



**PUNYASHLOK AHILYADEVII 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
<b>Total</b>		<b>16</b>			<b>16</b>	<b>330</b>	<b>145</b>		<b>475</b>

● 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
<b>Total</b>				<b>12</b>	<b>7</b>			<b>225</b>	<b>225</b>
<b>Grand Total</b>		<b>16</b>	<b>1</b>	<b>12</b>	<b>23</b>	<b>330</b>	<b>145</b>	<b>225</b>	<b>700</b>
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
<b>Total</b>		<b>14</b>			<b>14</b>	<b>280</b>	<b>170</b>		<b>450</b>

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
<b>Total</b>				<b>14</b>	<b>8</b>	<b>50</b>		<b>200</b>	<b>250</b>
<b>Grand Total</b>		<b>14</b>	<b>1</b>	<b>14</b>	<b>22</b>	<b>330</b>	<b>170</b>	<b>200</b>	<b>700</b>
C127	Democracy, Elections and Good Governance *					<b>50</b>			<b>50</b>

- 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 (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*

<b>Theory Courses</b>										
<i>Course Code</i>	<i>Name of Theory Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>			
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>	<i>ICA</i>	<i>Total</i>
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
	<b>Sub Total</b>	<b>15</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15</b>	<b>150</b>	<b>350</b>		<b>500</b>
MEV21	Environmental Sciences	1	-	-	-	-	-	-	-	-

<b>Laboratory / Tutorial Courses</b>											
<i>Course Code</i>	<i>Name of Laboratory/Tutorial Course</i>	<i>Hrs./week</i>				<i>Credits</i>	<i>Examination Scheme</i>				
		<i>L</i>	<i>T</i>	<i>P</i>	<i>D</i>		<i>ISE</i>	<i>ESE</i>		<i>ICA</i>	<i>Total</i>
						<i>POE</i>		<i>OE</i>			
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
	<b>Sub Total</b>	<b>-</b>	<b>1</b>	<b>6</b>	<b>-</b>	<b>6</b>	<b>-</b>	<b>75</b>		<b>150</b>	<b>200</b>
	<b>Grand Total</b>	<b>15</b>	<b>1</b>	<b>6</b>	<b>4</b>	<b>21</b>	<b>150</b>	<b>425</b>		<b>150</b>	<b>725</b>

**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**

<b>Theory Courses</b>										
<b>Course Code</b>	<b>Name of Theory Course</b>	<b>Hrs./week</b>				<b>Credits</b>	<b>Examination Scheme</b>			
		<b>L</b>	<b>T</b>	<b>P</b>	<b>D</b>		<b>ISE</b>	<b>ESE</b>	<b>ICA</b>	<b>Total</b>
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
	<b>Sub Total</b>	<b>15</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15</b>	<b>150</b>	<b>350</b>		<b>500</b>
MEV22	Environmental Sciences	1	-	-	-	-	-	-	-	-

<b>Laboratory / Tutorial Courses</b>											
<b>Course Code</b>	<b>Name of Laboratory / Tutorial Course</b>	<b>Hrs./week</b>				<b>Credits</b>	<b>Examination Scheme</b>				
		<b>L</b>	<b>T</b>	<b>P</b>	<b>D</b>		<b>ISE</b>	<b>ESE</b>		<b>ICA</b>	<b>Total</b>
								<b>POE</b>	<b>OE</b>		
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
	<b>Sub Total</b>	<b>-</b>	<b>1</b>	<b>12</b>	<b>-</b>	<b>7</b>	<b>-</b>	<b>50</b>		<b>200</b>	<b>250</b>
	<b>Grand Total</b>	<b>15</b>	<b>1</b>	<b>12</b>		<b>22</b>		<b>400</b>		<b>200</b>	<b>750</b>



**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 and Technology

*Credit System structure of T.Y. B. Tech. Mechanical Engineering W.E.F. 2022-2023 [ Semester V ]*

### Semester V: Theory Courses

Course code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME 311	Design of Machine Elements	3	-	-	-	3	30	70	-	100
ME 312	CAD-CAM-CAE	3	-	-	-	3	30	70	-	100
ME 313	Metallurgy	3	-	-	-	3	30	70	-	100
ME 314	Industrial Engineering	3	-	-	-	3	30	70	-	100
ME 315 P	Professional Elective -III	3	-	-	-	3	30	70	-	100
ME 316	Advanced Programming Concepts – I(Python)	1	-	-	-	1				
SLH31	Self Learning -HSS	-	-	-	-	#2	-	50	-	50
	<b>Sub Total</b>	16	-	-	-	16	150	400	-	550

### Semester V: Laboratory / Tutorial Courses

Course code	Name of Laboratory /Tutorial Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE		ICA
							POE	OE		
ME 311	Design of Machine Elements	-	-	2	-	1	-	-	25	25
ME 312	CAD CAM CAE	-	-	2	-	1	-	-	25	25
ME 313	Metallurgy	-	-	2	-	1	-	25	25	50
ME 315 P	Professional Elective -III	-	-	2	-	1	-	-	25	25
ME 316	Advanced Programming Concepts - I(Python)	-	-	2	-	1	-	-	25	25
Me 317	Workshop Practice - II	-	-	2	-	1	-	-	50	50
ME 318	Metrology	-	-	2	-	1	-	25	25	50
	<b>Sub Total</b>	-	-	14	-	07	-	50	200	250
	<b>Grand Total</b>	16	-	14	-	23	150	450	200	800

**Note:**# Indicates credits over and above

**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 –III:** A. Gas Turbines, B. Tool Engineering, C. Industrial Hydraulics Pneumatics D. Mechanical Vibrations



# Punyashlok Ahilyadevi Holkar Solapur University, Solapur

## Faculty of Science and Technology

*Credit System structure of T.Y. B. Tech. Mechanical Engineering W.E.F. 2022-2023 [ Semester VI ]*

### Semester VI : Theory Courses

Course code	Name of Theory Course	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
ME 321	Transmission System Design	3	-	-	-	3	30	70	-	100
ME 322	Instrumentation and Control Engineering	3	-	-	-	3	30	70	-	100
ME 323	Heat Transfer	3	-	-	-	3	30	70	-	100
ME 324	Industrial & Quality Management	3	-	-	-	3	30	70	-	100
ME 325 P	Professional Elective - IV	3	-	-	-	3	30	70	-	100
ME 327	Advanced Programming Concepts – II(Java)	1	-	-	-	1	-	-	-	-
	<b>Sub Total</b>	<b>16</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>150</b>	<b>350</b>	<b>-</b>	<b>500</b>

### Semester VI : 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		
ME 321	Transmission System Design	-	-	2	-	1	-	-	25	25	50
ME 322	Instrumentation and Control Engineering	-	-	2	-	1	-	-	-	25	25
ME 323	Heat Transfer	-	-	2	-	1	-	25	-	25	50
ME 324	Industrial & Quality Management	-	1	-	-	1	-	-	-	25	25
ME 325 P	Professional Elective - IV	-	-	2	-	1	-	-	-	25	25
ME 326	Workshop Practice - III	-	-	2	-	1	-	-	-	50	50
ME 327	Advanced Programming Concepts – II (Java)	-	-	2	-	1	-	-	-	25	25
ME 328	Mini Project	-	1	-	-	1	-	-	-	50	50
	<b>Sub Total</b>		02	12	-	08	-	50		250	300
	<b>Grand Total</b>	<b>16</b>	<b>02</b>	<b>12</b>	<b>-</b>	<b>24</b>	<b>150</b>	<b>400</b>	<b>250</b>	<b>800</b>	

**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 – IV:** A. Project Management, B. Industrial Product Design C. Plastic Engineering, D. Railway Transportation System.

• **Note –**

1. Batch size for the practical /tutorial shall be of 15 students. On forming the batches, if the strength of remaining students exceeds 07, then a new batch shall be formed.
2. Industrial Training (evaluated at Final Year Sem.-I) of minimum 30 days shall be completed in any vacation after S.Y. Sem.-IV but before Final Year Sem.VII & the report shall be submitted and evaluated in Final Year Sem.-VII.
3. Students shall select one Self Learning Module at T.Y. Sem. V from Humanities and Social Sciences.
4. Curriculum for Humanities and Social Sciences Self Learning Modules is common for all under graduate programmes of faculty of Engineering and Technology.

**5. For T. Y. Sem. V**

A. Student can select a Self Learning Course from PAH Solapur University, Solapur HSS Course List and appear for its examination as and when conducted by PAH Solapur University, Solapur

**OR**

B. 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 PAH Solapur University, Solapur ([http://sus.ac.in/uploads/engineering/Eng%20Revised%20Semester%20Pattern/Self%20Learning-%20H.S.S.%20courses%20All%20Engg.Branches\\_2014-15.pdf](http://sus.ac.in/uploads/engineering/Eng%20Revised%20Semester%20Pattern/Self%20Learning-%20H.S.S.%20courses%20All%20Engg.Branches_2014-15.pdf)). More details about NPTEL are available at <http://nptel.ac.in>*

6. ICA assessment shall be a continuous process based on student's attendance and performance in class tests, assignments, homework, seminars, quizzes, case studies and journals, as applicable.

**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**

<b>Theory Courses</b>										
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
	<b>Sub Total</b>	<b>15</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>15</b>	<b>150</b>	<b>350</b>		<b>500</b>

<b>Laboratory / Tutorial Courses</b>											
Course Code	Name of Laboratory/Tutorial Course	Hrs./week				Credits	ISE	Examination Scheme			Total
		L	T	P	D			ESE		ICA	
								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
	<b>Sub Total</b>	<b>-</b>	<b>2</b>	<b>12</b>	<b>-</b>	<b>8</b>	<b>-</b>	<b>50</b>		<b>200</b>	<b>250</b>
	<b>Grand Total</b>	<b>15</b>	<b>2</b>	<b>12</b>	<b>-</b>	<b>23</b>	<b>150</b>	<b>400</b>	<b>200</b>	<b>750</b>	

**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:***

ME4141 Production and Operations Management

ME4142 Computational Fluid Dynamics

ME4143 Process Engineering

ME4144 Finite Element Method

ME4145 Tribology

ME4146 Railway Systems Management

***Open Elective:***ME4151 *Costing and Cost Control*ME4152 *Entrepreneurship Development*ME4153 *Business Development*ME4154 *Product Life Cycle Management*ME4155 *Business Economics*ME4156 *Reliability Engineering*

**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 & Presentation)	-	-	-	-	-	-	-	-	-	-
	<b>Sub Total</b>	-	-	-	-	-	-	-	-	-	-
Laboratory / Tutorial Courses											
Course Code	Name of Laboratory / Tutorial Course	Hrs./week				Credits	ISE	Examination Scheme			
		L	T	P	D			ESE	ICA	Total	
											POE
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
	<b>Sub Total</b>	-	-	<b>8</b>	-	<b>4</b>	-	<b>50</b>		<b>150</b>	<b>200</b>
	<b>Grand Total</b>			<b>8</b>		<b>4</b>		<b>50</b>		<b>150</b>	<b>200</b>

**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.

**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 continue professional development in Computers, IT & 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 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, development and implementation of database systems and networking applications.
2. Graduate has an ability to provide IT solutions, develop mobile applications in multidisciplinary areas using standard tools and techniques.
3. Graduate has an ability to utilize and apply software engineering tools for design and realization of 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
	<b>Sub Total</b>	<b>17</b>	<b>2</b>		<b>19</b>	<b>350</b>	<b>175</b>	<b>50</b>	<b>575</b>
	Environmental studies	2				50			50
	<b>Laboratory/Workshop</b>					<b>ESE</b>			
						<b>POE</b>			
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
	<b>Sub Total</b>			<b>8</b>	<b>4</b>	<b>100</b>		<b>100</b>	<b>200</b>
	<b>Grand Total</b>	<b>19</b>	<b>2</b>	<b>8</b>	<b>23</b>	<b>450</b>	<b>175</b>	<b>150</b>	<b>775</b>



**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
	<b>Total</b>	<b>14</b>	<b>2</b>		<b>16</b>	<b>280</b>	<b>145</b>	<b>50</b>	<b>475</b>
	Environmental studies	2				50			50
	<b>Laboratory/Workshop</b>					<b>ESE</b>			
						<b>POE</b>			
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
	<b>Total</b>			<b>8</b>	<b>4</b>	<b>100</b>		<b>75</b>	<b>175</b>
	<b>Grand Total</b>	<b>16</b>	<b>2</b>	<b>8</b>	<b>20</b>	<b>380</b>	<b>145</b>	<b>125</b>	<b>650</b>

**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 & Syllabus**

**Name of the Course: B. Tech. (Computer Science & Engineering)**

**(Syllabus to be implemented from June 2022)**



**PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**Structure of T.Y. B. Tech. (CSE) w.e.f. 2022-2023 Semester-I**

Course Code	Theory Course Name	Engagement Hours			Credits	FA	SA		Total
		L	T	P		ESE	ISE	ICA	
CS311	Artificial Intelligence	3			3	70	30		100
CS312	Operating Systems	3			3	70	30		100
CS313	Database Engineering	3			3	70	30		100
CS314	Design and Analysis of Algorithm	3			3	70	30		100
CS315	Mobile Application Development	2			2		25		25
SL31	Self-Learning Module I (HSS)				1	50			50
	<b>Sub Total</b>	<b>14</b>			<b>15</b>	<b>330</b>	<b>145</b>		<b>475</b>
	<b>Laboratory/Workshop</b>					<b>ESE</b>			
						<b>POE</b>			
CS311	Artificial Intelligence			2	1			25	25
CS312	Operating Systems			2	1			25	25
CS313	Database Engineering			2	1	50		25	75
CS314	Design and Analysis of Algorithm			2	1	50		25	75
CS315	Mobile Application Development			2	1	50		25	75
	<b>Sub Total</b>			<b>10</b>	<b>5</b>	<b>150</b>		<b>125</b>	<b>275</b>
	<b>Grand Total</b>	<b>14</b>		<b>10</b>	<b>20</b>	<b>480</b>	<b>145</b>	<b>125</b>	<b>750</b>



**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. Semester VII) of minimum 15 days shall be completed in vacation/s after S.Y. B. Tech. Semester IV but before Final Year B.Tech. Semester VII & the report shall be submitted and evaluated in Final Year B.Tech. Semester VII
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 at T.Y. B.Tech. – 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 Course from PAH Solapur University, Solapur HSS 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 AND TECHNOLOGY**

**Structure of T.Y. B. Tech. (CSE) w.e.f. 2022-2023 Semester-II**

Course Code	Theory Course Name	Engagement Hours			Credits	FA	SA		Total
		L	T	P		ESE	ISE	ICA	
CS321	System Programming	3			3	70	30		100
CS322	Internet of Things	3			3	70	30		100
CS323	Software Engineering	3	2		5	70	30	25	125
CS324	Professional Elective-I	3			3	70	30		100
CS325	Web UI and UX Technology	2			2		25		25
CSO326	Open Elective	2			2	50			50
	<b>Sub Total</b>	<b>16</b>	<b>2</b>		<b>18</b>	<b>330</b>	<b>145</b>	<b>25</b>	<b>500</b>
	<b>Laboratory/Workshop</b>					<b>ESE</b>			
						<b>POE</b>			
CS321	System Programming			2	1			25	25
CS322	Internet of Things			2	1			25	25
CS324	Professional Elective-I			2	1			25	25
CS325	Web UI and UX Technology			2	1	50		25	75
CS327	Mini Project			2	1	50		25	75
	<b>Sub Total</b>			<b>10</b>	<b>5</b>	<b>100</b>	<b>0</b>	<b>125</b>	<b>225</b>
	<b>Grand Total</b>	<b>16</b>	<b>2</b>	<b>10</b>	<b>23</b>	<b>430</b>	<b>145</b>	<b>150</b>	<b>725</b>

<b>Professional Elective – I</b>	<b>Open Elective</b>
Cloud Computing	Principles of Management: Practicing Ethics, Responsibility, Sustainability
Augmented Reality/Virtual Reality	Engineering Economics and Management
Network Security	Disaster Management

**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. Semester VII) of minimum 15 days shall be completed in vacation/s after S.Y. B.Tech. Semester IV but before Final Year B.Tech. Semester VII & the report shall be submitted and evaluated in Final Year B.Tech. Semester VII
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.

**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**



**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
	<b>Sub Total</b>	18	2	--	20	175	350	50	575
<b>Laboratory / Workshop</b>									
							<b>ESE</b>		
							<b>POE</b>		
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
	<b>Sub Total</b>				6		150	125	275
	<b>Grand Total</b>	<b>18</b>	<b>2</b>	<b>10</b>	<b>26</b>	<b>175</b>	<b>500</b>	<b>175</b>	<b>850</b>

### 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
	<b>Sub Total</b>	16	--	--	16	145	280		425
<b>Laboratory / Workshop</b>									
							<b>ESE</b>		
							<b>POE</b>		
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
	<b>Sub Total</b>			14	7		200	200	400
	<b>Grand Total</b>	<b>16</b>		<b>14</b>	<b>23</b>	<b>145</b>	<b>480</b>	<b>200</b>	<b>825</b>

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

**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
<b>Sub Total</b>		15	1	--	16	150	350	100	600
ENV21	Environmental Science	1	--	--	--	--	--	--	--
Course Code	Laboratory Course Name								
							<b>ESE</b>		
							<b>POE</b>	<b>OE</b>	
ET212	Electronic Circuit Analysis and Design	--	--	2	1	--	50*	--	50
ET213	Network Theory and Analysis	--	--	2	1	--	--	--	25
ET214	Digital Techniques	--	--	2	1	--	25	--	25
ET215	Analog Communication	--	--	2	1	--	25	--	25
E216	Electronics Software Lab-I	--	1	2	2	--	--	--	25
<b>Sub Total</b>		--	1	10	6	--	100	50	150
<b>Grand Total</b>		<b>15</b>	<b>2</b>	<b>10</b>	<b>22</b>	<b>150</b>	<b>450</b>	<b>150</b>	<b>750</b>

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
<b>Sub Total</b>		15	2	--	17	150	350	100	600
ENV22	Environmental Science	1	-	--	--	--	--	--	--
Course Code	Laboratory Course Name								
							<b>ESE</b>		
							<b>POE</b>	<b>OE</b>	
ET222	Analog Integrated Circuits	--	--	2	1	--	25	--	25
ET223	Principles of Digital Communication	--	--	2	1	--	25	--	25
ET225	Data Structures	--	--	2	1	--	--	--	25
ET226	Electronic Software Lab-II	1	--	4	3	--	50	--	75
<b>Sub Total</b>		--	--	10	6	--	100	--	150
<b>Grand Total</b>		<b>16</b>	<b>2</b>	<b>10</b>	<b>23</b>	<b>150</b>	<b>450</b>	<b>150</b>	<b>750</b>

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**



**Name of the Faculty: Science & Technology**

**CHOICE BASED CREDIT SYSTEM**

**Syllabus: ELECTRONICS & TELECOMMUNICATION  
ENGINEERING**

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

**(Syllabus to be implemented from Academic Year 2022-23)**

**॥ विद्याया संपन्नता ॥**



**PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR  
UNIVERSITY, SOLAPUR**

FACULTY OF SCIENCE & TECHNOLOGY

*Credit System structure of T.Y. B.Tech. Electronics & Telecommunication*

*Engineering W.E.F. 2022-23*

*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	Microcontrollers and Applications	3	--	--	3	30	70	25	125	
ET313	Digital Signal Processing	3	-	--	3	30	70	25	125	
ET314	Open Elective-I	3	1	--	4	30	70	25	125	
SLM31	Self Learning Module-I (HSS Course)	--	--	--	2	--	50	--	50	
<b>Sub Total</b>		12	2	--	16	120	330	100	550	
Course Code	Laboratory Course Name									
							ESE			
							POE	OE		
ET312	Microcontrollers and Applications	--	--	2	1	--	50	--	--	50
ET313	Digital Signal Processing	--	--	2	1	--	50	--	--	50
ET315	Electronic Software Lab-III	1	--	4	3	--	50	--	50	100
<b>Sub Total</b>		--	--	8	5	--	150		50	200
<b>Grand Total</b>		<b>13</b>	<b>2</b>	<b>8</b>	<b>21</b>	<b>120</b>	<b>480</b>		<b>150</b>	<b>750</b>

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. 2022-23*

**Semester II**

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme				
		L	T	P		ISE	ESE	ICA	Total	
ET321	Antenna & Wave Propagation	3	1	--	4	30	70	25	125	
ET322	Embedded System	3	--	--	3	30	70	25	125	
ET323	Electronic System Design	3	--	--	3	30	70	25	125	
ET324	Professional Elective-I	3	--	--	3	30	70	25	125	
ET325	Open Elective-II	3	--	--	3	30	70	25	125	
<b>Sub Total</b>		15	1	--	16	150	350	125	625	
Course Code	Laboratory Course Name									
							<b>ESE</b>			
							<b>POE</b>	<b>OE</b>		
ET322	Embedded System	--	--	2	1	--	25	--	--	25
ET323	Electronic System Design	--	--	2	1	--	--	25	--	25
ET324	Professional Elective-I	--	--	2	1	--	--	--	--	--
ET325	Open Elective-II	--	--	2	1	--	--	--	--	--
ET327	Mini Project	--	--	2	1	--	50	--	25	75
<b>Sub Total</b>		--	--	10	5	--	100		25	125
<b>Grand Total</b>		<b>15</b>	<b>1</b>	<b>10</b>	<b>21</b>	<b>150</b>	<b>450</b>		<b>150</b>	<b>750</b>

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. Batch size for the practical /tutorial shall be of 16 students. On forming the batches, if the strength of remaining student exceeds 8, then a new batch shall be formed.
2. 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.
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 (SLM31). Student must appear and pass university examination.
  - Curriculum for Humanities and Social Sciences (HSS), Self Learning Module-I is common for all undergraduate engineering programs.
  - Minimum four assignments for Self Learning Module (SLM31) shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute/department.

OR

- Student shall select and enroll for university approved minimum eight weeks MOOC based HSS course (SLM31), and complete its assignments. Student must appear and pass certificate examination conducted through MOOC courses.
4. 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.
  5. Student shall select Professional Elective-I from given course list. Student must appear and pass university examination.
  6. Project group for T.Y. B.Tech. - Semester II – Mini Project shall not be of more than three students. This mini project may include simulation and/or Software and/or Hardware. Report of this work should be submitted at the end of semester.
  8. 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.

- **List of Open Electives -**

Sr.	Branch Offering Elective	Open Elective I	Open Elective II
1.	Electronics & Telecommunication Engineering	1. Managerial Economics 2. Project Management and Operation Research	1. Sensors and Applications 2. Open Source Technologies
2.	Electronics Engineering	Information Technology & Management	Operating Systems
3.	Electrical Engineering	Business Ethics	Power System Planning

- **List of Professional Elective I–**

1. Optical Fiber Communication
2. Image and Video Processing
3. Multimedia Communication Technology

- **List of Self Learning Modules (HSS Course) (SLM 31)–**

1. MOOC/University Defined 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 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*

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	
<b>Sub Total</b>		<b>18</b>	<b>2</b>	<b>--</b>	<b>20</b>	<b>150</b>	<b>350</b>	<b>50</b>	<b>550</b>	
Course Code	Laboratory Course Name									
							<i>ESE</i>			
							<i>POE</i>	<i>OE</i>		
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
<b>Sub Total</b>		<b>--</b>	<b>--</b>	<b>10</b>	<b>6</b>	<b>--</b>	<b>100</b>		<b>150</b>	<b>250</b>
<b>Grand Total</b>		<b>18</b>	<b>2</b>	<b>10</b>	<b>26</b>	<b>150</b>	<b>450</b>		<b>200</b>	<b>800</b>

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	
<b>Sub Total</b>		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
<b>Sub Total</b>		--	--	12	6	--	200		150	350
<b>Grand Total</b>		<b>14</b>	<b>2</b>	<b>12</b>	<b>22</b>	<b>120</b>	<b>480</b>		<b>200</b>	<b>800</b>

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.



**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 AHILYADEVJI 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 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 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	
	<b>Total</b>	<b>13</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>13</b>	<b>150</b>	<b>350</b>	<b>-</b>	<b>500</b>	
	<b>Laboratory/Drawings</b>							<b>POE</b>	<b>OE</b>		
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
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>8</b>	<b>-</b>	<b>5</b>	<b>-</b>	<b>75</b>	<b>125</b>	<b>200</b>	
	<b>Grand Total</b>	<b>13</b>	<b>1</b>	<b>8</b>	<b>2</b>	<b>18</b>	<b>150</b>	<b>425</b>	<b>125</b>	<b>700</b>	
	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	
	<b>Total</b>	<b>13</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>15</b>	<b>135</b>	<b>315</b>	<b>50</b>	<b>500</b>	
	<b>Laboratory/Drawings:</b>							<b>POE</b>	<b>OE</b>		
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
	<b>Total</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>7</b>	<b>-</b>	<b>125</b>	<b>100</b>	<b>225</b>	
	<b>Grand Total</b>	<b>15</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>22</b>	<b>135</b>	<b>440</b>	<b>150</b>	<b>725</b>	
	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**



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

**Name of the Faculty: Science & Technology**

**CHOICE BASED CREDIT SYSTEM**

**Syllabus Structure: B. Tech. (Civil Engineering)**

**T.Y. B. Tech (Civil Engineering)  
w. e. f. Academic Year 2022-23**



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

**Credit System structure of T. Y. B. Tech. Civil Engg.- I, Semester- V,**  
**(Revised from 2022-2023)**

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
CE51C	Design of Steel Structures	3	-	-	-	3	30	70	-	100
CE52C	Geotechnical Engineering	3	-	-	-	3	30	70	-	100
CE53C	Highway and Tunnel Engineering	3	-	-	-	3	30	70	-	100
CE54C	Hydrology and Water Resources Engineering	3	-	-	-	3	30	70	-	100
CE55C	Design of Concrete Structures I	3	-	-	-	3	30	70	-	100
CE56C	Environmental Engineering-II	3	-	-	-	3	30	70	-	100
SL-5	HSS Course – Elective (Self Learning mode)	-	-	-	-	1	-	50	-	50
	<b>Total</b>	<b>18</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>19</b>	<b>180</b>	<b>470</b>	<b>-</b>	<b>650</b>
	<b>Laboratory/Drawings</b>							<b>POE</b>	<b>OE</b>	
CE57L	Geotechnical Engineering	-	-	2	-	1	-	25	-	25
CE58L	Highway & Tunnel Engineering	-	-	2	-	1	-	-	-	25
CE59L	Planning & Design of Public Building	1	-	-	2	2	-	50	-	25
CE510L	Environmental Engineering-II	-	-	2	-	1	-	-	25	25
	<b>Total</b>	<b>1</b>	<b>-</b>	<b>6</b>	<b>2</b>	<b>5</b>	<b>-</b>	<b>100</b>	<b>100</b>	<b>200</b>
	<b>Grand Total</b>	<b>19</b>	<b>-</b>	<b>6</b>	<b>2</b>	<b>24</b>	<b>180</b>	<b>570</b>	<b>100</b>	<b>850</b>

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

Note:- Students shall undergo a field training of 15 days in the winter vacation after T.Y. B. Tech Part 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. Part II.

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

(A) Student can select & enroll a ‘Self Learning Module- I’ (HSS) Course from following list

**SL5- A:- Self Learning Module – I (HSS)**

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 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 Institute. 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)**

<b>No</b>	<b>Course title</b>	<b>No</b>	<b>Course title</b>
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 Engg. –II, Semester –VI, W. E.F. 2022-2023

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
CE61C	Foundation Engineering	3	-	-	-	3	30	70	-	100
CE62C	Hydraulic Structures and Water Power Engg.	3	-	-	-	3	30	70	-	100
CE63E	Professional Elective Course-I ( <i>Refer list at the end</i> )	3	-	-	-	3	30	70	-	100
CE64C	Design of Concrete Structures II	3	-	-	-	3	30	70	-	100
CE65C	Principles of Management and Quantitative Techniques	3	-	-	-	3	30	70	-	100
CE66C	Railway, Airport & Harbour Engineering	3	-	-	-	3	30	70	-	100
	<b>Total</b>	<b>18</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>18</b>	<b>180</b>	<b>420</b>	<b>-</b>	<b>600</b>
	<b>Laboratory/Drawings:</b>							<b>POE</b>	<b>OE</b>	
CE67L	Project on Steel Structures	-	-	-	2	1	-	-	25	25
CE68L	Principles of Management and Quantitative Techniques	-	-	2	-	1	-	-	25	25
CE69L	*Mini Project using Application Software	-	-	2	-	1	-	-	-	25
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>-</b>	<b>50</b>	<b>75</b>	<b>125</b>
	<b>Grand Total</b>	<b>18</b>	<b>-</b>	<b>4</b>	<b>2</b>	<b>21</b>	<b>180</b>	<b>470</b>	<b>75</b>	<b>725</b>

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' in any one of the using suitable application software. The Mini project shall be assessed by the concerned subject teachers for ICA.

#### Note:

- 1) Students shall undergo a field training of 15 days in the summer vacation after T.Y. B. Tech. Part II. The training report shall be assessed in Final Year B.Tech. Part -I by the concerned 'Seminar' guides.
- 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) 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.

**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
<b>Prof Elective-I</b>	<b>Semester-VI</b>	Structural Analysis by Matrix Methods	Airport Planning and Design	Construction Engineering Materials	Open Channel flow & River Hydraulics
		Structural Dynamics	Pavement Design	Systems Engineering & Economics	Solid and Hazardous Waste Management
		Design of Bridges		Advanced Concrete Technology	Urban Hydrology and Hydraulics
		Design of Pre stressed concrete structures			

**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 AHILYADEVJI 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	-	<b>100</b>	
CV412	Construction Engineering, Management & Construction Practices	3	-	-	-	3	30	70	-	<b>100</b>	
CV413	Design of Concrete Structures-II	3	-	-	-	3	30	70	25	<b>125</b>	
CV414	Earthquake Engineering	3	1	-	-	4	30	70	25	<b>125</b>	
CV415	Professional Elective Course- II	3	-	-	-	3	30	70	25	<b>125</b>	
	<b>Total</b>	<b>15</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>150</b>	<b>350</b>	<b>75</b>	<b>575</b>	
	<b>Laboratory/Drawings:</b>							<b>POE</b>	<b>OE</b>		
CV411	Engineering Economics, Estimation & Costing	-	-	4	-	2	-	25	-	50	<b>75</b>
CV412	Construction Engineering , Management & Construction Practices	-	-	2	-	1	-	-	25	-	<b>25</b>
CV416	Project on R. C. C. Structures	-	-	-	4	2	-	-	25	50	<b>75</b>
CV417	Seminar	-	-	2	-	1	-	-	-	50	<b>50</b>
CV418	Project work	-	-	2	-	1	-	-	-	25	<b>25</b>
CV419	Assessment of report on field training-II	-	-	-	-	1	-	-	-	25	<b>25</b>
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>4</b>	<b>8</b>	<b>-</b>	<b>75</b>	<b>200</b>	<b>275</b>	
	<b>Grand Total</b>	<b>15</b>	<b>1</b>	<b>10</b>	<b>4</b>	<b>24</b>	<b>150</b>	<b>425</b>	<b>275</b>	<b>850</b>	

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	-	<b>100</b>	
CV422	Professional Elective Course - IV	4	-	-	-	4	30	70	-	<b>100</b>	
CV423	Railway & Harbour Engineering	3	1	-	-	4	30	70	-	<b>100</b>	
CV424	Open Elective-III :Economic policies in India	3	-	-	-	3	30	70	-	<b>100</b>	
CV425	Professional Practice, Law & Ethics	3	-	-	-	3	30	70	-	<b>100</b>	
	<b>Total</b>	<b>17</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>18</b>	<b>150</b>	<b>350</b>	<b>-</b>	<b>500</b>	
	<b>Laboratory/Drawings</b>							<b>POE</b>	<b>OE</b>		
CV421	Professional Elective Course- III	-	-	2	-	1	-	-	25	25	<b>50</b>
CV422	Professional Elective Course - IV	-	-	2	-	1	-	-	25	25	<b>50</b>
	Project work	-	-	8	-	4	-	-	100	100	<b>200</b>
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>12</b>	<b>-</b>	<b>6</b>	<b>-</b>	<b>150</b>	<b>150</b>	<b>300</b>	
	<b>Grand Total</b>	<b>17</b>	<b>1</b>	<b>12</b>	<b>-</b>	<b>24</b>	<b>150</b>	<b>500</b>	<b>150</b>	<b>800</b>	

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
<b>Prof. Elective-I</b>	<b>Semester-VI</b>	Masonry Structures	Structural Geology	Construction Engineering Materials	Ecological Engineering
		Structural Analysis by Matrix Methods	Urban Transportation Planning.	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
<b>Prof. Elective-II</b>	<b>Semester-VII</b>	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		

<b>Prof. Elective- III</b>	<b>Semester -VIII</b>	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
<b>Prof. Elective- IV</b>	<b>Semester -VIII</b>	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		



**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	-		--	--	--	-	--	
<b>Sub Total</b>		<b>15</b>	<b>2</b>	<b>-</b>	<b>16</b>	<b>150</b>	<b>350</b>	<b>50</b>	<b>550</b>	
Environmental Science		1								
<b>Laboratory Course Name</b>										
							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
<b>Sub Total</b>		<b>-</b>	<b>-</b>	<b>8</b>	<b>4</b>		<b>150</b>		<b>100</b>	<b>250</b>
<b>Grand Total</b>		<b>15</b>	<b>2</b>	<b>8</b>	<b>20</b>	<b>150</b>	<b>500</b>	<b>150</b>	<b>800</b>	

➤ 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	
<b>Sub Total</b>		<b>14</b>	<b>2</b>	<b>-</b>	<b>16</b>	<b>150</b>	<b>350</b>	<b>50</b>	<b>550</b>	
Environmental Science		1	-	-	-	-	-	-	-	
<b>Laboratory Course Name</b>										
						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
<b>Sub Total</b>		<b>-</b>	<b>-</b>	<b>8</b>	<b>4</b>	<b>-</b>	<b>150</b>	<b>100</b>	<b>250</b>	
<b>Grand Total</b>		<b>14</b>	<b>2</b>	<b>8</b>	<b>20</b>	<b>150</b>	<b>500</b>	<b>150</b>	<b>800</b>	

- 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 from w.e.f. June 2022)**



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

*Choice Based Credit System Syllabus Structure of T. Y. B.Tech. Electrical Engineering W.E.F. 2022-2023*

**Semester I**

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme				
		L	T	P		ISE	ESE	ICA	Total	
EL 311	Power System III	3	-	-	3	30	70	-	100	
EL 312	Linear Control System	3	-	-	3	30	70	-	100	
EL 313	Advanced Microcontroller System	3	-	-	3	30	70	-	100	
EL 314	Electromagnetic Engineering	3	1	-	4	30	70	25	125	
EL 315	Open Elective-I	2	1	-	3	30	70	25	125	
EL 316	Self-Learning Module-I			-	2		50		50	
<b>Sub Total</b>		<b>14</b>	<b>2</b>	<b>-</b>	<b>18</b>	<b>150</b>	<b>400</b>	<b>50</b>	<b>600</b>	
<b>Laboratory Course Name</b>							<b>ESE</b>			
							<b>POE</b>	<b>OE</b>		
EL 311	Power System III	-	-	2	1	-	-	25	25	50
EL 312	Linear Control System	-	-	2	1	-	-	25	25	50
EL 313	Advanced Microcontroller System	-	-	2	1	-	50	-	25	75
EL 317	Electrical Workshop	-	-	2	1	-	-	-	25	25
<b>Sub Total</b>		<b>-</b>	<b>-</b>	<b>8</b>	<b>4</b>	<b>-</b>	<b>100</b>		<b>100</b>	<b>200</b>
<b>Grand Total</b>		<b>14</b>	<b>2</b>	<b>8</b>	<b>22</b>	<b>150</b>	<b>500</b>		<b>150</b>	<b>800</b>

➤ 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

### T.Y. B.Tech. (Electrical Engineering)

Choice Based Credit System Syllabus Structure of T.Y.B. Tech. Electrical Engineering W.E.F. 2022-2023

#### Semester II

Course Code	Theory Course Name	Hrs./week			Credits	Examination Scheme				
		L	T	P		ISE	ESE	ICA	Total	
EL 321	Electrical Machine Design	3	-	-	3	30	70	-	100	
EL 322	Electrical Utilization	3	1	-	4	30	70	25	125	
EL 323	Power Electronics & Industrial Drives	3	-	-	3	30	70	-	100	
EL 324	Advanced Control Systems	3	-	-	3	30	70	-	100	
EL 325	Open Elective-II	2	1	-	3	30	70	25	125	
EL 326	Self-Learning Module-II	-	-	-	2	--	50	-	50	
<b>Sub Total</b>		<b>14</b>	<b>2</b>	<b>-</b>	<b>18</b>	<b>150</b>	<b>400</b>	<b>50</b>	<b>600</b>	
<b>Laboratory Course Name</b>							<b>ESE</b>			
							<b>POE</b>	<b>OE</b>		
EL 321	Electrical Machine Design	-	-	2	1	-	-	25	25	50
EL 323	Power Electronics & Industrial Drives	-	-	2	1	-	50	-	25	75
EL 324	Advanced Control Systems	-	-	2	1	-	-	-	25	25
EL 327	Mini Hardware Project	-	-	2	1	-	-	25	25	50
<b>Sub Total</b>		<b>-</b>	<b>-</b>	<b>8</b>	<b>4</b>	<b>-</b>	<b>100</b>		<b>100</b>	<b>200</b>
<b>Grand Total</b>		<b>14</b>	<b>2</b>	<b>8</b>	<b>22</b>	<b>150</b>	<b>500</b>		<b>150</b>	<b>800</b>

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. Hybrid Electric Vehicle Design
2. Electrical Safety
3. Solar Photovoltaic System Design & Installation
4. NPTEL Course/MOOC/University Defined Courses

**Note –**

- Batch size for the TE 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 based on presentation as well as training report.
- Student shall select one as 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 as Self Learning Module from the Humanities and Social Sciences Group
- Curriculum for Humanities and Social Sciences Self Learning Modules is common for all undergraduate 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 students
- 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
- 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 will be same for all these branches.

### **List of Open Electives**

<b>Sr. No.</b>	<b>Open Elective I</b>	<b>Open Elective II</b>
1	Information Technology & Management	Operating Systems
2	Advanced Electrical Machines	Renewable Energy Sources
3	Business Ethics	Fiber Optic Communication
4	Managerial Economics	Sensors and Applications



**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**



**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.
- 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 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	
<b>Sub Total</b>		<b>15</b>	<b>2</b>	<b>-</b>	<b>17</b>	<b>150</b>	<b>350</b>	<b>50</b>	<b>550</b>	
<b>Laboratory Course Name</b>										
						<b>ESE</b>				
						<b>POE</b>	<b>OE</b>			
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
<b>Sub Total</b>		<b>--</b>	<b>-</b>	<b>10</b>	<b>5</b>	<b>-</b>	<b>125</b>	<b>125</b>	<b>250</b>	
<b>Grand Total</b>		<b>15</b>	<b>2</b>	<b>10</b>	<b>22</b>	<b>150</b>	<b>475</b>	<b>175</b>	<b>800</b>	

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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	
<b>Sub Total</b>		<b>10</b>	<b>2</b>	<b>-</b>	<b>12</b>	<b>120</b>	<b>280</b>	<b>50</b>	<b>450</b>	
<b>Laboratory Course Name</b>										
						<b>ESE</b>				
						<b>POE</b>	<b>OE</b>			
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
<b>Sub Total</b>		<b>-</b>	<b>-</b>	<b>12</b>	<b>6</b>	<b>-</b>	<b>200</b>	<b>150</b>	<b>350</b>	
<b>Grand Total</b>		<b>10</b>	<b>2</b>	<b>12</b>	<b>18</b>	<b>120</b>	<b>480</b>	<b>200</b>	<b>800</b>	

*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 Vitthal Education & Research Institute's

# COLLEGE OF ENGINEERING, PANDHARPUR



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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 : 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



*B-Range*

PRINCIPAL  
SVERI's College of Engineering,  
Pandharpur

**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**



**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	<b>Elective- I</b> 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
<b>Total</b>		<b>15</b>	<b>2</b>	<b>4</b>	<b>19</b>	<b>350</b>	<b>150</b>	<b>150</b>	<b>650</b>

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

© - 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	<b>Elective- II</b> 1. Theory and Analysis of Composite Materials 2. Engineering Design Optimization 3. Industrial Tribology 4. Advanced Engineering Materials	3	-	-	3	70	30			100	
5	<b>Elective- III</b> 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	
<b>Total</b>		<b>15</b>	<b>2</b>	<b>4</b>	<b>19</b>	<b>350</b>	<b>150</b>	<b>150</b>	<b>650</b>		

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

**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**



**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 Practises	-	-	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
<b>Total</b>		<b>3</b>	<b>-</b>	<b>4</b>	<b>15</b>	<b>170</b>	<b>280</b>	<b>50</b>	<b>500</b>

**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	ESE	ISE	ICA	
Dissertation	<b>Dissertation Phase –III</b> Progress Report presentation and submission		-	4	3	-	-	100				100
	<b>Dissertation Phase –IV</b> Final presentation and submission of report	-	-	2	6	-	-	100				100
	Dissertation Viva voice	-	-	-	6	200	-	-				200
<b>Total</b>		-	-	<b>6</b>	<b>15</b>	<b>200</b>			<b>200</b>			<b>400</b>

**Note:- \* indicates student engagement against which faculty contact hour is 3 hours per candidate**

<b>L</b>	Lecture	<b>FA</b>	Formative Assessment
<b>T</b>	Tutorial	<b>SA</b>	Summative Assessment
<b>P</b>	Lab Session	<b>ESE</b>	End Semester Examination
		<b>ISE</b>	In Semester Evaluation
		<b>ICA</b>	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 Purnyashlok 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**

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



*B. Range*

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**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	--	--	--	
<b>Total</b>		<b>15</b>	<b>2</b>	<b>8</b>	<b>25</b>	<b>15.0</b>	<b>2.0</b>	<b>5.0</b>	<b>22.0</b>		<b>500</b>	<b>125</b>	<b>50</b>	<b>675</b>

*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	--	--	--	
<b>Total</b>		<b>15</b>	<b>2</b>	<b>8</b>	<b>25</b>	<b>15.0</b>	<b>2.0</b>	<b>5.0</b>	<b>22.0</b>		<b>500</b>	<b>125</b>	<b>50</b>	<b>675</b>

**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 -**

<b>Sr. No.</b>	<b>Elective - I</b>	<b>Elective - II</b>	<b>Elective - III</b>
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**



**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)**



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	
	<b>Total</b>	<b>3</b>	<b>4</b>	<b>6.0</b>	<b>9.0</b>	<b>15.0</b>		<b>200</b>	<b>300</b>	<b>500</b>

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
	<b>Total</b>	--	<b>6</b>	--	<b>15.0</b>	<b>15.0</b>		<b>500</b>	<b>500</b>

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 Vitthal Education & Research Institute's

# COLLEGE OF ENGINEERING, PANDHARPUR



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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 (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



*B-Range*

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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	--	--	--	
<b>Total</b>		<b>15</b>	<b>2</b>	<b>8</b>	<b>25</b>	<b>15.0</b>	<b>2.0</b>	<b>5.0</b>	<b>22.0</b>		<b>500</b>	<b>125</b>	<b>50</b>	<b>675</b>

*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**

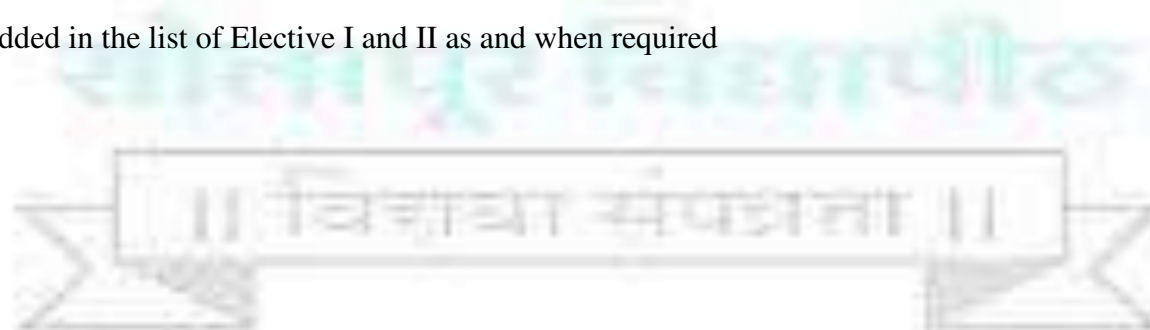
Sr. No.	Subject	Teaching Scheme				Credits				Evaluation Scheme				
		L	T	P	Total	Credits (L)	Credits (T)	Credits (P)	Total Credits	Scheme	Theory Marks	ICA- P Marks	ICA-T Marks	Total Marks
1	Advanced Internet of Things	3	-	2	5	3.0	-	1.0	4.0	ISE	30	25	--	125
										ESE	70	--	--	
2	RF Circuit Design	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	--	--	--	
<b>Total</b>		<b>15</b>	<b>2</b>	<b>8</b>	<b>25</b>	<b>15.0</b>	<b>2.0</b>	<b>5.0</b>	<b>22.0</b>		<b>500</b>	<b>125</b>	<b>50</b>	<b>675</b>

*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 -**

<b>Sr.</b>	<b>Elective - I</b>	<b>Elective - II</b>
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**



**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	
<b>Total</b>		<b>3</b>	<b>4</b>	<b>6.0</b>	<b>9.0</b>	<b>15.0</b>		<b>200</b>	<b>300</b>	<b>500</b>

*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 -

<i>Sr.</i>	<i>Self Learning Subject</i>
1	Programmable System on Chip (PSoC)
2	Remote Sensing
3	Multimedia Network

#### List of Open Elective Courses-

<i>Sr.</i>	<i>Self Learning Subject</i>
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

<i>Sr. No.</i>	<i>Subject</i>	<i>Teaching Scheme</i>			<i>Credits</i>			<i>Evaluation Scheme</i>		
		<i>L</i>	<i>P</i>	<i>Total</i>	<i>Credits (L)</i>	<i>Credits (P)</i>	<i>Total Credits</i>	<i>Scheme</i>	<i>ICA Marks</i>	<i>Total Marks</i>
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
<b>Total</b>		-	-	<b>6</b>	--	<b>15.0</b>	<b>15.0</b>	-	<b>500</b>	<b>500</b>

#### 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



ISO 9001:2015



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:-

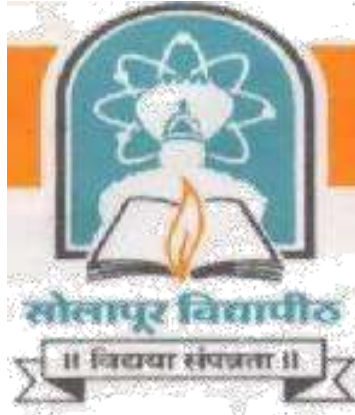
## 1.2.1 List of programs in which Choice Based Credit System (CBCS)/elective course system has been implemented

Programme Name : 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*

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**





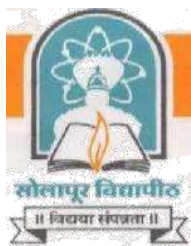
**SOLAPUR UNIVERSITY, SOLAPUR**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**STRUCTURE OF M.Tech. CIVIL (STRUCTURAL ENGINEERING)**

**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	--	--	--	
<b>Total</b>		<b>15</b>	<b>4</b>	<b>4</b>	<b>23</b>	<b>15</b>	<b>4</b>	<b>2</b>	<b>21</b>		<b>550</b>	<b>50</b>	<b>100</b>	<b>700</b>

*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	--	--	--	
<b>Total</b>		<b>15</b>	<b>5</b>	<b>4</b>	<b>24</b>	<b>15</b>	<b>5</b>	<b>3</b>	<b>23</b>		<b>500</b>	<b>75</b>	<b>125</b>	<b>700</b>

*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 -

<b>Sr. No.</b>	<b>Elective - I</b>	<b>Sr. No.</b>	<b>Elective - II</b>	<b>Sr. No.</b>	<b>Elective - III</b>
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**



**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
								ESE	--	--		
5	Dissertation Phase II Progress Seminar*				-	4	4	ISE	--	--	100	
								ESE	--	100		
<b>Total</b>		<b>3</b>	<b>8</b>	<b>11</b>	<b>3</b>	<b>12</b>	<b>15</b>		<b>100</b>	<b>300</b>	<b>400</b>	

*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-**

<b>Sr.</b>	<b>Subject</b>
<b>1</b>	<b>Business Analytics</b>
<b>2</b>	<b>Operation Research</b>
<b>3</b>	<b>Cost Management of Engineering Projects</b>
<b>4</b>	<b>Non conventional Energy</b>

- 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
<b>Total</b>		-	<b>6</b>	<b>6</b>	--	<b>15</b>	<b>15</b>	-	<b>500</b>	<b>500</b>

**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)

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Approved by A.I.C.T.E., New Delhi and Affiliated to Panyashlok 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**

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



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



**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**



**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		
<b>Hard Core</b>						
<b>101</b>	Principles of Management	80	20	100	4	4
<b>102</b>	Financial Accounting	80	20	100	4	4
<b>103</b>	Managerial Economics	80	20	100	4	4
<b>104</b>	Organizational Behaviour	80	20	100	4	4
<b>105</b>	Business Statistics	80	20	100	4	4
<b>Soft Core (Select Any Two Subjects)</b>						
<b>106</b>	Computer Operations And Management	80	20	100	4	4
<b>107</b>	Business Law.	80	20	100	4	4
<b>108</b>	Disaster Management	80	20	100	4	4
<b>109</b>	Banking Operations & Services	80	20	100	4	4
<b>Skill Core</b>						
<b>110</b>	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		
<b>Hard Core</b>						
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
<b>Soft Core (Select Any One Subjects)</b>						
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
<b>Skill Core</b>						
119	Employability Skills	80	20	100	4	4
<b>Open Elective</b>						
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		
<b>Hard Core</b>						
<b>121</b>	Strategic Management	80	20	100	4	4
<b>122</b>	Management Accounting	80	20	100	4	4
<b>123</b>	Project Report	50	50	100	4	4
<b>Elective Core</b>						
<b>124</b>	Elective Subject I (Paper – I)	80	20	100	4	4
<b>125</b>	Elective Subject I (Paper – II)	80	20	100	4	4
<b>126</b>	Elective Subject II (Paper – I)	80	20	100	4	4
<b>127</b>	Elective Subject II (Paper – II)	80	20	100	4	4
<b>Open Elective</b>						
<b>128</b>	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		
<b>Hard Core</b>						
<b>129</b>	Business Ethics & Corporate Governance	80	20	100	4	4
<b>130</b>	Total Quality Management	80	20	100	4	4
<b>Elective Core</b>						
<b>131</b>	Elective Subject I (Paper – III)	80	20	100	4	4
<b>132</b>	Elective Subject I (Paper – IV)	80	20	100	4	4
<b>133</b>	Elective Subject I (Paper – V)	80	20	100	4	4
<b>134</b>	Elective Subject II (Paper – III)	80	20	100	4	4
<b>135</b>	Elective Subject II (Paper – IV)	80	20	100	4	4
<b>136</b>	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

<b>Group</b>	<b>Elective Specialization</b>
A	<ul style="list-style-type: none"><li>• Marketing Management</li></ul>
B	<ul style="list-style-type: none"><li>• Financial Management</li><li>• Tourism and Hospitality Management</li><li>• Production and Materials Management</li></ul>
C	<ul style="list-style-type: none"><li>• Human Resource Management</li><li>• International Business Management</li><li>• Banking Management</li><li>• Systems Management</li><li>• Agriculture &amp; Co-operative Management</li></ul>

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

<b>Group</b>	<b>Specialization</b>	<b>Paper</b>	<b>Subject</b>
<b>C</b>	<b>Systems Management</b>	I	Management Information System
		II	ERP and SPD
		III	Relational Database Management System
		IV	Security And Control Information System
		V	Programming Concepts and Practices
	<b>Agriculture &amp; Co-operative Management</b>	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**



**Name of the Faculty: Commerce & Management**

**CHOICE BASED CREDIT SYSTEM**

**Syllabus: Master of Business Administration**

**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	<i>Elective I - Paper III</i>	04	20	80	100
20	Project Report & Viva	--	50	50	100	*28	<i>Elective II - Paper-III</i>	04	20	80	100
*21	<i>Elective I - Paper I</i>	04	20	80	100	*29	<i>Elective I - Paper IV</i>	04	20	80	100
*22	<i>Elective II - Paper-I</i>	04	20	80	100	*30	<i>Elective II - Paper-IV</i>	04	20	80	100
*23	<i>Elective I - Paper II</i>	04	20	80	100	*31	<i>Elective I - Paper V</i>	04	20	80	100
*24	<i>Elective II - Paper-II</i>	04	20	80	100	*32	<i>Elective II - Paper-V</i>	04	20	80	100

**Dual Specialization Groups.**

Group	Elective Specialization
A	<ul style="list-style-type: none"> <li>• Marketing Management</li> </ul>
B	<ul style="list-style-type: none"> <li>• Financial Management</li> <li>• Tourism and Hospitality Management</li> <li>• Production and Materials Management</li> </ul>
C	<ul style="list-style-type: none"> <li>• Human Resource Management</li> <li>• International Business Management</li> <li>• Banking Management</li> <li>• Systems Management</li> <li>• Agriculture &amp; Co-operative Management</li> </ul>

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

<b>Group</b>	<b>Specialization</b>	<b>Paper</b>	<b>Subject</b>
<b>C</b>	<b>Systems Management</b>	I	Management Information System
		II	ERP and SPD
		III	Relational Database Management System
		IV	Security And Control Information System
		V	Programming Concepts and Practices
	<b>Agriculture &amp; Co-operative Management</b>	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**



Name of the Faculty : Science and Technology

## **CHOICE BASED CREDIT SYSTEM**

### **Syllabus**

Name of the Course : **MCA – I (Sem. I and II)**  
**(Two Year)**

(Syllabus to be implemented from June. 2020)



**MASTER OF COMPUTER APPLICATIONS (SCIENCE & Technology FACULTY)**  
**DETAIL SYLLABUS OF SEMESTERS I AND II**

1. **Introduction:** The Master of Computer Applications (M. C. A.) Programme has been designed with a semester approach in mind. It is a two years course and in each year there are two semesters. Courses in semester-I to semester-IV are aimed at skills development in computers using various technologies.
2. **Program Outcomes :**
  - Students are able to take up positions as systems analysts, systems designers, programmers and managers in any field related to information technology.
  - Students are able to apply knowledge of Mathematical Foundations in computing problems.
  - Students pass on their knowledge for planning, designing and building complex Application Software Systems as well as provide support to automated systems or application.
  - Produce entrepreneurs who can develop customized software solutions for small to large Enterprises.
  - Students are able to function as an effective communicator and team member through essential skills in multidisciplinary projects.
3. **Intake Capacity: 60**
4. **Ordinances and regulations**
5. **ELIGIBILITY:** The eligibility criteria for admission for the MCA course will be as decided by the All Indian Council of Technical Education (AICTE), New Delhi and Directorate of Technical Education (DTE), Government of Maharashtra. It will be published on their respective websites time to time.
  - Passed B.C.A. / Bachelor Degree in Computer Science (B.C.S) / B.Sc. (Entire Computer Science / Computer Science) / Bachelor Degree in Computer Science Engineering or equivalent Degree  
**OR** passed B.Sc. / B.Com. / B.A. with Mathematics at 10+2 Level or at Graduation Level (with additional bridge Courses as per the norms of the concerned University).
  - Obtained at least 50% marks (45 % marks in case of candidates belonging to reserved category) in the qualifying Examination.
6. **FEES STRUCTURE:** The tuition fees or laboratory fees and other fees have to be paid at the beginning of every semester. At present a student has to pay tuition fees Rs.14000/- per semester and laboratory fee Rs.7000/- per semester together with other fees. These fees may be revised from time to time. The fees once paid will not be refunded.

7. **COURSE STRUCTURE:** The MCA course is a FOUR semester course. The teaching for the semesters I and III will be during the first half of the academic year and for the semesters II and IV will be during the second half the academic year.

- a) A candidate will be awarded a class or distinction as per the rules of other science subjects.
- b) The Regulations / Ordinance not covered in this shall be followed from the Regulations / Ordinance laid down for the science faculty.

#### **A Four Semester M.C.A. Course**

<b>Semester</b>	<b>No. of Papers / Practical / Project</b>	<b>Marks</b>	<b>Credits</b>
<b>Semester - I</b>			
• Theory Papers	06	600	24
• Practical Papers	02	100	04
• Mini Project	01	50	02
<b>Semester - II</b>			
• Theory Papers	06	600	24
• Practical Papers	02	100	04
• Mini Project	01	50	02
<b>Semester - III</b>			
• Theory Papers	06	600	24
• Practical Papers	02	100	04
• Mini Project	01	50	02
<b>Semester - IV</b>			
• Major Project	01	250	10
<b>Total marks and credits</b>		<b>2500</b>	<b>100</b>

#### **Bridge Course for B.Sc. / B.Com. / B.A. students**

<b>Semester</b>	<b>No. of Papers / Practical / Project</b>	<b>Marks</b>	<b>Credits</b>
<b>Semester - I</b>			
• Theory : Programming using C	01	50	02
• Practical : Programming using C	01	50	02

## MCA – I Semester I and II : Structure of the Syllabus

M. C. A. Part – I Semester – I						
Paper Code	Title of the Paper	Contact hrs./week	Distribution of Marks for Exam.			Credits
			Internal	University	Total	
<b>Hard Core – Theory</b>						
HCT 1.1	Object Oriented Programming using C++	04	20	80	100	04
HCT 1.2	Data Structures	04	20	80	100	04
HCT 1.3	Software Engineering	04	20	80	100	04
HCT 1.4	Operating Systems	04	20	80	100	04
HCT 1.5	Digital Circuits and Microprocessors	04	20	80	100	04
<b>Soft Core - Theory (Any One Group)</b>						
SCT 1.1	Discrete Mathematical Structures	04	20	80	100	04
SCT 1.2	Operation Research					
<b>Hard Core – Practical</b>						
HCP 1.1	Practical-I based on HCT 1.1	04	10	40	50	02
HCP 1.2	Practical-II based on HCT1.2	04	10	40	50	02
HCP 1.3	Mini Project –I	02	10	40	50	02
<b>Total</b>		-	<b>150</b>	<b>600</b>	<b>750</b>	<b>30</b>
M. C. A. Part – I Semester – II						
Paper Code	Title of the Paper	Contact hrs./week	Distribution of Marks for Exam.			Credits
			Internal	University	Total	
<b>Hard Core – Theory</b>						
HCT 2.1	Java Programming	04	20	80	100	04
HCT 2.2	Advanced DBMS	04	20	80	100	04
HCT 2.3	Computer Communication Network	04	20	80	100	04
HCT 2.4	System Software	04	20	80	100	04
<b>Soft Core - Theory (Any One)</b>						
SCT 2.1	UML	04	20	80	100	04
SCT 2.2	Graph Theory					
<b>Open Elective (Any One)</b>						
OET 2.1	Office Automation	04	20	80	100	04
OET 2.2	SWAYAM course*	--	--	--	--	
<b>Hard Core – Practical</b>						
HCP 2.1	Practical-III based on HCT 2.1 and HCT 2.2	04	10	40	50	02
HCP 2.2	Mini Project - II	04	10	40	50	02
<b>Open Elective - Practical (Any One)</b>						
OEP 2.1	Practical Based on OET 2.1	02	10	40	50	02
OEP 2.2	Practical / Seminar / Viva based on SWAYAM course OET2.2					
<b>Total</b>		-	<b>150</b>	<b>600</b>	<b>750</b>	<b>30</b>

\* : The credits will be transferred as per university policy and UGC guidelines after submitting the completion certificate / mark list from the SWAYAM.

Bridge Course for B.Sc. / B.Com. / B.A. students						
M. C. A. Part – I Semester – I						
Paper Code	Title of the Paper	Contact hrs./week	Distribution of Marks for Exam.			Credits
			Internal	University	Total	
<b>Hard Core – Theory</b>						
HCT-B1	Theory : Programming using C	02	50	--	50	02
HCP-B1	Practical : Programming using C	02	50	--	50	02

**8. Passing Standard:** Passing standard is same as that of other M.Sc. courses in the Punyashlok Ahilyadevi Holkar Solapur University. The candidate has to appear for internal evaluation of 20 marks and external evaluation (university exam) for 80 marks for each theory paper. The nature of internal evaluation of practical and project will be decided by the respective schools / departments. The internal evaluation is a process of continuous assessment.

A student who failed in Term End examination (theory) & passed in internal assessment of a paper (subject) shall be given FC (Failed in Term End Exam) Grade. Such student will have to appear for Term End examination only. A student who fails in Internal assessment and passed in Term End examination (Theory) shall be given FR (Failed in Internal Assessment) Grade. Such student will have to appear for Term End examination as well as internal assessment.