Engineering Mathematics- II		1		1			25	25
C123	Basic Electrical & Electronics Engineering			2	1			25	25
C124	Programming for problem solving			4	2	50#		50	100
C125	Engineering Graphics and CAD			4	2			50	50
C126	Professional Communication			2	1			25	25
	Total			**14**	**8**	**50**		**200**	**250**
Grand Total		**14**	**1**	**14**	**22**	**330**	**170**	**200**	**700**
C127	Democracy, Elections and Good Governance *					**50**			**50**

- Legends used–

L	Lecture	FA	Formative Assessment
T	Tutorial	SA	Summative Assessment
P	Lab Session	ESE	End Semester Examination
		ISE	In Semester Evaluation
		ICA	Internal Continuous Assessment

- **Notes-**

1. $ - Indicates approximately half of the total students at F. Y. will enroll under Group A and remaining will enroll under Group B.

   Group A will take up course of Engineering Physics (theory & laboratory) in Semester I and will take up course of Engineering Chemistry (theory & laboratory) in semester II.

   Group B will take up course of Engineering Chemistry (theory & laboratory) in Semester I and will take up course of Engineering Physics (theory & laboratory) in semester II.

2. # - Indicates the subject 'Programming for Problem Solving' shall have a University 'Practical and Oral Examination' at the end of the semester assessing student's programming skills.

3. @ - For the Course (C113) Basics of Civil and Mechanical Engineering, Practicals of Basics of Civil Engineering and Basics of Mechanical Engineering will be conducted in alternate weeks.

4. In Semester Evaluation (ISE) marks shall be based upon student's performance in minimum two tests & mid-term written test conducted & evaluated at institute level.

   Internal Continuous Assessment Marks (ICA) are calculated based upon student's performance during laboratory sessions / tutorial sessions.

5. *- Democracy, Elections & Good Governance is mandatory course. The marks earned by student with this course shall not be considered for calculation of SGPA/CGPA. However, student must complete End Semester Examination (ESE) of 50 marks (as prescribed by university) for fulfillment of this course. This course is not considered as a passing head for counting passing heads for ATKT. However, student must pass this subject for award of the degree.

6. Student must complete induction program of minimum five days before commencement of the regular academic schedule at the first semester.

** GUIDELINES FOR INDUCTION PROGRAM (C119)

New entrants into an Engineering program come with diverse thoughts, mind set and different social, economic, regional and cultural backgrounds. It is important to help them adjust to the new environment and inculcate in them the ethos of the institution with a sense of larger purpose.

An induction program for the new UG entrant students is proposed at the commencement of the first semester. It is expected to complete this induction program before commencement of the regular academic schedule.

Its purpose is to make new entrants comfortable in their new environment, open them up, set a healthy daily routine for them, create bonding amongst the peers as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The Induction Program shall encompass (but not limited to) below activity –

1. Physical Activities
2. Creative Arts
3. Exposure to Universal Human Values
4. Literary Activities
5. Proficiency Modules
6. Lectures by Experts / Eminent Persons
7. Visit to Local Establishments like Hospital /Orphanage
8. Familiarization to Department

Induction Program Course do not have any marks or credits however performance of students for Induction Program is assessed at institute level using below mandatory criteria –

1. Attendance and active participation
2. Report writing

Punyashlok Ahilyadevi Holkar Solapur University,Solapur

NAAC Accredited-2015'B'Grade(CGPA2.62)

Name of the Faculty: Science&Technology

Choice Based Credit System

ELECTRONICS & TELECOMMUNICATION ENGINEERING

Structure for

S.Y. B.Tech (Electronics & Telecommunication Engineering) w.e.f.

Academic Year 2021-22

T.Y. B.Tech (Electronics & Telecommunication Engineering) w.e.f.

Academic Year 2022-23

Final Year B.Tech (Electronics & Telecommunication Engineering) w.e.f. Academic Year 2023-24

PUNYASHLOK AHILYADEVI HOLKARSOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE& TECHNOLOGY

Electronics & Telecommunication Engineering

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. To make students competent for professional career in Electronics & allied fields.
2. To build strong fundamental knowledge amongst student to pursue higher education and continue professional development in Electronics & other fields
3. To imbibe professional ethics, develop team spirit and effective communication skills to be successful leaders and managers with a holistic approach.
4. To nurture students to be sensitive to ethical, societal & environmental issues while conducting their professional work.

B. Program Outcomes

Electronics & Telecommunication Engineering Graduate will be able to –

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. Program Specific Outcomes

1. **Solid foundation** : Graduates will be able to attain a **solid foundation** in Electronics and Tele-Communication Engineering with an ability to function in multidisciplinary environment.
2. **Techniques and Skills**: Graduates will be able to use **techniques and skills** to design, analyze, synthesize, and simulate Electronics and Communication Engineering components and systems.
3. **Developing Programs:** Graduate will be capable of **developing programs** in Assembly, High level and HDL languages using contemporary tools for software development.

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

Credit System structure of S.Y. B.Tech. Electronics & Telecommunication Engineering ***W.E.F. 2021-22***

Semester I

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
ET211	Engineering Mathematics – III	3	1	--	4	30	70	25	125
ET212	Electronic Circuit Analysis and Design	3	--	--	3	30	70	25	125
ET213	Network Theory and Analysis	3	--	--	3	30	70	--	100
ET214	Digital Techniques	3	--	--	3	30	70	25	125
ET215	Analog Communication	3	--	--	3	30	70	25	125
Sub Total		15	1	--	16	150	350	100	600
ENV21	Environmental Science	1	--	--	--	--	--	--	--
Course Code	***Laboratory Course Name***								
							ESE		
							POE	***OE***	
ET212	Electronic Circuit Analysis and Design	--	--	2	1	--	50*	--	--	50
ET213	Network Theory and Analysis	--	--	2	1	--	--	--	25	25
ET214	Digital Techniques	--	--	2	1	--	25	--	--	25
ET215	Analog Communication	--	--	2	1	--	25	--	--	25
E216	Electronics Software Lab-I	--	1	2	2	--	--	--	25	25
Sub Total		--	1	10	6	--	100		50	150
Grand Total		**15**	**2**	**10**	**22**	**150**	**450**		**150**	**750**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, OE-Oral Examination, POE- Practical Oral Examination, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)

 Note: *- Practical and Oral Examination of Electronics Circuit Analysis and Design include some of the practical from Network Theory and Analysis

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

Credit System structure of S.Y. B.Tech. Electronics & Telecommunication Engineering ***W.E.F. 2021-22***

Semester II

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
ET221	Control System	3	1	_	4	30	70	25	125
ET222	Analog Integrated Circuits	3	_	_	3	30	70	25	125
ET223	Principles of Digital Communication	3	--	--	3	30	70	25	125
ET224	Signals and Systems	3	1	_	4	30	70	25	125
ET225	Data Structures	3	_	_	3	30	70	--	100
Sub Total		15	2	--	17	150	350	100	600
ENV22	Environmental Science	1	-	--	--	--	--	--	--
Course Code	***Laboratory Course Name***								
							ESE		
							POE	***OE***	
ET222	Analog Integrated Circuits	_	_	2	1	_	25	_	--	25
ET223	Principles of Digital Communication	--	--	2	1	--	25	--	--	25
ET225	Data Structures	_	_	2	1	--	--	--	25	25
ET226	Electronic Software Lab-II	1	--	4	3	_	50	--	25	75
Sub Total		--	--	10	6	--	100		50	150
Grand Total		**16**	**2**	**10**	**23**	**150**	**450**		**150**	**750**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, OE-Oral Examination, POE- Practical Oral Examination, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination).

 Note:

1. Student is required to study and pass Environmental Science subject in Second Year to become eligible for award of degree.
2. Batch size for the practical /tutorial shall be of 18 students. On forming the batches, if the strength of remaining students exceeds 9, then a new batch shall be formed.
3. Vocational Training (evaluated at Final Year Part-I) of minimum 15 days shall be completed in any vacation after S.Y. Part-I but before Final Year Part-I & the report shall be submitted and evaluated in Final Year Part-I.
4. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: ELECTRONICS & TELECOMMUNICATION ENGINEERING

Name of the Course: T.Y.B. Tech (Sem.– I & II)

(Syllabus to be implemented from w.e.f. June 2020)

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
Electronics & Telecommunication Engineering

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. To make students competent for professional career in Electronics & allied fields.
2. To build strong fundamental knowledge amongst student to pursue higher education and continue professional development in Electronics & other fields
3. To imbibe professional ethics, develop team spirit and effective communication skills to be successful leaders and managers with a holistic approach.
4. To nurture students to be sensitive to ethical, societal & environmental issues while conducting their professional work.

B. Program Outcomes

Engineering Graduate will be able to –

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of t h e engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

1. Graduates will be able to attain a **solid foundation** in Electronics and Communication Engineering with an ability to function in multidisciplinary environment.
2. Graduates will be able to use **techniques and skills** to design, analyze, synthesize, and simulate Electronics and Communication Engineering components and systems.
3. Graduate will be capable of **developing programs** in Assembly, High level and HDL languages using contemporary tools for software development.

PUNYASHLOK AHILYADEVI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science & Technology

Credit System structure of T.Y. B.Tech. Electronics & Telecommunication Engineering ***W.E.F. 2020-21***

Semester I

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
ET311	Electromagnetic Field Theory	3	1	--	4	30	70	25	125
ET312	Digital Design & HDL	4	--	--	4	30	70	25	125
ET313	Digital Signal Processing	4	--	--	4	30	70	25	125
ET314	Microcontrollers and Applications	4	--	--	4	30	70	25	125
ET315	Open Elective-I	3	1	--	4	30	70	25	125
SLH31	Self Learning Module-I	--	--	--	2	--	50	--	50
Sub Total		18	2	--	22	150	400	125	675
Course Code	***Laboratory Course Name***								
							ESE		
							POE	***OE***	
ET312	Digital Design & HDL	--	--	2	1	--	50	--	--	50
ET313	Digital Signal Processing	--	--	2	1	--	50	--	--	50
ET314	Microcontrollers and Applications	--	--	2	1	--	50	--	--	50
ET316	Electronic Software Lab-III	--	1	2	2	--	--	--	25	25
Sub Total		--	1	8	5	--	150		25	175
Grand Total		**18**	**3**	**8**	**27**	**150**	**550**		**150**	**850**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, OE-Oral Examination, POE- Practical Oral Examination
ICA- Internal Continuous Assessment ESE - University Examination (Theory &/ POE &/Oral examination)

PUNYASHLOK AHILYADEVI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science & Technology

Credit System structure of T.Y. B.Tech. Electronics & Telecommunication Engineering ***W.E.F. 2020-21***

Semester II

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
ET321	Antenna & Wave Propagation	4	--	--	4	30	70	25	125
ET322	Embedded System	4	--	--	4	30	70	25	125
ET323	Electronic System Design	4	--	--	4	30	70	25	125
ET324	Advanced Mobile Communication	3	1	--	4	30	70	25	125
ET325	Open Elective-II	3	--	--	3	30	70	25	125
SLH32	Self Learning Module II	--	--	--	2	--	50	--	50
Sub Total		18	1	--	21	150	400	125	675
Course Code	***Laboratory Course Name***								
							ESE		
							POE	***OE***	
ET321	Antenna & Wave Propagation	--	--	2	1	--	--	25	--	25
ET322	Embedded System	--	--	2	1	--	50	--	--	50
ET323	Electronic System Design	--	--	2	1	--	#50	--	--	50
ET325	Open Elective-II	--	--	2	1	--	--	--	--	--
ET326	Mini Hardware Project	--	--	2	1	--	--	--	50	50
Sub Total		--	--	10	5	--	125		50	175
Grand Total		**18**	**1**	**10**	**26**	**150**	**525**		**175**	**850**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, OE-Oral Examination, POE- Practical Oral Examination

ICA- Internal Continuous Assessment ESE - University Examination (Theory &/ POE &/Oral examination)

Note - # Practical and Oral Examination of Electronics System Design is combined with Mini Hardware Project.

Note –

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.
2. Vocational Training (evaluated at Final Year Semester-I) of minimum 15 days shall be completed in any vacation after S.Y. Semester-II but before Final Year Semester-I & the report shall be submitted and evaluated in Final Year Semester-I.
3. Self-Learning Module I at T.Y. B.Tech. – Semester I
   - Student shall select & enroll a Self Learning Module I Course from PAH Solapur University, Solapur HSS Course List (SLH31-A) and appear for university examination.
   - Curriculum for Humanities and Social Sciences (HSS), Self Learning Module - I is common for all under graduate engineering programs.

   OR
   - Student shall select and enroll for university approved minimum eight weeks NPTEL HSS course (SLH31-B), complete its assignments and appear for certificate examination conducted by NPTEL. More details about NPTEL are available at http://nptel.ac.in
4. Self-Learning Module II at T.Y. B.Tech. – Semester II
   - Student shall select a Self Learning Module II (Technical Course) from Course List (SLH32) and appear for university examination.

   OR
   - Student can select & enroll for university approved minimum eight week technical course from various NPTEL technical courses, complete its assignments and appear for certificate examination conducted by NPTEL. More details about NPTEL are available at http://nptel.ac.in
   - Self learning module –II (Technical courses) shall be from the list approved by BOS Chairman at the start of semester.
5. Project group for T.Y. B.Tech. - Semester II Mini Project shall not be of more than **three** students.
6. Project group for Final Year B.Tech - Semester I and Semester II shall not be of more than **three** students.

7. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, and laboratory books and their interaction and attendance for theory and lab sessions as applicable.
8. Open Elective I & II shall be common and open for the students of the branches – Electronics Engineering, Electronics & Telecommunication Engineering and Electrical Engineering. Students of these branches can take any of these Open Electives. Syllabus and university examination question paper will be same for all these branches.

List of Open Electives -

Sr.	Branch Offering Elective	Open Elective I	Open Elective II
1.	Electronics &Telecommunication Engineering	1. Business Ethics 2. Managerial Economics	1. Optical Communication 2. Sensors & Applications
2.	Electronics Engineering	Information Technology & Management	Operating Systems
3.	Electrical Engineering	Hybrid Electric Vehicle Design	Advanced Control System

Self Learning Module II courses -

1. Computer Organization
2. Renewable Energy Systems
3. Soft Computing
4. NPTEL Courses

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: ELECTRONICS & TELECOMMUNICATION ENGINEERING

Name of the Course: Final Year B. Tech (Sem.– I & II)

(Syllabus to be implemented from w.e.f. July 2021)

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
Electronics & Telecommunication Engineering

Programme Educational Objectives and Outcomes

A. Program Educational Objectives

1. To make students competent for professional career in Electronics & allied fields.
2. To build strong fundamental knowledge amongst student to pursue higher education and continue professional development in Electronics & other fields
3. To imbibe professional ethics, develop team spirit and effective communication skills to be successful leaders and managers with a holistic approach.
4. To nurture students to be sensitive to ethical, societal & environmental issues while conducting their professional work.

B. Program Outcomes

Electronics and Telecommunication Engineering Graduate will be able to –

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of t h e engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. Program Specific Outcomes

1. Graduates will be able to attain a **solid foundation** in Electronics and Communication Engineering with an ability to function in multidisciplinary environment.
2. Graduates will be able to use **techniques and skills** to design, analyze, synthesize, and simulate Electronics and Communication Engineering components and systems.
3. Graduate will be capable of **developing programs** in Assembly, High level and HDL languages using contemporary tools for software development.

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science & Technology

Choice Based Credit System (CBCS) Curriculum of

Final Year B. Tech Electronic & Telecommunication Engineering ***W.E.F. 2021-22***

Semester I

Course Code	***Theory Course Name***	***Hrs./week***			***Credit***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
ET411	Machine Learning	4	---	--	4	30	70	--	100
ET412	Data Communication	4	---	--	4	30	70	--	100
ET413	Internet of Things	4		--	4	30	70	--	100
ET414	Database Management System	3	1	--	4	30	70	25	125
ET415A & ET415B	Elective-II * Image & Video Processing * Wireless Sensor Network	3	1	--	4	30	70	25	125
Sub Total		**18**	**2**	**--**	**20**	**150**	**350**	**50**	**550**
Course Code	***Laboratory Course Name***								
							ESE		
							POE	***OE***	
ET411	Machine Learning	--	--	2	1	--	25	--	25	50
ET412	Data Communication	--	--	2	1	--	--	25	25	50
ET413	Internet of Things	--	--	2	1	--	25	--	25	50
ET416	Project Phase I	--	--	4	2	--	--	25	50	75
ET417	Vocational Training	--	--	--	1	--	--	--	25	25
Sub Total		--	--	**10**	**6**	--	**100**		**150**	**250**
Grand Total		**18**	**2**	**10**	**26**	**150**	**450**		**200**	**800**

Abbreviations: L: Lectures, P: Practical, T: Tutorial, ISE: In Semester Exam., ESE: End Semester Exam, ICA: Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science & Technology

Choice Based Credit System (CBCS) Curriculum of
Final Year B. Tech Electronic & Telecommunication Engineering ***W.E.F. 2021-22***

Semester II

Course Code	***Theory Course Name***	***Hrs./week***			***Credit***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
ET421	Microwave Engineering	4	--	--	4	30	70	--	100
ET422	CMOS VLSI Design	4	--	--	4	30	70	--	100
ET423A & ET423B	Elective- III * Industrial IOT *Artificial Intelligence and Applications	3	1	--	4	30	70	25	125
ET424A & ET424B	Elective-IV * Network Security * Data Analytics	3	1	--	4	30	70	25	125
Sub Total		14	2	--	16	120	280	50	450
Course Code	***Laboratory Course Name***								
							ESE		
							POE	***OE***	
ET421	Microwave Engineering	--	--	2	1	--	--	50	25	75
ET422	CMOS VLSI Design	--	--	2	1	--	50	--	25	75
ET425	Project Phase II	--	--	8	4	--	100	--	100	200
Sub Total		--	--	12	6	--	200		150	350
Grand Total		**14**	**2**	**12**	**22**	**120**	**480**		**200**	**800**

Abbreviations: L: Lectures, P: Practical, T: Tutorial, ISE: In Semester Exam., ESE: End Semester Exam, ICA: Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)

Note –

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.
2. Project group for Final Year B.Tech - Semester I and Semester II shall not be of more than three students.
3. Minimum strength of the students for Elective is 15.
4. ICA assessment shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction, attendance for theory and lab sessions as applicable.
5. Project phase-I shall cover Literature survey, Problem statement Identification, and Synopsis submission of proposed work. Student shall submit hard copy of synopsis only after delivering seminar.
6. Project phase-II shall cover Simulation work, Software programming, and Hardware implementation. A hard copy of the final report shall be submitted to the department after successfully completion of project.
7. As per the guidelines of New Education Policy (NEP), the student of final year B.Tech. in Electronics and Telecommunication Engineering (Sem-II) can opt for any one "Employability Enhancement / Skill Development Course" from the list provided by PAH Solapur University, Solapur. This course will be 8 to 12 week duration and it can be taken in self learning mode or by physically attending at the affiliated institute wherever this course is offered. Though this course is not mandatory to any of the student, but the student attending this course will get the certificate from the university after successfully completion of this course. If any of the students could not complete this course within stipulated time then also he/she will be able to receive the regular B. Tech. Degree Certificate.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, Tal.: Pandharpur - 413 304, Dist.: Solapur (MH)
Contact No.: 9545553888, 9545553737, E-mail : coe@sveri.ac.in, Website : www.sveri.ac.in
Approved by A.I.C.T.E., New Delhi and Afiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, NAAC A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Civil Engineering			
Programme Code: 1-1408968331			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	F. Y. B.Tech. Civil Engineering	Yes (CBCS)	2020-2021
2	S. Y. B.Tech. Civil Engineering	Yes (CBCS & Elective)	2021-2022
3	T. Y. B.Tech. Civil Engineering	Yes (CBCS & Elective)	2020-2021
4	Final Year B.Tech. Civil Engineering	Yes (CBCS & Elective)	2021-2022

COLLEGE OF ENGINEERING PANDHARPUR

B-Range

PRINCIPAL
SVERI's College of Engineering
Pandharpur

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF

ENGINEERING& TECHNOLOGY

ALL BRANCHES

CBCS Syllabus for
First Year B. Tech. (All Branches)
w.e.f.
Academic Year 2020-21

PUNYASHLOK AHILYADEVI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

CBCS Curriculum for First Year B.Tech. (All Branches)

W.E.F. 2020-21

- Semester I : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C112	Engineering Mathematics-I	3			3	70	30		100
C113	Basics of Civil and Mechanical Engineering	4			4	70	30		100
C114	Engineering Mechanics	3			3	70	30		100
C115	Universal Human Values	2			2	50			50
C116	Communication Skills	1			1		25		25
	Total	**16**			**16**	**330**	**145**		**475**

- Semester I : Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $			2	1			25	25
C112	Engineering Mathematics-I		1		1			25	25
C113	Basics of Civil and Mechanical Engineering @			2	1			25	25
C114	Engineering Mechanics			2	1			25	25
C116	Communication Skills			2	1			25	25
C117	Creativity & Design Thinking			2	1			50	50
C118	Workshop Practice			2	1			50	50
	Total			**12**	**7**			**225**	**225**
	Grand Total	**16**	**1**	**12**	**23**	**330**	**145**	**225**	**700**
C119	Induction Program	*** Please see note below*							

- Semester II : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C122	Engineering Mathematics - II	3			3	70	30		100
C123	Basic Electrical & Electronics Engineering	3			3	70	30		100
C124	Programming for problem solving	2			2		25		25
C125	Engineering Graphics and CAD	2			2	70	30		100
C126	Professional Communication	1			1		25		25
Total		**14**			**14**	**280**	**170**		**450**

Semester II: Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE (POE)***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry$			2	1			25	25
C122	Engineering Mathematics- II		1		1			25	25
C123	Basic Electrical & Electronics Engineering			2	1			25	25
C124	Programming for problem solving			4	2	50#		50	100
C125	Engineering Graphics and CAD			4	2			50	50
C126	Professional Communication			2	1			25	25
	Total			**14**	**8**	**50**		**200**	**250**
Grand Total		**14**	**1**	**14**	**22**	**330**	**170**	**200**	**700**
C127	Democracy, Elections and Good Governance *					**50**			**50**

- Legends used–

L	Lecture	FA	Formative Assessment
T	Tutorial	SA	Summative Assessment
P	Lab Session	ESE	End Semester Examination
		ISE	In Semester Evaluation
		ICA	Internal Continuous Assessment

- **Notes-**

1. $ - Indicates approximately half of the total students at F. Y. will enroll under Group A and remaining will enroll under Group B.

   Group A will take up course of Engineering Physics (theory & laboratory) in Semester I and will take up course of Engineering Chemistry (theory & laboratory) in semester II.

   Group B will take up course of Engineering Chemistry (theory & laboratory) in Semester I and will take up course of Engineering Physics (theory & laboratory) in semester II.

2. # - Indicates the subject 'Programming for Problem Solving' shall have a University 'Practical and Oral Examination' at the end of the semester assessing student's programming skills.

3. @ - For the Course (C113) Basics of Civil and Mechanical Engineering, Practicals of Basics of Civil Engineering and Basics of Mechanical Engineering will be conducted in alternate weeks.

4. In Semester Evaluation (ISE) marks shall be based upon student's performance in minimum two tests & mid-term written test conducted & evaluated at institute level.

   Internal Continuous Assessment Marks (ICA) are calculated based upon student's performance during laboratory sessions / tutorial sessions.

5. *- Democracy, Elections & Good Governance is mandatory course. The marks earned by student with this course shall not be considered for calculation of SGPA/CGPA. However, student must complete End Semester Examination (ESE) of 50 marks (as prescribed by university) for fulfillment of this course. This course is not considered as a passing head for counting passing heads for ATKT. However, student must pass this subject for award of the degree.

6. Student must complete induction program of minimum five days before commencement of the regular academic schedule at the first semester.

** GUIDELINES FOR INDUCTION PROGRAM (C119)

New entrants into an Engineering program come with diverse thoughts, mind set and different social, economic, regional and cultural backgrounds. It is important to help them adjust to the new environment and inculcate in them the ethos of the institution with a sense of larger purpose.

An induction program for the new UG entrant students is proposed at the commencement of the first semester. It is expected to complete this induction program before commencement of the regular academic schedule.

Its purpose is to make new entrants comfortable in their new environment, open them up, set a healthy daily routine for them, create bonding amongst the peers as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The Induction Program shall encompass (but not limited to) below activity –

1. Physical Activities
2. Creative Arts
3. Exposure to Universal Human Values
4. Literary Activities
5. Proficiency Modules
6. Lectures by Experts / Eminent Persons
7. Visit to Local Establishments like Hospital /Orphanage
8. Familiarization to Department

Induction Program Course do not have any marks or credits however performance of students for Induction Program is assessed at institute level using below mandatory criteria –

1. Attendance and active participation
2. Report writing

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science and Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Civil Engineering

Name of the Course: S. Y. B. Tech

(Syllabus to be implemented from w.e.f. June 2021)

PUNYASHLOK AHILYADEVI HOLKARSOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
B. Tech. Civil Engineering

Program Educational Objectives (PEOs)
B. Tech. Civil Engineering

The Program Educational Objectives for B. Tech. Civil Engineering program are designed to produce competent civil engineers who are ready to contribute effectively to the advancement of civil engineering and to fulfill the needs of the community. These objectives are as follows:

PEO1: Practice civil engineering in construction industry, public sector undertaking or as an entrepreneur for successful professional career.

PEO2: Pursue higher education for professional development.

PEO3: Exhibit leadership qualities with demonstrable attributes in lifelong learning tocontribute to the societal needs.

Program Outcomes (POs)
B. Tech. Civil Engineering

The program outcomes of B. Tech. Civil Engineering Program are as following:

i) **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

ii) **Problem Analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

iii) **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

iv) **Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complexproblems:

v) **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

vi) **The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

vii) **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

viii) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

ix) **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

x) **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and

write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

xi) **Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

xii) **Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)
B. Tech. Civil Engineering

The program specific outcomes of B. Tech. Civil Engineering Program are as following:

1) Students will be able to survey, conduct geo-technical investigations, plan, analyze, design, estimate and construct residences, public buildings, industrial buildings, townships and infrastructural projects by adopting appropriate construction methods.

2) Students will be able to analyze and design the water resources systems, municipal and industrial waste treatment plants with due consideration to pollution free environment.

3) Students will be able to use appropriate application software, develop skills necessary for professional practice as a Civil Engineer and prepare themselves for education & for Public service commissions

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Science & Technology
Credit System structure of S. Y. B. Tech. Civil Engg. - I, Semester- III, (W.E.F. 2021-2022)

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
CE 31 C	Surveying & Geomatics	3	-	-	-	3	30	70		-	100
CE32C	Fluid Mechanics and Fluid Machines	3	-	-	-	3	30	70		-	100
CE33C	Concrete Technology, Material Testing & Evaluation	2	-	-	-	2	30	70		-	100
CE34C	Building Construction & Drawing	2	-	-	-	2	30	70		-	100
CE35C	Structural Mechanics-I	3	-	-	-	3	30	70		-	100
	Total	**13**	**-**	**_**	**-**	**13**	**150**	**350**		**-**	**500**
	Laboratory/Drawings							**POE**	**OE**		
CE36L	Surveying & Geomatics	-	-	2	-	1	-	50	-	25	75
CE37L	Fluid Mechanics and Fluid Machines	-	-	2	-	1	-	25	-	25	50
CE38L	Concrete Technology, Material Testing & Evaluation	-	-	2	-	1	-	-	-	25	25
CE39L	Building Construction & Drawing	-	-	-	2	1	-	-	-	25	25
CE 410 L	Lab Practice	-	-	2	-	1	-	-	-	25	25
	Total	**-**	**-**	**8**	**-**	**5**	**-**	**75**		**125**	**200**
	Grand Total	**13**	**1**	**8**	**2**	**18**	**150**	**425**		**125**	**700**
	Environmental Science	1	_	_	-	_	_	_		_	_

Abbreviations: L- Lectures, P –Practical, T- Tutorial, D- Drawing, ISE -Internal Tests, ESE - University Examination (Theory &/ POE &/Oral examination), ICA- Internal Continuous Assessment.

Note:

(1) The number of students in a practical/Tutorial batch shall be 20. New batch shall be formed if the number of remaining students (after forming batches of 20) exceeds 9.

(2) Internal Continuous Assessment (ICA): ICA shall be a continuous process based on the performance of the student in assignments, class tests, quizzes, attendance and interaction during theory and lab sessions, journal writing, report presentation etc., as applicable

(3) Student is required to study and pass Environmental Science subject in Second Year of B. Tech. Civil Engineering to become eligible for award of degree.

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
Faculty of Science & Technology

Credit System structure of S. Y. B. Tech. Civil Engg.- II, Semester – IV, W. E.F. 2021-2022

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
CE41C	Environmental Engineering-I	3	-	-	-	3	30	70		-	100
CE42C	Building Planning & Design	2	-	-	-	2	15	35		-	50
CE43C	Structural Mechanics-II	3	1	-	-	4	30	70		25	125
CE44B	Engineering Mathematics-III	3	1	-	-	4	30	70		25	125
CE45B	Engineering Geology	2	-	-	-	2	30	70		-	100
	Total	**13**	**2**	**-**	**-**	**15**	**135**	**315**		**50**	**500**
	Laboratory/Drawings:							**POE**	**OE**		
CE46L	Environmental Engineering-I	-	-	2	-	1	-	-	-	25	25
CE47L	Building Planning & Design	-	-	-	2	1	-	50	-	25	75
CE48L	Computer Programming & Numerical Methods	2	-	2	-	3	-	50	-	25	75
CE49L	Engineering Geology	-	-	2	-	1	-	25	-	25	50
	Total	**2**	**0**	**6**	**2**	**7**	**-**	**125**		**100**	**225**
	Grand Total	**15**	**2**	**6**	**2**	**22**	**135**	**440**		**150**	**725**
	Environmental Science	1	–	–		–	–	–		–	–

Abbreviations: L- Lectures, P –Practical, T- Tutorial, D- Drawing, ISE -Internal Tests, ESE - University Examination (Theory &/ POE &/Oral examination), ICA- Internal Continuous Assessment.

Note:

(1) The number of students in a Practical/Tutorial batch shall be 20. New batch shall be formed if the number of remaining students (after forming batches of 20) exceeds 9.

(2) Internal Continuous Assessment (ICA): ICA shall be a continuous process based on the performance of the student in assignments, class tests, quizzes, attendance and interaction during theory and lab sessions, journal writing, report presentation etc., as applicable.

(3) Student is required to study and pass Environmental Science subject in Second Year of B. Tech. Civil Engineering to become eligible for award of degree

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus

T.Y. B. Tech (Civil Engineering)

w. e. f. Academic Year 2020-21

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
B. Tech. Civil Engineering

Program Educational Objectives (PEOs)
B. Tech. Civil Engineering

The Program Educational Objectives for B. Tech. Civil Engineering program are designed to produce competent civil engineers who are ready to contribute effectively to the advancement of civil engineering and to fulfill the needs of the community. These objectives are as follows:

PEO1: Practice civil engineering in construction industry, public sector undertaking or as an entrepreneur for successful professional career.

PEO2: Pursue higher education for professional development.

PEO3: Exhibit leadership qualities with demonstrable attributes in lifelong learning to contribute to the societal needs.

Program Outcomes (POs)
B. Tech. Civil Engineering

The program outcomes of B. Tech. Civil Engineering Program are as following:

i) **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

ii) **Problem Analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

iii) **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

iv) **Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems:

v) **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

vi) **The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

vii) **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

viii) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

ix) **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

x) **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

xi) **Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

xii) **Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

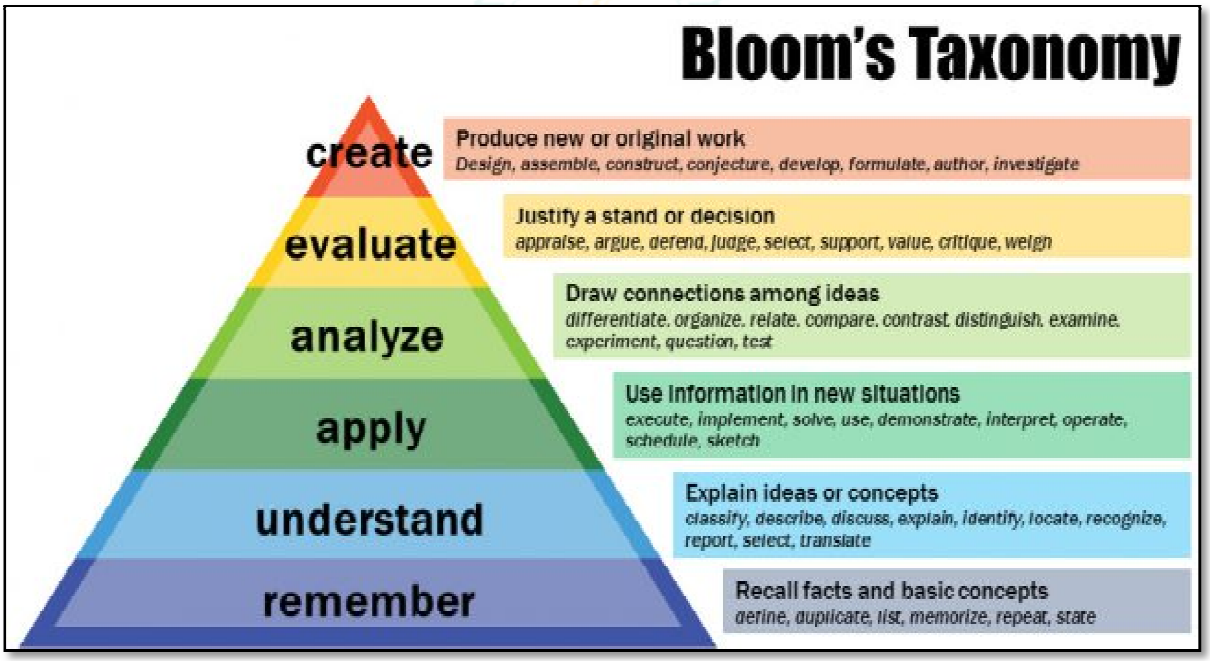
B. Tech. Civil Engineering

1) Graduates will be able to survey, conduct geo-technical investigations, plan, analyze, design, estimate and construct residences, public buildings, industrial buildings, townships and infrastructural projects by adopting appropriate construction methods.

2) Graduates will analyze and design the water resources systems, municipal and industrial waste treatment plants with due consideration to pollution free environment.

3) Graduates will use appropriate application software, develop skills necessary for professional practice as a Civil Engineer and prepare themselves for competitive examinations for higher education & for public service commissions.

BLOOM'S TAXONOMY



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Faculty of SCIENCE & TECHNOLOGY

Credit System structure of T. Y. B. Tech. Civil Engineering, Semester- I, (W.E.F. 2020-2021)

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
CV311	Design of Steel Structures	3	1	-	-	4	30	70		25	125
CV312	Geotechnical Engineering	4	-	-	-	4	30	70		-	100
CV313	Waste water Engineering & Air Pollution	3	-	-	-	3	30	70		-	100
CV314	Highway & Tunnel Engineering	4	-	-	-	4	30	70		-	100
CV315	Hydrology and Water Resources Engineering	3	1	-	-	4	30	70		25	**125**
SL31	Self Learning Module-I (H. S. S.)	-	-	-	-	2	-	50		-	50
	Total	**17**	**2**			**21**	**150**	**400**		**50**	**600**
	Laboratory/Drawings							**POE**	**OE**		
CV312	Geotechnical Engineering	-	-	2	-	1	-	25	-	25	50
CV313	Waste water Engg. & Air Pollution	-	-	2	-	1	-	-	25	25	50
CV314	Highway & Tunnel Engineering	-	-	2	-	1	-		-	25	25
CV317	Planning & Design of Public Buildings	**1**	-	-	2	2	-	50	**-**	25	75
CV318	Mini Project *	-	-	2	-	1	-	-	-	50	50
	Total	**1**	**-**	**8**	**2**	**6**	**-**	**100**		**150**	**250**
	Grand Total	**18**	**2**	**8**	**2**	**27**	**150**	**500**		**200**	**850**

Abbreviations: L- Lectures, P -Practical, T- Tutorial, D-Drawing., ISE -Internal Tests, ESE– University Examination (Theory&/ POE &/Oral examination), ICA- Internal Continuous Assessment.

*The students shall carry out 'Mini Project' using suitable application software /Carry out suitable Experimental work/ Carry out variety of Civil Engineering Surveys and present a report. The Mini project shall be assessed by the respective guide for ICA.

Note:

1) The batch size for the practical/tutorial is of 15 students. On forming the batches, if the number of remaining students exceeds 7 students, then a new batch be formed.
2) Internal Continuous Assessment (ICA) shall be a continuous process based on the performance of the student in assignments, class tests, quizzes, attendance and interaction during theory and lab sessions, syllabus, report presentation etc., as applicable.
3) Students shall undergo a field training of 15 days in the winter vacation after T.Y. B. Tech. Civil - Semester- I and submit the field training report, which shall be assessed by faculty associated with 'Principles of Management and Quantitative Techniques' , in T.Y.B. Tech Civil Semester-II.

4) Self-Learning Module- I at T.Y. B. Tech. Civil Engineering, Semester – I:

Curriculum for Humanities and Social Sciences, 'Self Learning Module – I' is common for all under graduate engineering programs.

(A) Student can select & enroll a 'Self Learning Module- I' (HSS) Course from P.A.H Solapur University, Solapur HSS Course List **SL31-(A)** and appear for University examination.

SL31-(A): Self Learning Module – I (HSS)

P. A. H. Solapur University, Solapur: HSS Course List

No	Course title
1	Economics
2	Intellectual Property Rights for Technology Development and Management
3	Introduction to Sociology
4	Stress and Coping
5	Professional Ethics & Human Value

OR

(B) Student can select and enroll for University approved minimum eight weeks NPTEL HSS course **SL31-(B)**, complete its assignments, and appear for certificate examination conducted by NPTEL. The list of courses as shown in Table SL31-(B) will be updated from time to time by University authorities. Latest updated list will be valid for selection of self learning Module-I (HSS) courses.

More details about NPTEL are available at http://nptel.ac.in

SL31-(B): Self Learning Module-I (HSS)

University approved NPTEL- HSS course List (SL31-B)

No	Course title	No	Course title
1	Soft skills	15	Management of Inventory Systems
2	Introduction to Modern India Political Thought	16	Economic Growth and Development
3	Intellectual Property	17	Ethic in Engineering Practice
4	Technical English for Engineers	18	Corporate Social Responsibility
5	Developing Soft Skills and Personality	19	Marketing Management –I
6	Educational Leadership	20	Marketing Research and Analysis
7	Microeconomics: Theory & Applications	21	Selected Topics in Decision Modeling
8	Engineering Economics	22	Innovation, Business Models and Entrepreneurship
9	Human Resource Development	23	Simulation of Business Systems: An Applied Approach
10	Project Management for managers	24	Sustainability through Green Manufacturing Systems: An Applied Approach
11	Data Analysis and Decision Making - I	25	Total Quality Management - I
12	E-Business	26	Introduction to Operations Research
13	Working Capital Management	27	Knowledge Management
14	Industrial Safety Engineering		

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Faculty of SCIENCE & TECHNOLOGY

Credit System structure of T. Y. B. Tech. Civil Engineering, Semester – II, (W. E.F. 2020-2021)

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
CV321	Foundation Engineering	4	-	-	-	4	30	70		-	100
CV322	Hydraulic Structures & Water Power Engg.	3	-	-	-	3	30	70		-	100
CV323	Professional Elective-I	3	-	-	-	3	30	70		-	100
CV324	Design of Concrete Structures-I	4	-	-	-	4	30	70		-	100
CV325	Principles of Management and Quantitative Techniques	3	1	-	-	4	30	70		25	125
CV326 (SL32)	Self Learning Module-II (Technical)	-	-	-	-	2	-	50		-	50
	Total	**17**	**1**	**-**	**-**	**20**	**150**	**400**		**25**	**575**
	Laboratory/Drawings:						-	**POE**	**OE**		
CV321	Foundation Engineering	-	-	2	-	1	-	-	-	25	**25**
CV322	Hydraulic Structures & Water Power Engg.	-	-	2	-	1	-	-	25	25	50
CV323	Professional Elective Course-I	-	-	2	-	1	-	-	-	25	**25**
CV324	Design of Concrete Structures-I	-	-	2		1	-	-	-	25	**25**
CV327	Project on Steel Structures	-	-	-	4	2	-	-	50	50	**100**
CV328	Assessment of field training report	-	-	-	-	1	-	-	-	25	**25**
	Total	**-**	**-**	**8**	**4**	**7**		**75**		**150**	**225**
	Grand Total	**17**	**1**	**8**	**4**	**27**	**150**	**475**		**200**	**825**

Abbreviations: L- Lectures, P -Practical, T- Tutorial, D-Drawing., ISE -Internal Tests, ESE– University Examination (Theory&/ POE&/Oral examination), ICA- Internal Continuous Assessment.

.**Note:**

1) The batch size for the practical/tutorial is of 15 students. On forming the batches, if the number of remaining students exceeds 7 students, then a new batch be formed.
2) Internal Continuous Assessment (ICA) shall be a continuous process based on the performance of the student in assignments, class tests, quizzes, attendance and interaction during theory and lab sessions, syllabus, report presentation etc., as applicable.
3) Students shall undergo a field training of 15 days in the summer vacation after T.Y.B. Tech Civil Semester-II. The training report shall be assessed in Final Tear B. Tech Civil Semester-I by the concerned project guides.

4) Self-Learning Module II at T.Y. B. Tech. Civil Engineering, Semester- II

(A) Student can select a 'Self Learning Module II' (Technical Course) from Course List **SL32-(A)** and appear for university examination.

P. A. H. Solapur University, Solapur: Technical Course List Course List

SL32- (A): Self Learning Module – II (Technical Courses)

No	Course title
1	Geosynthetics and Reinforced Soil Structures
2	Rural Roads
3	Planning for Sustainable Development
4	TQM and MIS in Civil Engineering
5	Earthquake Resistant Non Engineered Construction

OR

(B) Student can select & enroll for university approved minimum eight week technical course from various NPTEL technical courses, complete its assignments and appear for certificate examination conducted by NPTEL.

BOS Chairman / Coordinator will announce the list of approved NPTEL online courses of minimum eight weeks duration for 'Self Learning Module-II (Technical)' on commencement of the Semester-II of respective academic year from the available NPTEL courses through university system and will make available to student through University / institute website.

Professional Elective Courses: Student shall choose any one course of the following

Elective No	Semester	(I) Structural Engineering	(II) Geotechnical Engineering & Transportation Engg	(III) Construction Engineering & Management	(IV) Environmental Engineering &Hydraulics, Hydrology & Water Resources Engineering
Professional Elective-I	**T.Y.B.Tech Civil Semester-II**	(A) Masonry Structures	(D) Structural Geology	(H) Construction Engineering Materials	(K) Ecological Engineering
		(B) Structural Analysis by Matrix Methods	(E) Urban Transportation Planning.	(I) Systems Engineering & Economics	(L) Solid and Hazardous Waste Management
		(C)Structural Dynamics	(F) Pavement Design	(J) Infrastructure Planning and Management	(M) Physico-Chemical Processes for Water and Wastewater Treatment
			(G) Metro Systems and Engineering		(N)Hydraulic modelling
					(O)Urban Hydrology and Hydraulics
					(P) Instrumentation & Sensor Technologies for Civil Engg. Applications
					(Q) Open Channel flow & River Hydraulics

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Civil Engineering

Name of the Course: Final Year B. Tech

(Syllabus to be implemented w.e.f. June 2021)

PUNYASHLOK AHILYADEVI HOLKAR
SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
B. Tech. Civil Engineering

Program Educational Objectives (PEOs)
B. Tech. Civil Engineering

1. Graduate will demonstrate peer-recognized technical competency in the analysis, design and construction of Civil Engineering Structures.

2. Graduate will demonstrate leadership and initiative to advance professional and organizational goals with commitment to ethical standards of profession, teamwork and respect for diverse cultural background.

3. Graduate will be engaged in ongoing learning and professional development through pursuance of higher education and self-study.

4. Graduates will be committed to create practice of engineering and other professionals in a responsible manner contributing to the socio-economic development of the society.

Program Outcomes (POs)
B. Tech. Civil Engineering

The program outcomes of B. Tech. Civil Engineering Program are as following:

i) **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

ii) **Problem Analysis:** Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

iii) **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

iv) **Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems:

v) **Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

vi) **The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

vii) **Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

viii) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

ix) **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Faculty of SCIENCE & TECHNOLOGY

Credit System structure of Final Year B. Tech. Civil Engg. I; Semester – VII, W. E.F. 2021-2022

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
CV411	Engineering Economics, Estimation & Costing	3	-	-	-	3	30	70		-	**100**
CV412	Construction Engineering, Management & Construction Practices	3	-	-	-	3	30	70		-	**100**
CV413	Design of Concrete Structures-II	3	-	-	-	3	30	70		25	**125**
CV414	Earthquake Engineering	3	1	-	-	4	30	70		25	**125**
CV415	Professional Elective Course- II	3	-	-	-	3	30	70		25	**125**
	Total	**15**	**1**	**-**	**-**	**16**	**150**	**350**		**75**	**575**
	Laboratory/Drawings:							**POE**	**OE**		
CV411	Engineering Economics, Estimation & Costing	-	-	4	-	2	-	25	-	50	**75**
CV412	Construction Engineering , Management & Construction Practices	-	-	2	-	1	-	-	25	-	**25**
CV416	Project on R. C. C. Structures	-	-	-	4	2	-	-	25	50	**75**
CV417	Seminar	-	-	2	-	1	-	-	-	50	**50**
CV418	Project work	-	-	2	-	1	-	-	-	25	**25**
CV419	Assessment of report on field training-II	-	-	-	-	1	-	-	-	25	**25**
	Total	**-**	**-**	**10**	**4**	**8**	**-**	**75**		**200**	**275**
	Grand Total	**15**	**1**	**10**	**4**	**24**	**150**	**425**		**275**	**850**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, D- Drawing, ISE - Internal Tests, ESE - University Examination (Theory &/ POE &/Oral examination), ICA- Internal Continuous Assessment.

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
Faculty of SCIENCE & TECHNOLOGY

Credit System structure of Final Year B. Tech. Civil Engg. II, Semester – VIII, W. E.F. 2021-2022

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE		ICA	Total
CV421	Professional Elective Course- III	4	-	-	-	4	30	70		-	**100**
CV422	Professional Elective Course - IV	4	-	-	-	4	30	70		-	**100**
CV423	Railway & Harbour Engineering	3	1	-	-	4	30	70		-	**100**
CV424	Open Elective-III :Economic policies in India	3	-	-	-	3	30	70		-	**100**
CV425	Professional Practice, Law & Ethics	3	-	-	-	3	30	70		-	**100**
	Total	**17**	**1**	**-**	**-**	**18**	**150**	**350**		**-**	**500**
	Laboratory/Drawings							**POE**	**OE**		
CV421	Professional Elective Course- III	-	-	2	-	1	-	-	25	25	**50**
CV422	Professional Elective Course - IV	-	-	2	-	1	-	-	25	25	**50**
	Project work	-	-	8	-	4	-	-	100	100	**200**
	Total	-	-	**12**	-	**6**	-	**150**		**150**	**300**
	Grand Total	**17**	**1**	**12**	-	**24**	**150**	**500**		**150**	**800**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, D- Drawing, ISE - Internal Tests, ESE - University Examination (Theory &/ POE &/Oral examination), ICA- Internal Continuous Assessment.

.**Note:**

(1) Project group be of @ 7 students.

(2) Elective subject can be offered from the following list, if minimum 15 students opt for that subject.

(3) Term work assessment: Term Work assessment shall be a continuous process based on the performance of the student in assignments, classtests, quizzes, attendance and interaction during theory and lab sessions, journal writing, report presentation etc., as applicable.

Professional Elective Courses: Student shall choose any one course from a group

Elective No	Semester	(I) Structural Engineering	(II) Geotechnical Engineering & Transportation Engg	(III) Construction Engineering & Management	(IV) Environmental Engineering & Hydraulics, Hydrology & Water Resources Engineering
Prof. Elective-I	**Semester-VI**	Masonry Structures	Structural Geology	Construction Engineering Materials	Ecological Engineering
		Structural Analysis by MatrixMethods	Urban TransportationPlanning.	Systems Engineering & Economics	Solid and Hazardous Waste Management
		Structural Dynamics	Pavement Design	Infrastructure Planning and Management	Physico-Chemical Processes for Water and Wastewater Treatment
					Hydraulic modeling
					Urban Hydrology and Hydraulics
					Instrumentation & Sensor Technologies for Civil Engg. Applications
					Open Channel flow & River Hydraulics
Prof. Elective-II	**Semester-VII**	Metal Structure Behaviour- I	Traffic Engineering and Management	Construction Productivity	Environmental Systems
		Advanced Structural Analysis	Geosynthetics and soil structures		Water Power Engineering
		Finite Element Method	Advanced Railway Track		

Prof. Elective-III	**Semester -VIII**	Industrial Structures	Public Transportation Systems	Construction Cost Analysis	Rural Water Supply and Onsite Sanitation Systems
		Repairs & Rehabilitation of Structures	Airport Planning and Design	Construction Equipment & Automation	Air & Noise Pollution and Control
			High Speed Rail Engineering		Surface Hydrology
Prof. Elective-IV	**Semester -VIII**	Metal Structure Behaviour - II	Infrastructure Planning and Design	Advanced Concrete Technology	Water and Air Quality Modelling
		Design of Bridges	Transportation Economics	Entrepreneurship	Water Resources Field Methods
			Railway Project Design & Planning for Civil Engineering		
			Ground Improvement Techniques		

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, Tal.: Pandharpur - 413 304, Dist.: Solapur (MH)
Contact No.: 9545553888, 9545553737, E-mail : coe@sveri.ac.in, Website : www.sveri.ac.in
Approved by A.I.C.T.E., New Delhi and Affiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, NAAC A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref :-

Date :-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Electrical Engineering			
Programme Code: 1-3675277161			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	F. Y. B.Tech. Electrical Engineering	Yes (CBCS)	2020-2021
2	S. Y. B.Tech. Electrical Engineering	Yes (CBCS & Elective)	2021-2022
3	T. Y. B.Tech. Electrical Engineering	Yes (CBCS & Elective)	2020-2021
4	Final Year B.Tech. Electrical Engineering	Yes (CBCS & Elective)	2021-2022

COLLEGE OF ENGINEERING PANDHARPUR

B.Bange

PRINCIPAL
SVERI's College of Engineering,
Pandharpur

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF

ENGINEERING& TECHNOLOGY

ALL BRANCHES

CBCS Syllabus for
First Year B. Tech. (All Branches)
w.e.f.
Academic Year 2020-21

PUNYASHLOK AHILYADEVI HOLKAR

SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

CBCS Curriculum for First Year B.Tech. (All Branches)

W.E.F. 2020-21

- Semester I : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C112	Engineering Mathematics-I	3			3	70	30		100
C113	Basics of Civil and Mechanical Engineering	4			4	70	30		100
C114	Engineering Mechanics	3			3	70	30		100
C115	Universal Human Values	2			2	50			50
C116	Communication Skills	1			1		25		25
	Total	**16**			**16**	**330**	**145**		**475**

- Semester I : Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $			2	1			25	25
C112	Engineering Mathematics-I		1		1			25	25
C113	Basics of Civil and Mechanical Engineering @			2	1			25	25
C114	Engineering Mechanics			2	1			25	25
C116	Communication Skills			2	1			25	25
C117	Creativity & Design Thinking			2	1			50	50
C118	Workshop Practice			2	1			50	50
	Total			**12**	**7**			**225**	**225**
	Grand Total	**16**	**1**	**12**	**23**	**330**	**145**	**225**	**700**
C119	Induction Program	*** Please see note below*							

- Semester II : Theory Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry $	3			3	70	30		100
C122	Engineering Mathematics - II	3			3	70	30		100
C123	Basic Electrical & Electronics Engineering	3			3	70	30		100
C124	Programming for problem solving	2			2		25		25
C125	Engineering Graphics and CAD	2			2	70	30		100
C126	Professional Communication	1			1		25		25
Total		**14**			**14**	**280**	**170**		**450**

Semester II: Laboratory / Tutorial Courses

Course Code	***Name of the Course***	***Engagement Hours***			***Credits***	***FA***	***SA***		***Total***
		L	***T***	***P***		***ESE (POE)***	***ISE***	***ICA***	
C011/ C012	Engineering Physics / Engineering Chemistry$			2	1			25	25
C122	Engineering Mathematics- II		1		1			25	25
C123	Basic Electrical & Electronics Engineering			2	1			25	25
C124	Programming for problem solving			4	2	50#		50	100
C125	Engineering Graphics and CAD			4	2			50	50
C126	Professional Communication			2	1			25	25
	Total			**14**	**8**	**50**		**200**	**250**
Grand Total		**14**	**1**	**14**	**22**	**330**	**170**	**200**	**700**
C127	Democracy, Elections and Good Governance *					**50**			**50**

- Legends used–

L	Lecture	FA	Formative Assessment
T	Tutorial	SA	Summative Assessment
P	Lab Session	ESE	End Semester Examination
		ISE	In Semester Evaluation
		ICA	Internal Continuous Assessment

- **Notes-**

1. $ - Indicates approximately half of the total students at F. Y. will enroll under Group A and remaining will enroll under Group B.

   Group A will take up course of Engineering Physics (theory & laboratory) in Semester I and will take up course of Engineering Chemistry (theory & laboratory) in semester II.

   Group B will take up course of Engineering Chemistry (theory & laboratory) in Semester I and will take up course of Engineering Physics (theory & laboratory) in semester II.

2. # - Indicates the subject 'Programming for Problem Solving' shall have a University 'Practical and Oral Examination' at the end of the semester assessing student's programming skills.

3. @ - For the Course (C113) Basics of Civil and Mechanical Engineering, Practicals of Basics of Civil Engineering and Basics of Mechanical Engineering will be conducted in alternate weeks.

4. In Semester Evaluation (ISE) marks shall be based upon student's performance in minimum two tests & mid-term written test conducted & evaluated at institute level.

   Internal Continuous Assessment Marks (ICA) are calculated based upon student's performance during laboratory sessions / tutorial sessions.

5. *- Democracy, Elections & Good Governance is mandatory course. The marks earned by student with this course shall not be considered for calculation of SGPA/CGPA. However, student must complete End Semester Examination (ESE) of 50 marks (as prescribed by university) for fulfillment of this course. This course is not considered as a passing head for counting passing heads for ATKT. However, student must pass this subject for award of the degree.

6. Student must complete induction program of minimum five days before commencement of the regular academic schedule at the first semester.

** GUIDELINES FOR INDUCTION PROGRAM (C119)

New entrants into an Engineering program come with diverse thoughts, mind set and different social, economic, regional and cultural backgrounds. It is important to help them adjust to the new environment and inculcate in them the ethos of the institution with a sense of larger purpose.

An induction program for the new UG entrant students is proposed at the commencement of the first semester. It is expected to complete this induction program before commencement of the regular academic schedule.

Its purpose is to make new entrants comfortable in their new environment, open them up, set a healthy daily routine for them, create bonding amongst the peers as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The Induction Program shall encompass (but not limited to) below activity –

1. Physical Activities
2. Creative Arts
3. Exposure to Universal Human Values
4. Literary Activities
5. Proficiency Modules
6. Lectures by Experts / Eminent Persons
7. Visit to Local Establishments like Hospital /Orphanage
8. Familiarization to Department

Induction Program Course do not have any marks or credits however performance of students for Induction Program is assessed at institute level using below mandatory criteria –

1. Attendance and active participation
2. Report writing

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-
2015'B' Grade
(CGPA 2.62)

Name of the Faculty: Engineering & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: ELECTRICAL ENGINEERING

Name of the Course: S.Y. B.Tech

(Syllabus to be implemented from w.e.f. June 2021)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Engineering & Technology
B.Tech (Electrical Engineering)
PROGRAMME: BACHELOR OF ELECTRICAL ENGINEERING
PROGRAMME OBJECTIVES

A. PROGRAM EDUCATIONAL OBJECTIVES

1. Deliver fundamental as well as advanced knowledge with research initiatives in the field of electrical engineering with emphasis on state-of-the-art technology.
2. Graduates will demonstrate measurable progress in the fields they choose to pursue.
3. Design and develop technically feasible solutions for real world applications which are economically viable leading to societal benefits.
4. To nurture Graduates to be sensitive for ethical, societal and environmental issues while conducting their professional work.

B. PROGRAMME OUTCOMES

Students attain the following outcomes: -

1 **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2 **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3 **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4 **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5 **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6 **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7 **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9 **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10 **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11 **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12 **Lifelong learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. PROGRAMME SPECIFIC OUTCOMES

1 An ability to specify, design and analyze Power System, Electrical Machinery, Electronic Circuits, Drive Systems, Lightning Systems and deliver technological solution by adapting advances in allied disciplines.

2 Apply knowledge of electrical engineering to meet the desired needs within realistic constraints viz. economical, ethical, and environmental and safety.

3 Apply modern software tools for design, simulation and analysis of electrical systems to successfully adapt in multi-disciplinary environments.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Engineering & Technology
S.Y. B Tech. (Electrical Engineering

Choice Based Credit System Syllabus Structure of S.Y. B. Tech. Electrical Engineering W.E.F. 2021-22 ***Semester I***

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
EL 211	Engineering Mathematics-III	2	1		3	30	70	25	125
EL 212	Electrical Machines-I	3	-		3	30	70	-	100
EL 213	Electrical Measurement and Instrumentation	3	-		3	30	70	-	100
EL 214	Power System I	3	1		4	30	70	25	125
EL 215	Electronic Devices and Circuits	3	-		3	30	70	-	100
EL 216	Object Oriented Programming with C++	1	-		--	--	--	-	--
Sub Total		**15**	**2**	**-**	**16**	**150**	**350**	**50**	**550**
Environmental Science		1							
Laboratory Course Name									
							ESE		
							POE	OE	
EL 212	Electrical Machines-I	-	-	2	1	-	50	-	25	75
EL 213	Electrical Measurement and Instrumentation	-	-	2	1	-	50	-	25	75
EL 215	Electronic Devices and Circuits	-	-	2	1	-		-	25	25
EL 216	Object Oriented Programming with C++	-	-	2	1	-	50	-	25	75
Sub Total		**-**	**-**	**8**	**4**		**150**		**100**	**250**
Grand Total		**15**	**2**	**8**	**20**	**150**	**500**		**150**	**800**

- *Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In semester Exam, ESE - End Semester Exam, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)*

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Engineering & Technology
S. Y. B. Tech. (Electrical Engineering)

Choice Based Credit System Structure of S.Y.B.Tech. Electrical Engineering W.E.F. 2021-2022 ***Semester II***

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
EL 221	Numerical Methods and Linear Algebra	2	1	-	3	30	70	25	125
EL 222	Electrical Machines-II	3	-	-	3	30	70	-	100
EL 223	Power System II	3	1	-	4	30	70	25	125
EL 224	Analog & Digital Integrated circuits	3	-	-	3	30	70	-	100
EL 225	Network Analysis	3	-	-	3	30	70	-	100
Sub Total		**14**	**2**	**-**	**16**	**150**	**350**	**50**	**550**
Environmental Science		1	-	-	-	-	-	-	-
Laboratory Course Name									
							ESE		
							POE	OE		
EL 222	Electrical Machines-II	-	-	2	1	-	50	-	25	75
EL 225	Network Analysis	-	-	2	1	-	50	-	25	75
EL 224	Analog & Digital Integrated circuits	-	-	2	1	-	-	-	25	25
EL 226	Computer Aided Design and Simulation	-	-	2	1	-	50	-	25	75
Sub Total		**-**	**-**	**8**	**4**	**-**	**150**		**100**	**250**
Grand Total		**14**	**2**	**8**	**20**	**150**	**500**		**150**	**800**

- *Abbreviations: L - Lectures, P –Practical, T - Tutorial, ISE - In Semester Exam, ESE - End Semester Exam, ICA - Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)*

Note –

- Batch size for the SE practical /tutorial shall be of 20 students. On forming the batches, if the strength of remaining student exceeds 9, then a new batch shall be formed.
- Vocational Training (evaluated at B.E. Part-I) of minimum 15 days shall be completed in any vacation after S.E. Part-II but before B.E. Part-I & and evaluated on the basis of presentation as well as training report.
- Student shall select one Self Learning Module at T.E. Part I and T.E. Part II each from Technical and Humanities and Social
- Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group
- Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology
- Minimum four assignments for Self-Learning Modules at T.E. Part I and T.E. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department
- Project group for T.E.(Electrical) Part II Mini Project shall not be of more than three student
- Project group for B.E. (Electrical) Part I and Part II shall not be of more than FOUR students.
- ICA shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus : Electrical Engineering

Name of the Course: T.Y. B. Tech. (Sem.–I&II)

(Syllabus to be implemented w.e.f. June 2020)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
T. Y. B.Tech. (Electrical Engineering)

Choice Based Credit System Syllabus Structure of T. Y .B.Tech. Electrical Engineering

W.E.F. 2020-21 ***Semester I***

Course code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
EL 311	Power System-III	4	-	-	4	30	70	-	100
EL 312	Linear Control System	4	-	-	4	30	70	-	100
EL 313	Microprocessor and Microcontroller	3	-	-	3	30	70	-	100
EL 314	Electromagnetic Engineering	4	1	-	5	30	70	25	125
EL 315	Open Elective-I	3	1	-	4	30	70	25	125
EL 316	Self-Learning Module-I			-	2		50		50
Sub Total		**18**	**2**	**-**	**22**	**150**	**400**	**50**	**600**
Laboratory Course Name									
							ESE		
							POE	OE	
EL 311	Power System III	-	-	2	1	-	-	25	25	50
EL 312	Linear Control System	-	-	2	1	-	-	25	25	50
EL 313	Microprocessor and Microcontroller	-	-	2	1	-	50	-	25	75
EL 317	Electrical Workshop	-	-	2	1	-	-	-	25	25
Sub Total		-	**-**	**8**	**4**	**-**	**100**		**100**	**200**
Grand Total		**18**	**2**	**8**	**26**	**150**	**500**		**150**	**800**

- *Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In semester Exam, ESE - End Semester Exam, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)*

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
T. Y. B.Tech. (Electrical Engineering)

Choice Based Credit System Structure of T.Y.B .Tech. Electrical Engineering W.E.F. 2020-21

Semester II

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
EL 321	Electrical Machine Design	4	-	-	4	30	70	-	100
EL 322	Electrical Utilisation	3	1	-	4	30	70	25	125
EL 323	Power Electronics	4	-	-	4	30	70	-	100
EL 324	Signals & Systems	4	1	-	5	30	70	25	125
EL 325	Open Elective-II	3	-	-	3	30	70	-	100
EL 326	Self-Learning Module-II	-	-	-	2	--	50	-	50
Sub Total		**18**	**2**	**-**	**22**	**150**	**400**	**50**	**600**
Laboratory Course Name									
							ESE		
							POE	OE		
EL 321	Electrical Machine Design	-	-	2	1	-		25	25	50
EL 323	Power Electronics	-	-	2	1	-	50	-	25	75
EL 325	Open Elective-II	-	-	2	1				25	25
EL 327	Mini Hardware Project	-	-	2	1	-	-	25	25	50
Sub Total		**-**	**-**	**8**	**4**	**-**	**100**		**100**	**200**
Grand Total		**18**	**2**	**8**	**26**	**150**	**500**		**150**	**800**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)

Self-Learning Module-II:

1. Special Purpose Machines
2. Electrical Safety
3. Solar Photovoltaic System Design & Installation
4. NPTEL Courses

Note –

- Batch size for the TE practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds7, then a new batch shall be formed.
- Vocational Training (evaluated at B.E. Part-I) of minimum 15 days shall be completed in any vacation after S.E. Part-II but before B.E. Part-I & and evaluated on the basis of presentation as well as training report.
- Student shall select one Self Learning Module at T.E. Part I and T.E. Part II each from Technical and Humanities and Social.
- Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group.
- Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programs of faculty of Engineering and Technology.
- Minimum four assignments for Self-Learning Modules at T.E. Part I and T.E. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department.
- Project group for T.E (Electrical) Part II Mini Project shall not be of more than three student.
- ICA shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars, quizzes, and laboratory books and their interaction and attendance for theory and lab sessions as applicable.

List of Open Electives

Sr. No.	Open Elective I	Open Elective II
1	Information Technology & Management	Operating Systems
2	Hybrid Electric Vehicle Design	Advanced control System
3	Business Ethics	Optical Communication
4	Managerial Economics	Sensors & Applications

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited – 2015
B-Grade CGPA- 2.62

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

SYLLABUS: ELECTRICAL ENGG

Name of the Course: Final Year B. Tech

(Syllabus to be implemented w.e.f. June 2021-22)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
B.Tech (Electrical Engineering)
PROGRAMME: BACHELOR OF ELECTRICAL ENGINEERING
PROGRAMME OBJECTIVES

A. PROGRAM EDUCATIONAL OBJECTIVES

1. Deliver fundamental as well as advanced knowledge with research initiatives in the field of electrical engineering with emphasis on state of the art technology.
2. Graduates will demonstrate measurable progress in the fields they choose to pursue.
3. Design and develop technically feasible solutions for real world applications which are economically viable leading to societal benefits.
4. To nurture Graduates to be sensitive for ethical, societal and environmental issues while conducting their professional work.

B. PROGRAMME OUTCOMES

Students attain the following outcomes:-

1 **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2 **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3 **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4 **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5 **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6 **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7 **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9 **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10 **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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12 **Lifelong learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. PROGRAMME SPECIFIC OUTCOMES

1 An ability to specify, design and analyze Power System, Electrical Machinery, Electronic Circuits, Drive Systems, Lightning Systems and deliver technological solution by adapting advances in allied disciplines.

2 Apply knowledge of electrical engineering to meet the desired needs within realistic constraints viz. economical, ethical, and environmental and safety.

3 Apply modern software tools for design, simulation and analysis of electrical systems to successfully adapt in multi-disciplinary environments.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
B.Tech (Electrical Engineering)

Choice Based Credit System Syllabus Structure of B.Tech Electrical Engineering W.E.F. 2021-2022

Semester I

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	***ICA***	***Total***
EL 411	Industrial Drives Control	3	-	-	3	30	70	-	100
EL 412	Power System and Operation Control	3	1	-	4	30	70	25	125
EL 413	Renewable Energy Sources	3	-	-	3	30	70	-	100
EL 414	Switchgear and Protection	3	-	-	3	30	70	-	100
EL 415	Elective-I	3	1	-	4	30	70	25	125
Sub Total		**15**	**2**	**-**	**17**	**150**	**350**	**50**	**550**
Laboratory Course Name									
							ESE		
							POE	**OE**	
EL 411	Industrial Drives Control	-	-	2	1	-	50	-	25	75
EL 413	Renewable Energy Sources	-	-	2	1	-	-	-	25	25
EL 414	Switchgear and Protection	-	-	2	1	-	-	25	25	50
EL 416	Seminar on Industrial Training	-	-	-	-	-	-	-	25	25
EL 417	Project Phase-I	-	-	4	2	-	-	50	25	75
Sub Total		**--**	**-**	**10**	**5**	**-**	**125**		**125**	**250**
Grand Total		**15**	**2**	**10**	**22**	**150**	**475**		**175**	**800**

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Punyashlok Ahilyadevi Holkar Solapur University, Solapur
Faculty of Science & Technology
B.Tech (Electrical Engineering)

Choice Based Credit System Syllabus Structure of B.Tech Electrical Engineering W.E.F. 2021-2022

Semester II

Course Code	***Theory Course Name***	***Hrs./week***			***Credits***	***Examination Scheme***			
		L	***T***	***P***		***ISE***	***ESE***	ICA	***Total***
EL 421	Power Quality & FACTS	3	-	-	3	30	70	-	100
EL 422	Extra High Voltage AC Transmission	3	-	-	3	30	70		100
EL 423	Elective -II	2	1	-	3	30	70	25	125
EL 424	Elective III	2	1	-	3	30	70	25	125
Sub Total		**10**	**2**	**-**	**12**	**120**	**280**	**50**	**450**
Laboratory Course Name									
							ESE		
							POE	**OE**		
EL 421	Power Quality & FACTS	-	-	2	1	-		50	25	75
EL 422	Extra high voltage AC transmission			2	1			50	25	75
EL 425	Project Phase-II	-	-	8	4	-	100		100	200
Sub Total		**-**	**-**	**12**	**6**	**-**	**200**		**150**	**350**
Grand Total		**10**	**2**	**12**	**18**	**120**	**480**		**200**	**800**

Abbreviations: L- Lectures, P –Practical, T- Tutorial, ISE- In Semester Exam, ESE - End Semester Exam, ICA- Internal Continuous Assessment, ESE - University Examination (Theory &/ POE &/Oral examination)

Elective I		Elective II		Elective III	
Course Code	**Course**	**Course Code**	**Course**	**Course Code**	**Course**
EL 415.1	Energy Audit and Management	EL 423.1	Power System Planning	EL 424.1	Advance Control Engineering
EL 415.2	Digital Signal Processing	EL 423.2	Neural Network & Fuzzy Logic	EL 424.2	Electrical Estimation and Installation
EL 415.3	Programmable Logic Control and SCADA	EL 423.3	Advance Electrical Drives	EL 424.3	Instrumentation Process Control & Robotics
EL 415.4	High Voltage Engineering	EL 423.4	Smart Grid Technology	EL 424.4	Power System Dynamics and stability

Note –

- Batch size for the BE practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining student exceeds 7, then a new batch shall be formed.
- Vocational Training (evaluated at B.E. Part-I) of minimum 15 days shall be completed in any vacation after S.E. Part-II but before B.E. Part-I & and evaluated on the basis of presentation as well as training report.
- Student shall select one Self Learning Module at T.E. Part I and T.E. Part II each from Technical and Humanities and Social
- Sciences Group with at least one Self Learning Module from the Humanities and Social Sciences Group
- Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology
- Minimum four assignments for Self-Learning Modules at T.E. Part I and T.E. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department
- Project group for T.E. (Electrical) Part II Mini Project shall not be of more than three student
- Project group for B.E. (Electrical) Part I and Part II shall not be of more than FOUR student.
- ICA shall be a continuous process based on student's performance in – class tests, assignments, homework, subject seminars,
  quizzes, laboratory books and their interaction and attendance for theory and lab sessions as applicable.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, **Tal.:** Pandharpur - 413 304, **Dist.:** Solapur (MH)
Contact No.: 9545553888, 9545553737, **E-mail :** coe@sveri.ac.in, **Website :** www.sveri.ac.in
Approved by **A.I.C.T.E.**, New Delhi and Afiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, **NAAC** A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Mechanical- Design Engineering			
Programme Code: 1-1408968333			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	M.Tech. Mechanical-Design Engineering-I	Yes (CBCS & Elective)	2018-19
2	M.Tech. Mechanical-Design Engineering-II	Yes (CBCS & Elective)	2019-2020

COLLEGE OF ENGINEERING PANDHARPUR

B. Range

PRINCIPAL
SVERI's College of Engineering,
Pandharpur

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

Revised Structure and Syllabus

CHOICE BASED CREDIT SYSTEM

Syllabus: Mechanical-Design Engineering

Name of the Course: M.Tech.- Semester I, II, III & IV

(Syllabus to be implemented from w.e.f. June 2018-19 & 2019-20)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

FACULTY OF SCIENCE & TECHNOLOGY

Curriculum for M. Tech.(Mechanical-Design Engineering)

Four Semester Course

Choice Based Credit System (CBCS) - (WEF 2018-19)

Semester I: Theory /Tutorial/ Lab Courses

Course Code	*Name of the Course*	*Engagement Hours*			*Credits*	*SA*	*FA*		*Total*
		L	*T*	*P*		*ESE*	*ISE*	*ICA*	
1	Advanced Stress Analysis	3	-	-	3	70	30	-	100
2	Advanced Vibrations and Acoustics	3	-	-	3	70	30	-	100
3	Industrial Instrumentation	3	-	-	3	70	30	-	100
4	**Elective- I** 1. Computational Techniques in Design Engineering 2.Reliability Engineering 3.Mechanical System Design 4. Computer Aided Design	3	-	-	3	70	30	-	100
5	Research Methodology and IPR©	3	-	-	3	70	30	-	100
6	Advanced Vibrations and Acoustics Lab	-	-	2	1	-	-	50	50
7	Industrial Instrumentation Lab	-	-	2	1	-	-	50	50
8	Seminar –I		2		2			50	50
	Total	**15**	**2**	**4**	**19**	**350**	**150**	**150**	**650**

L Lecture
T Tutorial
P Lab Session

FA Formative Assessment
SA Summative Assessment
ESE End Semester Examination
ISE In Semester Evaluation
ICA Internal Continuous Evaluation

© - This Course is common for M. Tech. (Civil- Structural Engineering) and M. Tech. (Mechanical-Design Engineering)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

FACULTY OF SCIENCE & TECHNOLOGY

Curriculum for M. Tech. (Mechanical-Design Engineering)

Four Semester Course

Choice Based Credit System (CBCS)- (WEF 2018-19)

Semester II: Theory /Tutorial/ Lab Courses

Course Code	*Name of the Course*	*Engagement Hours*			*Credits*	*SA*	*FA*		*Total*
		L	*T*	*P*		*ESE*	*ISE*	*ICA*	
1	Finite Element Method	3	-	-	3	70	30		100
2	Advanced Design Engineering	3	-	-	3	70	30		100
3	Industrial Product Design	3	-	-	3	70	30		100
4	**Elective- II** 1. Theory and Analysis of Composite Materials 2. Engineering Design Optimization 3. Industrial Tribology 4. Advanced Engineering Materials	3	-	-	3	70	30		100
5	**Elective- III** 1. Engineering Fracture Mechanics 2. Project Management 3. Design for Manufacture and Assembly 4. Analysis and Synthesis of Mechanisms and Machine	3	-	-	3	70	30		100
6	Finite Element Method Lab	-	-	2	1	-		50	50
7	Product Design Lab	-	-	2	1	-		50	50
8	Seminar-II	-	2	-	2	-	-	50	50
	Total	**15**	**2**	**4**	**19**	**350**	**150**	**150**	**650**

L Lecture
T Tutorial
P Lab Session

FA Formative Assessment
SA Summative Assessment
ESE End Semester Examination
ISE In Semester Evaluation
ICA Internal Continuous Evaluation

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

Revised Structure and Syllabus

CHOICE BASED CREDIT SYSTEM

Syllabus: Mechanical-Design Engineering

Name of the Course: M.Tech.- Semester I, II, III & IV

(Syllabus to be implemented from w.e.f. June 2018-19 & 2019-20)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

FACULTY OF ENGINEERING & TECHNOLOGY

Curriculum for M. Tech. (Mechanical-Design Engineering)

Four Semester Course

Choice Based Credit System (CBCS) - (WEF 2019-20)

Semester III: Theory /Tutorial/ Lab Courses

Course Code	*Name of the Course*	*Engagement Hours*			*Credits*	*SA*	*FA*		*Total*
		L	*T*	*P*		*ESE*	*ISE*	*ICA*	
Dissertation	Lab Practices	-	-	2	2	-	-	50	50
	Open Elective	3	-	-	3	70	30	-	100
	Dissertation Phase I : Synopsis Submission Seminar*	-	-	2	2	-	50	-	50
	Dissertation Phase II : Progress Seminar	-	-		8	100	200	-	300
Total		**3**	**-**	**4**	**15**	**170**	**280**	**50**	**500**
Note:- * indicates student engagement against which faculty contact hour is 2 hours per candidate									

L Lecture
T Tutorial
P Lab Session

FA Formative Assessment
SA Summative Assessment
ESE End Semester Examination
ISE In Semester Evaluation
ICA Internal Continuous Evaluation

List of open Elective

1. Business Analytics
2. Operation Research
3. Cost Management of Engineering Projects
4. Non conventional Energy

- For all activities related to dissertation Phase I (synopsis submission seminar and progress seminar) student must interact regularly every week with the advisor.
- Synopsis submission seminar shall cover detailed synopsis of the proposed work. Student shall submit Synopsis of the Dissertation Work only after delivering this seminar.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation.
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any.
- Lab Practice shall include any of the below activities as recommended by Advisor and student shall submit a report after completion of the activity to Advisor along with other details if any. Software / hardware assignments, learning new software, literature survey, filed work, industrial training etc. related to dissertation work.
- Details of modes of assessment of seminar and dissertation shall be as specified in 7(III) of PG Engineering Ordinance of Solapur University, Solapur.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

FACULTY OF ENGINEERING & TECHNOLOGY

Curriculum for M. Tech. (Mechanical-Design Engineering)
Four Semester Course
Choice Based Credit System (CBCS) - (WEF 2019-20)

Semester IV: Laboratory / Tutorial Courses

Course Code	*Name of the Course*	*Engagement Hours*			*Credits*	*SA*	*FA*		*Total*
		L	*T*	*P*		*ESE*	*ISE*	*ICA*	
Dissertation	**Dissertation Phase –III** Progress Report presentation and submission		-	4	3	-	-	100	100
	Dissertation Phase –IV Final presentation and submission of report	-	-	2	6	-	-	100	100
	Dissertation Viva voice	-	-	-	6	200	-	-	200
Total		**-**	**-**	**6**	**15**	**200**		**200**	**400**
Note:- * indicates student engagement against which faculty contact hour is 3 hours per candidate									

L	Lecture	**FA**	Formative Assessment
T	Tutorial	**SA**	Summative Assessment
P	Lab Session	**ESE**	End Semester Examination
		ISE	In Semester Evaluation
		ICA	Internal Continuous Evaluation

- For all activities related to dissertation Phase III, student must interact regularly every week with the advisor.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation.
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the faculty advisor along with other details if any.
- Details of modes of assessment of seminar and dissertation shall be as specified in 7(III) of PG Engineering Ordinance of Solapur University, Solapur.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, Tal.: Pandharpur - 413 304, Dist.: Solapur (MH)
Contact No.: 9545553888, 9545553737, E-mail : coe@sveri.ac.in, Website : www.sveri.ac.in
Approved by A.I.C.T.E., New Delhi and Affiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, NAAC A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref :-

Date :-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Computer Science & Engineering (PG)			
Programme Code: 1-1408968341			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	M.Tech. Computer Science & Engineering -I	Yes (CBCS & Elective)	2018-19
2	M.Tech. Computer Science & Engineering -II	Yes (CBCS & Elective)	2019-2020

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COLLEGE OF ENGINEERING PANDHARPUR

PRINCIPAL
SVERI's College of Engineering,
Pandharpur

SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING

CBCS Syllabus for

First Year M.Tech.
w.e.f. Academic Year 2018-19

SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF ENGINEERING & TECHNOLOGY
STRUCTURE OF M.Tech. (COMPUTER SCIENCE & ENGINEERING)
Four Semester Course
Choice Based Credit System Syllabus wef 2018 -19
Semester-I

Sr. No.	Subject	Teaching Scheme				Credits				Evaluation Scheme				
		L	T	P	Total	Credits (L)	Credits (T)	Credits (P)	Total Credits	Scheme	Theory Marks	ICA- P Marks	ICA-T Marks	Total Marks
1	Applied Algorithms	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
2	Theory of Computation	3	1	-	4	3.0	1.0		4.0	ISE	30	--	25	125
										ESE	70	--	--	
3	Data Mining	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
4	Machine Learning©	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
5	Elective I	3	1	-	4	3.0	1.0	-	4.0	ISE	30	--	25	125
										ESE	70	--	--	
6	Seminar- I	-	-	2	2	-	-	2.0	2.0	ISE	--	50	--	50
										ESE	--	--	--	
Total		**15**	**2**	**8**	**25**	**15.0**	**2.0**	**5.0**	**22.0**		**500**	**125**	**50**	**675**

Note : *L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment*

© - This Course is common for M.Tech. (Electronics Engineering) and M.Tech. (Computer Science & Engineering)

SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF ENGINEERING & TECHNOLOGY
STRUCTURE OF M.Tech. (COMPUTER SCIENCE & ENGINEERING)
Four Semester Course
Choice Based Credit System Syllabus wef 2018-19
Semester-II

Sr. No.	Subject	Teaching Scheme				Credits				Evaluation Scheme				
		L	T	P	Total	Credits (L)	Credits (T)	Credits (P)	Total Credits	Scheme	Theory Marks	ICA- P Marks	ICA-T Marks	Total Marks
1	Research Methodology & IPR©	3	1	-	4	3.0	1.0	-	4.0	ISE	30	--	25	125
										ESE	70	--	--	
2	Internet of Things	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
3	Internet Routing Algorithm	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
4	Elective – II	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
5	Elective – III	3	1	-	4	3.0	1.0	-	4.0	ISE	30	--	25	125
										ESE	70	--	--	
6	Seminar- II	-	-	2	2	-	-	2.0	2.0	ISE	--	50	--	50
										ESE	--	--	--	
Total		**15**	**2**	**8**	**25**	**15.0**	**2.0**	**5.0**	**22.0**		**500**	**125**	**50**	**675**

Note : *L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment*
© - This Course is common for M.Tech. (Electronics Engineering) and M.Tech. (Computer Science & Engineering)

- Seminar I shall be delivered on a topic related to student's broad area of interest for dissertation work selected in consultation with the advisor after compiling the information from the latest literature. Student shall deliver seminar using modern presentation tools. A hard copy of the report (as per format specified by the department) shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any.

- Seminar II shall be delivered on a topic related to student's particular area of interest for dissertation work selected in consultation with the advisor after compiling the information from the latest literature. Student shall deliver seminar using modern presentation tools. A hard copy of the report (as per format specified by the department) shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any.

- **List of elective courses for semester I and II -**

Sr. No.	***Elective - I***	***Elective – II***	***Elective – III***
1	Natural Language Processing	Reinforcement Learning	Wireless Sensor Network
2	Soft Computing	Advanced Cloud Computing	Infrastructure Management
3	Computer Vision	High Performance Computing	Real Time Operating System
4	Object Oriented Software Engineering	Software Defined Network	Advances in Database Systems

- Courses may be added in the list of Elective I, Elective II and Elective III as and when required.

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: COMPUTER SCIENCE ENGINEERING

Name of the Course: M.Tech.- Semester I, II, III & IV

(Syllabus to be implemented from w.e.f. 2018-19 & 2019-20)

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

M.Tech. (COMPUTER SCIENCE & ENGINEERING)

Four Semester Course

Choice Based Credit System

Semester-III

Sr. No.	Subject	Teaching Scheme		Credits			Evaluation Scheme			
		L	P	Credits (L)	Credits (P)	Total Credits	Scheme	Theory Marks	ICA-P Marks	Total Marks
1	Self Learning Course	$	--	3.0	--	3.0	ISE	30	--	100
							ESE	70	--	
2	Open Elective Course#	3	--	3.0	--	3.0	ISE	30	--	100
							ESE	70	--	
3	Dissertation Phase-I : Synopsis Submission Seminar*		@4	--	3.0	3.0	ISE	--	100	100
							ESE	--		
4	Dissertation Phase-II : ICA*	--	--	--	3.0	3.0	ISE	--	100	100
							ESE	--		
5	Dissertation Phase-II : Progress Seminar*	--	--	--	3.0	3.0	ISE	--		100
							ESE	--	100	
	Total	**3**	**4**	**6.0**	**9.0**	**15.0**		**200**	**300**	**500**

L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE – End Semester Evaluation, ICA- Internal Continuous Assessment

Note -

- **$-** Being a Self Learning Course, student shall prepare for examination as per specified syllabus
- ***-** For all activities related to dissertation Phase I (synopsis submission seminar and progress seminar) student must interact regularly every week with the adviser.
- # - This course is common for all branches of Technology (i.e. for all M.Tech. Programs)
- Synopsis submission seminar shall cover detailed synopsis of the proposed work. Student shall submit synopsis of the dissertation work only after delivering this seminar.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the department before delivering the seminar. A PDF copy of the report must be submitted to the adviser along with other details if any
- @ Indicates contact hours of students for interaction with adviser.
- Details of modes of assessment of seminar and dissertation shall be as specified in 7(III) of PG Engineering Ordinance of P.A.H. Solapur University, Solapur

Self Learning Course	
Sr. No.	Subject
1	Big Data
2	Computer Network Administration
3	Open Source Technologies
4	Usability Engineering

Open Elective Course	
Sr. No.	Subjects
1	Business Analytics
2	Operation Research
3	Cost Management of Engineering Projects
4	Non Conventional Energy

- New Self Learning Courses and New Open Elective Courses may be added as and when required

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
M.Tech. (COMPUTER SCIENCE & ENGINEERING)
Four Semester Course
Choice Based Credit System
Semester-IV

Sr. No.	Subject	Teaching Scheme		Credits			Evaluation Scheme		
		L	P	Credits (L)	Credits (P)	Total Credits	Scheme	ICA-P Marks	Total Marks
1	Dissertation Phase-III : Progress Seminar #	--	@4	--	3.0	3.0	ISE	100	100
2	Dissertation Phase-IV : #	--	@2	--	6.0	6.0	--	200	200
3	Final Submission of the Dissertation and Viva-voce	--	--	--	6.0	6.0	ESE	200	200
	Total	**--**	**6**	**--**	**15.0**	**15.0**		**500**	**500**

Note –

- #- For all activities related to dissertation Phase III and Phase IV student must interact regularly every week with the adviser.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation.
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the adviser along with other details if any.
- Student must submit a hard copy of Project Report to the department
- @ indicates contact hours of the student for interaction with the adviser.
- Details of modes of assessment of seminar and dissertation shall be as specified in 7 (III) of PG Engineering Ordinance of P.A.H. Solapur University, Solapur.

Shri Vithal Education & Research Institute's
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Approved by **A.I.C.T.E.**, New Delhi and Afiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, **NAAC** A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Electronics & Tele-communication Engineering (PG)			
Programme Code: 1-1408968335			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	M.Tech. Electronics & Tele-communication Engineering -I	Yes (CBCS & Elective)	2018-19
2	M.Tech. Electronics & Tele-communication Engineering -II	Yes (CBCS & Elective)	2019-2020

COLLEGE OF ENGINEERING PANDHARPUR

B-Range

PRINCIPAL
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Pandharpur

SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

ELECTRONICS and TELECOMMUNICATION ENGINEERING

CBCS Syllabus for

First Year M. Tech.

w.e.f. Academic Year 2018-19

SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF ENGINEERING & TECHNOLOGY

STRUCTURE of M.Tech. (ELECTRONICS and TELECOMMUNICATION ENGINEERING)

Four Semester Course

Choice Based Credit System (CBCS) Syllabus w.e.f. A.Y. 2018 -19

Semester-I

Sr. No.	*Subject*	*Teaching Scheme*				*Credits*				*Evaluation Scheme*				
		L	*T*	*P*	*Total*	*Credits (L)*	*Credits (T)*	*Credits (P)*	*Total Credits*	*Scheme*	*Theory Marks*	*ICA- P Marks*	*ICA-T Marks*	*Total Marks*
1	Research Methodology & IPR	3	1	-	4	3.0	1.0	-	4.0	ISE	30	--	25	125
										ESE	70	--	--	
2	Antenna Design and Application	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
3	Soft Computing Methods	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
4	Advanced Network System	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
5	Elective I	3	1	-	4	3.0	1.0	-	4.0	ISE	30	--	25	125
										ESE	70	--	--	
6	Seminar- I	-	-	2	2	-	-	2.0	2.0	ISE	--	50	--	50
										ESE	--	--	--	
Total		**15**	**2**	**8**	**25**	**15.0**	**2.0**	**5.0**	**22.0**		**500**	**125**	**50**	**675**

Note: *L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment*

SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF ENGINEERING & TECHNOLOGY

STRUCTURE of M.Tech. (ELECTRONICS and TELECOMMUNICATION ENGINEERING)
Four Semester Course

Choice Based Credit System (CBCS) Syllabus w.e.f. A.Y. 2018-19
Semester-II

Sr. No.	*Subject*	*Teaching Scheme*				*Credits*				*Evaluation Scheme*				
		L	*T*	*P*	*Total*	*Credits (L)*	*Credits (T)*	*Credits (P)*	*Total Credits*	*Scheme*	*Theory Marks*	*ICA- P Marks*	*ICA-T Marks*	*Total Marks*
1	Advanced Internet of Things	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
2	RF Circuit Design	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
3	Artificial Intelligence & Machine Learning	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
4	Cryptography and Network Security	3	1	-	4	3.0	1.0	-	4.0	ISE	30	--	25	125
										ESE	70	--	--	
5	Elective – II	3	1	-	4	3.0	1.0	-	4.0	ISE	30	--	25	125
										ESE	70	--	--	
6	Seminar- II	-	-	2	2	-	-	2.0	2.0	ISE	--	50	--	50
										ESE	--	--	--	
Total		**15**	**2**	**8**	**25**	**15.0**	**2.0**	**5.0**	**22.0**		**500**	**125**	**50**	**675**

Note : *L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment*

- Seminar I shall be delivered on a topic related to student's broad area of interest for dissertation work selected in consultation with the advisor after compiling the information from the latest literature. Student shall deliver seminar using modern presentation tools. A hard copy of the report (as per format specified by the department) shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any.

- Seminar II shall be delivered on a topic related to student's particular area of interest for dissertation work selected in consultation with the advisor after compiling the information from the latest literature. Student shall deliver seminar using modern presentation tools. A hard copy of the report (as per format specified by the department) shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any.

- **List of elective courses for semester I and II -**

Sr.	***Elective - I***	***Elective – II***
1.	Biomedical Signal Processing	Communication System Design
2.	Advanced Embedded System	Multimedia Processing
3.	Automotive Electronics	Automation and Industrial Robotics

- Courses may be added in the list of Elective I and II as and when required

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: ELECTRONICS & TELECOMMUNICATION ENGINEERING

Name of the Course: M.Tech.- Semester I, II, III & IV

(Syllabus to be implemented from w.e.f. 2018-19 & 2019-20)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

FACULTY OF SCIENCE & TECHNOLOGY

STRUCTURE OF M.Tech.(ELECTRONICS and TELECOMMUNICATION ENGINEERING)

Four Semester Course

Choice Based Credit System Syllabus

Semester-III

Sr. No.	*Subject*	*Teaching Scheme*		*Credits*			*Evaluation Scheme*			
		L	*P*	*Credits (L)*	*Credits (P)*	*Total Credits*	*Scheme*	*Theory Marks*	*ICA Marks*	*Total Marks*
1	Self Learning Course	$	-	3.0	-	3.0	ISE	30	--	100
							ESE	70		
2	Open Elective Course#	3		3.0		3.0	ISE	30		100
							ESE	70		
3	Dissertation Phase I : Synopsis Submission Seminar*		@4		3.0	3.0	ISE	--	100	100
							ESE	--	--	
4	Dissertation Phase II : ICA*		-		3.0	3.0	ISE	--	100	100
							ESE	--	--	
5	Dissertation Phase II Progress Seminar*		-		3.0	3.0	ISE	--		100
							ESE	--	100	
Total		**3**	**4**	**6.0**	**9.0**	**15.0**		**200**	**300**	**500**

L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment

Note -

- $- Being a Self Learning Course, student shall prepare for examination as per specified syllabus
- *- For all activities related to dissertation Phase I (synopsis submission seminar and progress seminar) student must interact regularly every week with the advisor.

- # - This course is common for all branches of Technology (i.e. for all M.Tech. Programs)

- Synopsis submission seminar shall cover detailed synopsis of the proposed work. Student shall submit synopsis of the dissertation work only after delivering this seminar.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any
- @ Indicates contact hours of students for interaction with advisor.
- Details of modes of assessment of seminar and dissertation shall be as specified in 7(III) of PG Engineering Ordinance of Solapur University, Solapur

List Self Learning Courses -

Sr.	*Self Learning Subject*
1	Programmable System on Chip (PSoC)
2	Remote Sensing
3	Multimedia Network

List of Open Elective Courses-

Sr.	*Self LearningSubject*
1	Business Analytics
2	Operation Research
3	Cost Management of Engineering Projects
4	Non conventional Energy

- New Self Learning Courses and New Open Elective Courses may be added as and when required

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

FACULTY OF SCIENCE & TECHNOLOGY

STRUCTURE OF M.Tech.(ELECTRONICS and TELECOMMUNICATION ENGINEERING)

Four Semester Course

Choice Based Credit System Syllabus

Semester-IV

Sr. No.	*Subject*	*Teaching Scheme*			*Credits*			*Evaluation Scheme*		
		L	*P*	*Total*	*Credits (L)*	*Credits (P)*	*Total Credits*	*Scheme*	*ICA Marks*	*Total Marks*
1	Dissertation Phase III : Progress Seminar #	-	4@	4	-	3.0	3.0	ISE	100	100
2	Dissertation Phase IV: #	-	2@	2	-	6.0	6.0	--	200	200
3	Final Submission of the Dissertation and Viva –Voce	-	-	-	-	6.0	6.0	ESE	200	200
	Total	**-**	**-**	**6**	**--**	**15.0**	**15.0**	**-**	**500**	**500**

Note –

- #- For all activities related to dissertation Phase III & IV student must interact regularly every week with the advisor.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any.
- Student must submit a hard copy of Project Report to the department
- @ indicates contact hours of the student for interaction with the advisor
- Details of modes of assessment of seminar and dissertation shall be as specified in 7 (III) of PG Engineering Ordinance of Solapur University, Solapur.

Shri Vithal Education & Research Institute's
COLLEGE OF ENGINEERING, PANDHARPUR
P. B. No. 54, Gopalpur - Ranjani Road, Gopalpur, Tal.: Pandharpur - 413 304, Dist.: Solapur (MH)
Contact No.: 9545553888, 9545553737, E-mail : coe@sveri.ac.in, Website : www.sveri.ac.in
Approved by A.I.C.T.E., New Delhi and Afiliated to Punyashlok Ahilyadevi Holkar Solapur University, Solapur
NBA Accredited all eligible UG Programmes, NAAC A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

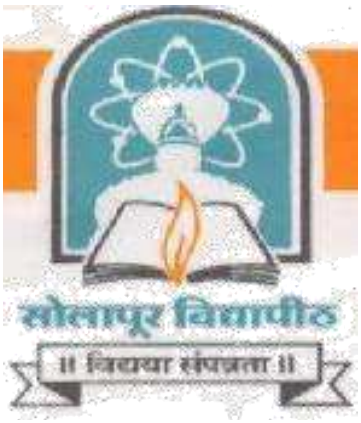
1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Civil -Structural Engineering (PG)			
Programme Code: 1-1408968343			
Sr. No.	Class Name	Status of implementation of CBCS / elective course system (Yes/No)	Year of implementation of CBCS / elective course system
1	M.Tech. Civil -Structural Engineering -I	Yes (CBCS & Elective)	2018-19
2	M.Tech. Civil -Structural Engineering -II	Yes (CBCS & Elective)	2019-2020

B-Range

COLLEGE OF ENGINEERING PANDHARPUR

PRINCIPAL
SVERI's College of Engineering
Pandharpur



SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech. CIVIL (STRUCTURAL ENGINEERING)

Choice Based Credit System Syllabus

w.e.f. Academic Year 2018-19

SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF ENGINEERING & TECHNOLOGY
STRUCTURE OF M.Tech. CIVIL (STRUCTURAL ENGINEERING)
Four Semester Course
Choice Based Credit System Syllabus wef 2018 -19
Semester-I

Sr. No.	*Subject*	*Teaching Scheme*				*Credits*				*Evaluation Scheme*				
		L	*T*	*P*	*Total*	*Credits (L)*	*Credits (T)*	*Credits (P)*	*Total Credits*	*Scheme*	*Theory Marks*	*ICA- P Marks*	*ICA-T Marks*	*Total Marks*
1	Advanced structural analysis	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
2	Advanced solid Mechanics	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
3	Structural dynamics	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
4	Elective- I	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
5	Research Methodology and IPR©	3	-	-	3	3	-	-	3	ISE	30	--	-	100
										ESE	70	--	--	
6	Structural design Lab	-		4	4	-	-	2	2	ISE	50	50	--	100
										ESE	--	--	--	
Total		**15**	**4**	**4**	**23**	**15**	**4**	**2**	**21**		**550**	**50**	**100**	**700**

Note : *L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment*
© - This Course is common for M.Tech. (Civil- Structural Engineering) and M.Tech. (Mechanical-Design Engineering)

SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF ENGINEERING & TECHNOLOGY
STRUCTURE OF M.Tech. CIVIL (STRUCTURAL ENGINEERING)
Four Semester Course
Choice Based Credit System Syllabus wef 2018-19
Semester-II

Sr. No.	*Subject*	*Teaching Scheme*				*Credits*				*Evaluation Scheme*				
		L	*T*	*P*	*Total*	*Credits (L)*	*Credits (T)*	*Credits (P)*	*Total Credits*	*Scheme*	*Theory Marks*	*ICA- P Marks*	*ICA-T Marks*	*Total Marks*
1	FEM in structural Engineering	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
2	Theory of plates and shells	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
3	Seismic design of multistoried buildings	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
4	Elective – II	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
5	Elective – III	3	1	-	4	3	1	-	4	ISE	30	--	25	125
										ESE	70	--	--	
6	Advanced concrete Lab	-	-	2	2	-	-	1	1	ISE		25	--	25
										ESE	--	--	--	
7	Mini project	-	-	2	2	-		2	2	ISE	--	50	--	50
										ESE	--	--	--	
Total		**15**	**5**	**4**	**24**	**15**	**5**	**3**	**23**		**500**	**75**	**125**	**700**

Note : *L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment*

- **List of elective courses for semester I and II -**

Sr. No.	***Elective - I***	***Sr. No.***	***Elective – II***	***Sr. No.***	***Elective – III***
1	Advanced Design of Concrete Structures	1	Design of Prestressed Concrete Structures	1	Theory of Structural Stability
2	Design of Formwork	2	Structural Audits	2	Design of RCC Bridges
3	Advanced Design of Foundation	3	Concrete Composites	3	Advanced Steel Design
4	Structural Optimization	4	Design of Industrial Structures	4	Soil Structure Interaction

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: CIVIL STRUCTURAL ENGINEERING

Name of the Course: M.Tech.- Semester I, II, III & IV

(Syllabus to be implemented from w.e.f. 2018-19 & 2019-20)

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
STRUCTURE OF M.Tech. CIVIL (STRUCTURAL ENGINEERING)
Four Semester Course
Choice Based Credit System Syllabus w.e.f. 2019-20
Semester-III

Sr. No.	*Subject*	*Teaching Scheme*			*Credits*			*Evaluation Scheme*			
		L	*P*	*Total*	*Credits (L)*	*Credits (P)*	*Total Credits*	*Scheme*	*Theory Marks*	*ICA- P Marks*	*Total Marks*
1	Lab. Practice	-	4	4	-	2	2	ISE	--	50	50
								ESE	--	--	
2	Open Elective Course#	3	-	3	3		3	ISE	30	--	100
								ESE	70	--	
3	Dissertation Phase I : Synopsis Submission Seminar*		@4	4	-	2	2	ISE	--	50	50
								ESE	--	--	
4	Dissertation Phase II : ICA*				-	4	4	ISE	--	100	100
								ESE	--	--	
5	Dissertation Phase II Progress Seminar*				-	4	4	ISE	--	--	100
								ESE	--	100	
Total		**3**	**8**	**11**	**3**	**12**	**15**		**100**	**300**	**400**

L- Lectures, P-Practical, T-Tutorial, ISE- In Semester Evaluation, ESE- End Semester Evaluation, ICA- Internal Continuous Assessment

Note –

- Lab Practice shall include any of the below activities as recommended by Advisor and student shall submit a report after completion of the activity to Advisor along with other details if any. Software / hardware assignments, learning new software, literature survey, filed work, industrial training etc. related to dissertation work.
- *- For all activities related to dissertation Phase I (synopsis submission seminar and progress seminar) student must interact regularly every week with the advisor.
- # - This course is common for all branches of Technology (i.e. for all M.Tech. Programs)
- Synopsis submission seminar shall cover detailed synopsis of the proposed work. Student shall submit synopsis of the dissertation work only after delivering this seminar.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any
- @ Indicates contact hours of students for interaction with advisor.
- Details of modes of assessment of seminar and dissertation shall be as specified in 7(III) of PG Engineering Ordinance of Solapur University, Solapur

- **List of open Elective Courses-**

Sr.	***Subject***
1	Business Analytics
2	Operation Research
3	Cost Management of Engineering Projects
4	Non conventional Energy

- New Open Elective Courses may be added as and when required

PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR
FACULTY OF SCIENCE & TECHNOLOGY
STRUCTURE OF M.Tech. CIVIL (STRUCTURAL ENGINEERING)
Four Semester Course
Choice Based Credit System Syllabus w.e.f. 2019-20
Semester-IV

Sr. No.	*Subject*	*Teaching Scheme*			*Credits*			*Evaluation Scheme*		
		L	*P*	*Total*	*Credits (L)*	*Credits (P)*	*Total Credits*	*Scheme*	*ICA- P Marks*	*Total Marks*
1	Dissertation Phase III : Progress Seminar #	-	4@	4	-	3	3	ISE	100	100
2	Dissertation Phase IV: Final presentation and submission of report #	-	2@	2	-	6	6	--	200	200
3	Dissertation Viva – Voce	-	-	-	-	6	6	ESE	200	200
Total		**-**	**6**	**6**	**--**	**15**	**15**	**-**	**500**	**500**

Note –

- #- For all activities related to dissertation Phase III & IV student must interact regularly every week with the advisor.
- Progress seminar shall be delivered capturing details of the work done by student for dissertation
- Student shall deliver all seminars using modern presentation tools. A hard copy of the report shall be submitted to the Department before delivering the seminar. A PDF copy of the report must be submitted to the advisor along with other details if any.
- Student must submit a hard copy of Project Report to the department
- @ indicates contact hours of the student for interaction with the advisor
- Details of modes of assessment of seminar and dissertation shall be as specified in 7 (III) of PG Engineering Ordinance of Solapur University, Solapur.

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NBA Accredited all eligible UG Programmes, **NAAC** A+ Accredited Institute, ISO 9001: 2015 Certified Institute.
Accredited by Institution of Engineers (India) & TCS.

Ref.:- Date:-

1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : Master of Business Administration (MBA)			
Programme Code: 1-1408968337			
Sr. No.	**Class Name**	**Status of implementation of CBCS / elective course system (Yes/No)**	**Year of implementation of CBCS / elective course system**
1	Master of Business Administration-I	Yes (CBCS & Elective)	2020-2021
2	Master of Business Administration-II	Yes (CBCS & Elective)	2021-2022

COLLEGE OF ENGINEERING PANDHARPUR

B. Range

PRINCIPAL
SVERI's College of Engineering,
Pandharpur

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Commerce & Management

Choice Based Credit System

Syllabus: Master of Business Administration (MBA)

(w. e. f. June 2020)

MASTER OF BUSINESS ADMINISTRATION
(M. B. A. Part I Sem. - I and II) Semester Pattern
(Choice Based Credit System) June 2020

1. Introduction:

Considering the current requirement and present scenario of globalization and emerging trends in the Industry, Information Technology, there is need to make students aware and synchronize with the skills required in the industry. It is necessary to make changes in present curriculum of MBA.

2. A. Basic objectives

The basic objectives of an M.B.A. course are-

1. To provide competent young men and women with necessary knowledge, skills, values and attitudes to occupy positions of management and administration in business.
2. To impart the students latest and relevant knowledge from the field of management theory and practice.
3. To provide opportunities to the students for developing necessary managerial skills.
4. To impart/ develop the right kind of values and attitude to function effectively in Managerial/ administrative positions.
5. The course is conducted with semester system which includes Four semesters with following purposes:
   a. **Hard core** subjects provide Foundation of Management.
   b. **Soft core** subjects focus on preliminary knowledge to enhance specific skills and a student gets an opportunity to choose amongst the group of subjects.
   c. **Skill core** subjects focus on in-depth knowledge and practical approach with the subjects. It aims to nurturing student's proficiency and skills.
   d. **Open Elective** A subject elective course chosen generally, with an intention to seek cross-functional exposures is called Open Elective.

B. Program Educational Outcomes

At the end of MBA program student should take of either of following.

1. Managerial decision making through the application of knowledge of management discipline
2. Set up business enterprise and manage diversified growth of entrepreneurship.

C. Program Outcomes:

At the end of MBA program students should be with following abilities.

1. Recognize the functioning of business opportunities involvement of business enterprises
2. and exploring the entrepreneurial opportunities.
3. Develop skills on analyzing the business data application of relevant analysis and problem solving.
4. Demonstrate a global outlook with the ability to identify aspects of the global business and cross cultural understanding
5. Identify the contemporary social problems, exploring the opportunities for social entrepreneurship, designing business solutions and demonstrate ethical standards in organizational decision making.
6. Develop effective and oral communication especially in business applications, with the use of appropriate technology.

3. Eligibility for Admission

1. Candidate should have passed with minimum 50% marks in aggregate (45% marks in case of Backward class candidates from Maharashtra State only) in any full time Bachelor's Degree of Minimum 3 years duration in any discipline recognized by Association of Indian Universities.
2. Obtained score in one of the following CET examinations conducted by the Competent Authority. CET conducted by the Competent Authority, MBA/MMS CET by Maharashtra State Competent Authority, Common Admission Test conducted by Indian Institute of Management (CAT) and Common Management Aptitude Test Conducted by All India Council for Technical Education (CMAT) or Any other CET exams conducted by National level Agencies / institutes and as notified by State CET Cell and DTE to be eligible for Admission to MBA/MMS in the state.
3. Candidate should have completed the admission related process as prescribed by the Competent Authority for Common Admission Process (CAP) in the state.

4. Choice Based Credit System

With the view to ensure worldwide recognition, acceptability, horizontal as well as vertical mobility for students completing post graduate degree, the Solapur University is implementing **Choice Based Credit System** (CBCS) of Evaluation at Postgraduate level.

CBCS offers wide ranging choice for students to offer courses based on their aptitude and their career goals. CBCS works on the fundamental premise where students are matured individuals capable of making their own decisions.

Credit is a numerical value that indicates student's work load (Lectures, Seminars, Assignments, Group Exercises, seminars, mini projects etc.) to complete a course unit. In most of the universities 15 contact hours constitute one credit. The contact hours are transformed into Credits. As per present norms, there are 4 contact hours per paper (subject) per week which works out to be 60 contact hours per paper (subject) per semester.

In PAH Solapur University, for M.B.A-I, there are 8 subjects for each semester and each subject has 4 contact hours per week. Therefore, total contact hours per week are 32 for each class. The evaluation process includes an 80 + 20 pattern wherein the candidate has to appear for University Evaluation for 80 marks and a Continuous Internal Evaluation of 20 marks. This format is applicable for theory as well as practical subjects.

1. MBA Course Structure:

MBA COURSE STRUCTURE FOR COLLEGE & UNIVERSITY CAMPUS
Choice Based Credit System w.e.f. 2020-21

First Semester

Paper Code	Title of the Paper	Semester Exam			No. of weekly lectures	Credits
		UP	IA	Total		
Hard Core						
101	Principles of Management	80	20	100	4	4
102	Financial Accounting	80	20	100	4	4
103	Managerial Economics	80	20	100	4	4
104	Organizational Behaviour	80	20	100	4	4
105	Business Statistics	80	20	100	4	4
Soft Core (Select Any Two Subjects)						
106	Computer Operations And Management	80	20	100	4	4
107	Business Law.	80	20	100	4	4
108	Disaster Management	80	20	100	4	4
109	Banking Operations & Services	80	20	100	4	4
Skill Core						
110	Enhancing Business Communication Skills	80	20	100	4	4

Hard Core and Skill core subjects are compulsory subjects while students can choose **Any Two** subjects **From Soft Core**.

Second Semester

Paper Code	Title of the Paper	Semester Exam			No. of weekly lectures	Credits
		UP	IA	Total		
Hard Core						
111	Marketing Management	80	20	100	4	4
112	Financial Management	80	20	100	4	4
113	Human Resource Management	80	20	100	4	4
114	Production Management and Operational Research	80	20	100	4	4
115	Research Methodology	80	20	100	4	4
Soft Core (Select Any One Subjects)						
116	Event Management	80	20	100	4	4
117	Hospitality & Tourism Management	80	20	100	4	4
118	Logistics and Supply Chain Management	80	20	100	4	4
Skill Core						
119	Employability Skills	80	20	100	4	4
Open Elective						
120	Digital Business	80	20	100	4	4

Hard Core, Skill core and open Elective subjects are compulsory subjects where as students can choose **Any One** subject **from Soft Core**.

Third Semester

Paper Code	Title of the Paper	Semester Exam			No. of weekly lectures	Credits
		UP	IA	Total		
Hard Core						
121	Strategic Management	80	20	100	4	4
122	Management Accounting	80	20	100	4	4
123	Project Report	50	50	100	4	4
Elective Core						
124	Elective Subject I (Paper – I)	80	20	100	4	4
125	Elective Subject I (Paper – II)	80	20	100	4	4
126	Elective Subject II (Paper – I)	80	20	100	4	4
127	Elective Subject II (Paper – II)	80	20	100	4	4
Open Elective						
128	Entrepreneurship Development	80	20	100	4	4

Fourth Semester

Paper Code	Title of the Paper	Semester Exam			No. of weekly lectures	Credits
		UP	IA	Total		
Hard Core						
129	Business Ethics & Corporate Governance	80	20	100	4	4
130	Total Quality Management	80	20	100	4	4
Elective Core						
131	Elective Subject I (Paper – III)	80	20	100	4	4
132	Elective Subject I (Paper – IV)	80	20	100	4	4
133	Elective Subject 1 (Paper – V)	80	20	100	4	4
134	Elective Subject II (Paper – III)	80	20	100	4	4
135	Elective Subject II (Paper – IV)	80	20	100	4	4
136	Elective Subject II (Paper – V)	80	20	100	4	4

Dual Specialization Groups.

- **Elective Specializations:** The University offers Dual specialization**.** Student has to select **ANY TWO** of the Three Groups **A, B, C** and **ANY ONE** specialization subject from a selected group

Group	Elective Specialization
A	• Marketing Management
B	• Financial Management • Tourism and Hospitality Management • Production and Materials Management
C	• Human Resource Management • International Business Management • Banking Management • Systems Management • Agriculture & Co-operative Management

- **Elective Specializations:** Student has to select **ANY TWO** of the Three Groups **A, B, C** and **ANY ONE** Specialization from the selected groups.

Elective Specialization Groups with Subjects Papers:

Group	Specialization	Paper	Subject
A	**Marketing Management**	I	Brand Management
		II	Sales and Distribution Management
		III	Integrated Marketing Communications & Digital Marketing
		IV	Services and Retail Marketing
		V	International Marketing
B	**Financial Management**	I	Corporate Tax Management
		II	Financial Decision Analysis
		III	Financial System of India, Markets & Service.
		IV	Investment Management
		V	International Finance
	Tourism and Hospitality Management	I	Fundamentals of Hospitality Management
		II	Tourism and Travel Management
		III	Accommodation Management
		IV	Facility and Security Management
		V	Hospitality and tourism Marketing.
	Production and Materials Management	I	Purchasing and Inventory Management
		II	Logistics and Supply Chain Management
		III	Industrial Engineering
		IV	Quality Management
		V	World Class Manufacturing
C	**Human Resource Management**	I	Strategic Human Resource Management
		II	Human Resource Initiatives
		III	Industrial Relations and Labour Laws
		IV	Competence based HRM.
		V	International Human Resource Management
	International Business Management	I	International Business Environment
		II	Export Policy, Procedures and Documents
		III	International Marketing
		IV	EXIM Management
		V	International Logistics
	Banking Management	I	Banking Operations Management
		II	Indian Banking Structure
		III	E-Banking
		IV	Marketing of Financial Services
		V	Retail & Universal Banking

Group	Specialization	Paper	Subject
C	**Systems Management**	I	Management Information System
		II	ERP and SPD
		III	Relational Database Management System
		IV	Security And Control Information System
		V	Programming Concepts and Practices
	Agriculture & Co-operative Management	I	Fundamentals of Agriculture & Co-Operative Management
		II	Agricultural Marketing
		III	Agricultural Production Management
		IV	Agro- Processing Industries & Rural Industrialization
		V	International Trade And Agriculture

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

पुण्यश्लोक अहिल्यादेवी होळकर
सोलापूर विद्यापीठ
।। विद्यया संपन्नता ।।

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Commerce & Management

CHOICE BASED CREDIT SYSTEM

Syllabus: Master of Business Administion

Name of the Course: M.B.A. Part- II (Sem. III & IV)
(Syllabus to be implemented from w.e.f. June 2021)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

MBA Part II Syllabus (CBCS) w.e.f. 2021-22

Semester III						Semester IV					
Paper No.	**Subject**	**Weekly Theory**	**Internal Marks**	**Univ. Exam Marks**	**Total Marks**	**Paper No.**	**Subject**	**Weekly Theory**	**Internal Marks**	**Univ. Exam Marks**	**Total Marks**
17	Strategic Management	04	20	80	100	25	Business Ethics & Corporate Governance	04	20	80	100
18	Management Accounting	04	20	80	100	26	Quality Management	04	20	80	100
19	Entrepreneurship Development	04	20	80	100	*27	*Elective I - Paper III*	04	20	80	100
20	Project Report & Viva	--	50	50	100	*28	*Elective II - Paper-III*	04	20	80	100
*21	*Elective I - Paper I*	04	20	80	100	*29	*Elective I - Paper IV*	04	20	80	100
*22	*Elective II - Paper-I*	04	20	80	100	*30	*Elective II - Paper-IV*	04	20	80	100
*23	*Elective I - Paper II*	04	20	80	100	*31	*Elective I - Paper V*	04	20	80	100
*24	*Elective II - Paper-II*	04	20	80	100	*32	*Elective II - Paper-V*	04	20	80	100

Dual Specialization Groups.

Group	Elective Specialization
A	• Marketing Management
B	• Financial Management • Tourism and Hospitality Management • Production and Materials Management
C	• Human Resource Management • International Business Management • Banking Management • Systems Management • Agriculture & Co-operative Management

- **Elective Specializations:** The University offers Dual specialization**.** Student has to select **ANY TWO** of the Three Groups **A, B, C** and **ANY ONE** specialization subject from a selected group

Elective Specialization Groups with Subjects Papers:

Group	Specialization	Paper Code	Subject
A	**Marketing Management**	I	Brand Management
		II	Sales and Distribution Management
		III	Integrated Marketing Communications & Digital Marketing
		IV	Services and Retail Marketing
		V	International Marketing
B	**Financial Management**	I	Corporate Tax Management
		II	Financial Decision Analysis
		III	Financial System of India, Markets & Service.
		IV	Investment Management
		V	International Finance
	Tourism and Hospitality Management	I	Fundamentals of Hospitality Management
		II	Tourism and Travel Management
		III	Accommodation Management
		IV	Facility and Security Management
		V	Hospitality and tourism Marketing.
	Production and Materials Management	I	Purchasing and Inventory Management
		II	Logistics and Supply Chain Management
		III	Industrial Engineering
		IV	Quality Management
		V	World Class Manufacturing
C	**Human Resource Management**	I	Strategic Human Resource Management
		II	Human Resource Initiatives
		III	Industrial Relations and Labour Laws
		IV	Competence based HRM.
		V	International Human Resource Management
	International Business Management	I	International Business Environment
		II	Export Policy, Procedures and Documents
		III	International Marketing
		IV	EXIM Management
		V	International Logistics
	Banking Management	I	Banking Operations Management
		II	Indian Banking Structure
		III	E-Banking
		IV	Marketing of Financial Services
		V	Retail & Universal Banking

Elective Specialization Groups with Subjects Papers (*contd…*):

Group	Specialization	Paper	Subject
C	**Systems Management**	I	Management Information System
		II	ERP and SPD
		III	Relational Database Management System
		IV	Security And Control Information System
		V	Programming Concepts and Practices
	Agriculture & Co-operative Management	I	Fundamentals of Agriculture & Co-Operative Management
		II	Agricultural Marketing
		III	Agricultural Production Management
		IV	Agro- Processing Industries & Rural Industrialization
		V	International Trade And Agriculture