

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



NAAC Accredited-2022
'B⁺⁺' Grade (CGPA 2.96)

Name of the Faculty: Science & Technology

(As per New Education Policy 2020)

Structure:- Civil Engineering

Name of the Course: S. Y. B. Tech. (Sem.– III & IV)

(Syllabus to be implemented from-2024-25)



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum

With effect from 2023-2024

Semester I (Common for All Engineering Branches)

Course Type	Course Code	Name of the Course	Engagement Hours		Credits	FA	SA		Total
			L	P		ESE	ISE	ICA	
BSC	BS-01/ BS-02	Engineering Physics / Engineering Chemistry \$	3	2	4	70	30	25	125
	BS-03	Engineering Mathematics-I	3	2	4	70	30	25	125
ESC	ES-01/ ES-02	Basics of Civil and Mechanical Engineering /Basic Electrical & Electronics Engineering \$	3	2	4	70	30	25	125
	ES-03	Engineering Mechanics	3	2	4	70	30	25	125
AEC	AE-01	Communication Skills	1	2	2		25	25	50
CC	CC-01	Sports and Yoga or NSS/NCC/UBA (Liberal Learning Course-I)	1	2	2			25	25
SEC	SE-01	Workshop Practices		2	1			25	25
		Total	14	14	21	280	145	175	600
		Student Induction Program**							

Semester II (Common for All Engineering Branches)

Course Type	Course Code	Name of the Course	Engagement Hours		Credits	FA	SA		Total
			L	P		ESE	ISE	ICA	
BSC	BS-01/ BS-02	Engineering Physics / Engineering Chemistry \$	3	2	4	70	30	25	125
	BS-04	Engineering Mathematics - II	3	2	4	70	30	25	125
ESC	ES-01/ ES-02	Basics of Civil and Mechanical Engineering / Basic Electrical & Electronics Engineering \$	3	2	4	70	30	25	125
		Engineering Graphics and CAD		4	2		25	50	75
SEC	SE-02	Data Analysis and Programming Skills	1	2	2		25	25	50
CC	CC-02	Professional Personality Development (Liberal Learning Course-II)	1	2	2		25	25	50
IKS	IKS-01	Introduction to Indian Knowledge System	2		2		25	25*	50
		Total	13	14	20	210	190	200	600
		Democracy, Elections and Good Governance *	1			50			

*For IKS activity report should be submitted

BSC- Basic Science Course ESC- Engineering Science Course, PCC- Programme Core Course ,

AEC- Ability Enhancement Course, IKS- Indian Knowledge System, CC- Co-curricular Courses ,

VSEC-Vocational and Skill Enhancement Course

- 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. # - For the Course (C113) Basic Electrical & Electronics Engineering, Practicals of Basic Electrical Engineering and Basic Electronics Engineering will be conducted in alternate weeks.
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) is 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

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum

With effect from 2024-2025

Semester -III

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	CIVPCC-01	Structural Mechanics -I	3			03	70	30			100
PCC	CIVPCC-02	Fluid Mechanics and Machines	3			03	70	30			100
PCC	CIVPCC-03	Surveying and Geomatics	3		2	04	70	30	25	25	150
CEP/FP	CIVFP-01	Fluid Mechanics Lab			2	01			25	25	50
CEP/FP	CIVFP-02	Building and Infrastructure Drawing Lab			2	01			25	25	50
Entrepreneurship	EM-01	Product Development and Entrepreneurship	1	1		02		50	25		75
OE	OE-01	Open Elective-I	2		2	03	70	30	25		125
MD M	MDM-01	MD Minor-I	2		2	03	70	30	25		125
VEC	VEC-01	Universal Human Values	1		2	02	50*		25		75
		Total	15	1	12	22	400	200	175	75	850
		Environmental Science	1								

***For VEC-01: MCQ-based examination to be conducted.**

PCC- Programme Core Course, PEC-Programme Elective Course, AEC - Ability Enhancement Course, IKS- Indian Knowledge System, CC- Co-curricular Courses, VSEC-Vocational and Skill Enhancement Course MDM-Multidisciplinary Minor: It should be selected from other UG Engineering Minor Programme.



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum

With effect from 2024-2025

Semester -IV

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	CIVPCC-04	Structural Mechanics-II	3			03	70	30			100
PCC	CIVPCC-05	Building and Infrastructure Planning	2		2	03	70	30	25		125
PCC	CIVPCC-06	Environmental Engineering	3		2	04	70	30	25	25	150
SEC	CIVSEC-03	Concrete Technology, Material Testing and Evaluation	1		2	02			25	25	50
Economic/ Management	EM-02	Project Management and Economics	2			02		25	25		50
OE	OE-02	Open Elective-II	2		2	03	70	30	25		125
MDM	MDM-02	MD Minor-II	2		2	03	70	30	25		125
VEC	VEC-02	Professional Ethics	1		2	02	50*		25		75
		Total	16		12	22	400	175	175	50	800
		Environmental Science	1				40	10			50

*For VEC-02: MCQ-based examination to be conducted.

PCC- Programme Core Course, PEC-Programme Elective Course

AEC- Ability Enhancement Course, IKS- Indian Knowledge System, CC- Co-curricular Courses,

VSEC-Vocational and Skill Enhancement Course MDM - Multidisciplinary Minor: It should be selected from other UG Engineering Minor Programme.

.



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum

With effect from 2025-2026

Semester -V

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	CIVPCC-07	Design of Steel Structures	3			03	70	30			100
PCC	CIVPCC-08	Transportation Engineering	3		2	04	70	30	25		125
PCC	CIVPCC-09	Geotechnical Engineering	3		2	04	70	30	25	25	150
PEC	CIVPEC-01	Programme Electives Course -I	3		2	04	70	30	25		125
AEC	AEC-02	Creativity and Design Thinking	1		2	02	50*		25		75
OE	OE-03	Interdisciplinary Mini Project	1		2	02			25	25	50
MD M	MDM-03	MD Minor-III	2		2	03	70	30	25		125
		Total	16		12	22	400	150	150	50	750

***For AEC-02: MCQ-based examination to be conducted.**

PCC- Programme Core Course, PEC-Programme Elective Course

AEC- Ability Enhancement Course, IKS- Indian Knowledge System, CC- Co-curricular Courses,

VSEC-Vocational and Skill Enhancement Course

MDM-Multidisciplinary Minor: It should be selected from other UG Engineering Minor Programme.



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum

With effect from 2025-2026

Semester -VI

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	CIVPCC-10	Design of Concrete Structures -I	3			03	70	30			100
PCC	CIVPCC-11	Hydrology and Water Resources Engineering	3			03	70	30	25		125
PCC	CIVPCC-12	Construction Management Practices	2		2	03	70	30	25	25	150
PEC	CIVPEC-02	Programme Elective Course - II	3		2	04	70	30	25	25	150
PEC	CIVPEC-03	Programme Elective Course – III	3		2	04	70	30	25		125
SEC	CIVSEC-04	Mini Project on Design of Infrastructure (MPDI)			4	02			25	50	75
MDM	MDM-04	MD Minor-IV	2		2	03	70	30	25		125
		Total	16		12	22	420	180	150	100	850

PCC- Programme Core Course, PEC-Programme Elective Course AEC- Ability Enhancement Course, IKS- Indian Knowledge System,

CC- Co-curricular Courses,

VSEC-Vocational and Skill Enhancement Course.

MDM-Multidisciplinary Minor: It should be selected from other UG Engineering Minor Programme.



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum

With effect from 2026-2027

Semester –VII

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	CIVPCC-13	Design of Concrete Structures-II	3			03	70	30			100
PCC	CIVPCC-14	Estimating Costing and Valuation	2		2	03	70	30	25		125
PEC	CIVPEC-04	Programme Elective Course -IV or MOOCS##	4			04	100				100
Project	CIVProject	Capstone Project			8*	04			100	100	200
RM	RM	Research Methodology and IPR	3		2	04	70	30	25		125
MD M	MDM-05	MD Minor-V	2			02	70	30			100
		Total	14		12	20	380	120	150	100	750

Students should attend MOOCs in that 4 hrs, if MOOCs is chosen, Mini Project/ Assignment related to MOOCs and ICA marks to be given based on that.

List of MOOCs related to CIVPEC-04 will be provided by BOS time to time.

* Load Based on Project Groups

BSC- Basic Science Course

ESC- Engineering Science Course,

PCC- Programme Core Course,

AEC- Ability Enhancement Course, IKS- Indian Knowledge System, CC- Co-curricular Courses,

VSEC-Vocational and Skill Enhancement Course



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

FACULTY OF SCIENCE & TECHNOLOGY

NEP 2020 Compliant Curriculum

With effect from 2026-2027

Semester –VIII

Distribution	Course Code	Name of the Course	Engagement Hours			Credits	FA	SA			Total
			L	T	P		ESE	ISE	ICA	OE/ POE	
PCC	CIVPCC-10	Professional Practice, Law & Ethics	4#			04	100				100
PEC	CIVPEC-05	Programme Elective Course -V or MOOCs	4#			04	100				100
OJT	CIVOJT	On-Job Training			24	12			200	100	300
		Total	8		24	20	200		200	100	500

Students will practice or attend in Self-Learning mode.

PCC- Programme Core Course, PEC-Programme Elective Course

AEC- Ability Enhancement Course, IKS- Indian Knowledge System, CC- Co-curricular Courses,

VSEC-Vocational and Skill Enhancement Course

MDM-Multidisciplinary Minor: It should be selected from other UG Engineering Minor Programme.

List of MOOCs related to CIVPEC-05 will be provided by BOS time to time.

Basket of Programme Elective Course (PEC)

PEC/Sem	Course code and name
CIVPEC - 01/ V	CIVPEC – 01A: Advanced Concrete Technology CIVPEC – 01B: Engineering Geology and Material Science CIVPEC – 01C: Water and Sanitation Infrastructure
CIVPEC - 02/ VI	CIVPEC – 02A: Foundation Engineering CIVPEC – 02B: Urban Transportation Planning CIVPEC – 02C: Air and Noise Pollution and Control
CIVPEC - 03/ VI	CIVPEC – 03A: Construction Productivity CIVPEC – 03B Planning for Sustainable Development CIVPEC – 03C Earthquake Engineering
CIVPEC - 04/ VII OR	CIVPEC – 04A: Hydraulic Structures and Water Power Engg. CIVPEC – 04B: Repair and Rehabilitation of Structure CIVPEC – 04C: Industrial Structures
CIVPEC - 04/ VII	MOOC Courses CIVPEC – 04D : <As per the list provided by BoS> CIVPEC – 04E : <As per the list provided by BoS>
CIVPEC - 05/ VIII OR	CIVPEC – 05A: Concrete Composites CIVPEC – 05B: TQM and MIS in Civil Engineering CIVPEC – 05C: Disaster Management
CIVPEC - 05/ VIII	MOOC Courses CIVPEC – 05D: <As per the list provided by BoS> CIVPEC – 05D: <As per the list provided by BoS>

A. Multidisciplinary Minor in “Product Design and Commercialization”

Semester	Course Code	Course Title
III	CIVMDM-01A	Design Thinking: Business Innovation Framework
IV	CIVMDM-02A	Entrepreneurship ,Leadership and Management
V	CIVMDM-03A	Design Optimization
VI	CIVMDM-04A	New Product Development
VII	CIVMDM-05A	Finance Management and Marketing

B. Multidisciplinary Minor in “Applied Civil Engineering”

Semester	Course Code	Course Title
III	CIVMDM-01B	Introduction to Geographic Information Systems
IV	CIVMDM-02B	Urban Planning and Design
V	CIVMDM-03B	Operation Research and Management
VI	CIVMDM-04B	Disaster Management and Mitigation
VII	CIVMDM-05B	Sustainable Engineering and Trends

A. Honors in **Innovation and Design Engineering**

<i>Semester</i>	<i>Course Code</i>	<i>Name of the Course</i>	<i>Engagement Hours</i>			<i>Credits</i>	<i>FA</i>	<i>SA</i>		Total
			<i>L</i>	<i>T</i>	<i>P</i>		<i>ESE</i>	<i>ISE</i>	<i>ICA</i>	
III	CIVHON-01A	Design Thinking	3	1		4	70	30	25	125
IV	CIVHON-02A	Managing Innovation and Entrepreneurship	3		2	4	70	30	25	125
V	CIVHON-03A	Engineering Systems and Design Optimization	3		2	4	70	30	25	125
VI	CIVHON-04A	Civil Engineering System Analysis and Design	3		2	4	70	30	25	125
VII	CIVHON-05A	Mini Project			4*	2			50	50
		Total	12	1	10	18	280	120	150	550

* Indicates Contact Hours

B. Honors in Infrastructure Engineering

<i>Semester</i>	<i>Course Code</i>	<i>Name of the Course</i>	<i>Engagement Hours</i>			<i>Credits</i>	<i>FA</i>	<i>SA</i>		<i>Total</i>
			<i>L</i>	<i>T</i>	<i>P</i>		<i>ESE</i>	<i>ISE</i>	<i>ICA</i>	
III	CIVHON-01B	Applications of Information Technology and Information Systems	3	1		4	70	30	25	125
IV	CIVHON-02B	Planning and Design of Rural Roads	3		2	4	70	30	25	125
V	CIVHON-03B	Roads and Highway Project Development	3		2	4	70	30	25	125
VI	CIVHON-04B	Bridge and Grade Separated Structures	3		2	4	70	30	25	125
VII	CIVHON-05B	Mini Project			4*	2			50	50
		Total	12	1	10	18	280	120	150	550

* Indicates Contact Hours

C. Honors in **Sustainability Engineering**

<i>Semester</i>	<i>Course Code</i>	<i>Name of the Course</i>	<i>Engagement Hours</i>			<i>Credits</i>	<i>FA</i>	<i>SA</i>		<i>Total</i>
			<i>L</i>	<i>T</i>	<i>P</i>		<i>ESE</i>	<i>ISE</i>	<i>ICA</i>	
III	CIVHON-01C	Environmental Laws and Impact Assessment	3	1		4	70	30	25	125
IV	CIVHON-02C	Construction Materials: Sustainability and Usability	3		2	4	70	30	25	125
V	CIVHON-03C	Sustainable Materials and Green Buildings	3		2	4	70	30	25	125
VI	CIVHON-04C	Sustainable Engineering and Technology	3		2	4	70	30	25	125
VII	CIVHON-05C	Mini Project			4*	2			50	50
		Total	12	1	10	18	280	120	150	550

* Indicates Contact Hours

D. Honors in “Railway Infrastructure”

<i>Semester</i>	<i>Course Code</i>	<i>Name of the Course</i>	<i>Engagement Hours</i>			<i>Credits</i>	<i>FA</i>	<i>SA</i>		<i>Total</i>
			<i>L</i>	<i>T</i>	<i>P</i>		<i>ESE</i>	<i>ISE</i>	<i>ICA</i>	
III	CIVHON-01D	Railway Track structure	3	1		4	70	30	25	125
IV	CIVHON-02D	Elevated structures in Railway	3		2	4	70	30	25	125
V	CIVHON-03D	Underground structures in Railway	3		2	4	70	30	25	125
VI	CIVHON-04D	High speed Railway infrastructure	3		2	4	70	30	25	125
VII	CIVHON-05D	Mini Project			4*	2			50	50
		Total	12	1	10	18	280	120	150	550

* Indicates Contact Hours

Honors with Research*

<i>Semester</i>	<i>Course Code</i>	<i>Name of the Course</i>	<i>Engagement Hours</i>	<i>Credits</i>	<i>SA</i>		<i>Total</i>
			<i>P</i>		<i>ICA</i>	<i>OE</i>	
VII	CIVRES-01	Research Project Phase-01	9 #	9	100	100	200
VIII	CIVRES-01	Research Project during OJT	9 ##	9	100	100	200
		Total	18	18	200	200	400

Along with 9 hours of engagement hours, 4.5 Hrs. activities for preparation for community engagement and service, preparation of reports, etc.

Along with 9 hours of engagement hours 4.5 Hrs. activities for preparation for community engagement and service, preparation of reports, etc. and independent reading during On Job Training and preferably related to On Job Training activities.

These Courses are open for students of all the UG Engineering Program.

Semester: III List of open elective - I

Sr. No.	List of Open Electives
1.	OE-01A: Advanced Mathematics and Statistics
2.	OE-01B Digital Marketing and E- Commerce
3.	OE-01C Humanities and Social Sciences
4.	OE-01D Industrial and Quality Management
5.	OE-01E Mathematics for Software and Hardware
6.	OE-01F Soft Skills and Personality Development

Semester: IV List of open elective – II

Sr. No.	List of Open Electives
1.	OE-02A Entrepreneurship and Innovation
2.	OE-02B Environmental Sustainability
3.	OE-02C Renewable Energy
4.	OE-02 D Measurement, Instrumentation and Sensors
5.	OE-02E Operation Research
6.	OE-02F Computational Mathematics
7.	OE-02 G Professional Business Communication

List of Open Electives 01 (Semester –III)

- 1. OE-01A: Advanced Mathematics and Statistics**
- 2. OE-01B Digital Marketing and E-Commerce**
- 3. OE-01C Humanities and Social Sciences**
- 4. OE-01D Industrial and Quality Management**
- 5. OE-01E Mathematics for Software and Hardware**
- 6. OE-01F Soft Skills and Personality Development**

List of Open Electives 02 (Semester –IV)

- 1. OE-02A Entrepreneurship and Innovation**
- 2. OE-02B Environmental Sustainability**
- 3. OE-02C Renewable Energy**
- 4. OE-02D Measurement, Instrumentation and Sensors**
- 5. OE-02F Operation Research**
- 6. OE-02F Computational Mathematics**
- 7. OE-02 G Professional Business Communication**

Open Electives 03 (Semester –V)

- 1. Interdisciplinary Mini Project**