Punyashlok Ahilyadevi Holkar Solapur University, Solapur



Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus Structure: B. Tech. (Civil Engineering)

S.Y. B.Tech (Civil Engineering) w.e.f. Academic Year 2019-20

T.Y. B.Tech (Civil Engineering) w.e.f. Academic Year 2020-21

Final Year B.Tech (Civil Engineering) w.e.f. Academic Year 2021-22

Punyashlok Ahilyadevi Holkar Solapur University, Solapur FACULTY OF SCIENCE & TECHNOLOGY B. Tech. Civil Engineering

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

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

- Graduates will be prepared with strong engineering fundamentals leading to excellent performance in professional career in planning, designing, construction, operation & maintenance of the built environment and global infrastructure that meet the societal needs.
- 2. Graduates will exhibit strong technical ability to create and synthesize data using relevant tools and concepts, for providing sustainable solutions to civil engineering problems and projects.
- 3. Graduates will exhibit excellent interpersonal communication and resource management skills as leaders in the civil engineering profession while working as a part of multidisciplinary team.
- 4. Graduates will be prepared with sound foundation in mathematics, science and in Civil Engineering to prepare them for higher studies and research.
- 5. Graduates will possess a breadth of knowledge and engage themselves in the lifelong learning to meet challenges of globalization.
- 6. Graduates will have a sense of responsibility, respect towards society & its heritage and will follow the professional ethics.

Program Outcomes (POs) B. Tech. Civil Engineering

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

- a) Students will demonstrate the basic knowledge of mathematics, science and engineering.
- b) Students will demonstrate ability to design and conduct experiments, interpret & analyze data and report results.
- c) Students will demonstrate an ability to design a system, component, or a process that meets desired specifications within realistic constraints.
- d) Students will demonstrate an ability to function in multidisciplinary team.
- e) Students will demonstrate the ability to identify, formulate and solve Civil engineering problems.
- f) Students will demonstrate the understanding of their professional Responsibilities ethically.
- g) Students will be able to communicate effectively to all concerned.
- h) Students will have the confidence to apply engineering solutions in global and social context.
- i) Students will recognize the need for and an ability to engage in life-long learning.
- j) Students will have broad education for understanding the impact of engineering solutions in a global, economic, environmental, and societal context.
- k) Students will possess an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

PROGRAM SPECIFIC OUTCOMES (PSOs)

B. Tech. Civil Engineering

- a) Graduates will be able to survey, conduct geo-technical investigations, plan, analyse, design, estimate and construct residences, public buildings, industrial buildings, townships and infrastructural projects by adopting appropriate construction methods.
- b) Graduates will analyse and design the water resources systems, municipal and industrial waste treatment plants with due consideration to pollution free environment.
- c) Graduates will use appropriate application software, develop skills necessary for professional practice as a Civil Engineer and prepare themselves for competitive examinations for higher education & for public service commissions.





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. 2019-2020)

Course	Theory Course Name		Hrs	/week		Credits	Examination Scheme				
Code		L	Т	Р	D		ISE	ESE	1	ICA	Total
CV211	Concrete Technology, Material Testing & Evaluation		-	-	-	3	30 70			-	100
CV212	Surveying & Geomatics	3	-	-	-	3	30	70		-	100
CV213	Building Construction & Drawing	2	-	-	-	2	30	70		-	100
CV214	Introduction to Fluid mechanics	3	-	-	-	3	30	70		-	100
CV215	Engineering Geology	2	-	-	-	2	30	70		-	100
CV216	Introduction to Solid Mechanics	3	1	-	-	4	30	70		-	100
CV217	Energy Science & Engineering	1	-	-	-	1	25	-		-	25
	Total	17	1	-	-	18	205	420		-	625
	Laboratory/Drawings			2				POE	OE		
CV211	Concrete Technology, Material Testing & Evaluation			2	-	1	-	-	-	25	25
CV212	Surveying & Geomatics	-)/		2	-	1	-	25	-	25	50
CV213	Building Construction & Drawing	-			2	1	-	-	-	25	25
CV214	Introduction to Fluid mechanics	पण्यञ्लोक	अहिल्यादेव	ो हो 8 कर	-	1	-	25	-	25	50
CV215	Engineering Geology	-सोल	पर विद्याप	ाउ 2	-	1	-	25	-	25	50
CV218	Lab practice		् ाया संप्रस्त	2	-	1	-	-	-	25	25
	Total	<u> </u>	-	10	-	6	-	75		150	225
	Grand Total	17	1	10	2	24	205	495		150	850
	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) Term work assessment: Term Work assessment 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 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. 2019-2020

Course	Theory Course Name		Hrs.	/week		Credits]	Examination Scheme			
Code		L	Т	Р	D		ISE	ES	E	ICA	Total
CV221	Water Supply Engineering	3	-	-	-	3	30	70)	-	100
CV222	Building Planning & Design	3	-	-	-	3	15	35	5	-	50
CV223	Hydraulic Engineering	3	-	-	-	3	30	70)	-	100
CV224	Open Elective-I: ICT for development	2	-	-	-	2	50	-		-	50
CV225	Structural Analysis	3	-	-	-	3	30	70)	25	125
CV226	Engineering Mathematics-III	3	1	-	-	4	30	70)	25	125
	Total	17		-	-	18	185	315		50	550
	Laboratory/Drawings:		-0-					POE	OE		
CV221	Water Supply Engineering		-	2	-	1	-	-	-	25	25
CV222	Building Planning & Design			-	2	1	-	75	-	50	125
CV223	Hydraulic Engineering			2	-	1	-	-	-	25	25
CV224	Open Elective- I : ICT for development	- /	7)	2	-	1	-	-	-	50	50
CV227	Computer Programming & Numerical Methods	2 पण्यञ्लोक		तो 2 उक	r –	3	-	50	-	25	75
	Total	2 सोट	गपूर0ंवद्य	पीठ8	2	7	- 125		175	300	
	Grand Total	19	1	8	2	25	185	440		225	850
	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) Term work assessment: Term Work assessment 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 Engineering to become eligible for award of degree.



Credit System structure of T. Y. B. Tech. Civil Engg.-I, Semester- V, (Revised from 2020-2021)

Course	Theory Course Name		Hrs	/week		Credits	Examination Scheme				
Code		L	Т	Р	D		ISE	ES	E	ICA	Total
CV311	Design of Steel Structures	4	-	-	-	4	30	70)	-	100
CV312	Geotechnical Engineering	4	-	-	-	4	30	70)	-	100
CV313	Waste water Engineering & Air Pollution	3	-	-	-	3	30	70)	-	100
CV314	Highway & Tunnel Engineering	3	-	-	-	3	30	70)	-	100
CV315	Hydrology and Water Resources Engineering	3	1	-	-	4	30	30 70		25	125
CV316	Life Science (Self Learning mode)	-	-	-	-	1	-	- 50		-	50
	Total	17	1			19	150 400		0	25	575
	Laboratory/Drawings		Drid					POE	OE		
CV312	Geotechnical Engineering	- <		2	-	1	-	50	-	25	75
CV313	Waste water Engg. & Air Pollution	- 3	2-0	2	-	1	-	-	-	25	25
CV314	Highway & Tunnel Engineering	- /	K.	2	-	1	-		-	50	50
CV317	Planning & Design of Public Building	1	(-)	-	2	2	-	50	-	25	75
CV318	*Mini Project using Application Software	-		2	-	1	-	-	-	50	50
	Total	पुण्यञ्चाक गोग	ोक असित्यावेचे हो ह कर 2 6 - 10		10	0	175	275			
	Grand Total	18	1	8	2	25	150	50	0	200	850

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.

*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.



Credit System structure of T. Y. B. Tech. Civil Engg. -II, Semester - VI, W. E.F. 2020-2021

Course	Theory Course Name		Hrs	./week		Credits	Examination Scheme				
Code		L	Т	Р	D		ISE	ES	E	ICA	Total
CV321	Foundation Engineering	3	-	-	-	3	30	70)	-	100
CV322	Hydraulic Structures & Water Power Engg.	3	-	-	-	3	30	70)	-	100
CV323	Professional Elective Course-I	3	-	-	-	3	30	70)	-	100
CV324	Design of Concrete Structures-I	3	-	-	-	3	30	70)	25	125
CV325	Principles of Management and Quantitative Techniques	3	-	-	-	3	30	0 70		25	125
CV326	Open Elective-II: Metro Systems & Engg.	3	-	-	-	3	30	30 70		-	100
	Total	18		-	-	18	180	180 420		50	650
	Laboratory/Drawings:		1.20				-	POE	OE		
CV321	Foundation Engineering	- <		2	-	1	-	-	-	25	25
CV322	Hydraulic Structures & Water Power Engg.	-		2	-	1	-	-	25	25	50
CV323	Professional Elective Course-I	- ,2	× ×	2	-	1	-	-	-	25	25
CV327	Project on Steel Structures	- 5/	7-1	<u> - </u>	4	2	-	-	50	25	75
CV328	Assessment of field training report				-	1	-	-	-	25	25
	Total	रण्यञ्चोक	अहिल्यादेव	ो हो&कर	2	6		7:	5	125	200
	Grand Total	18	0	6	6	24	180 495		175	850	

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) Students shall undergo a field training of 15 days in the winter vacation after T.E. Part I and submit the field training report, which shall be assessed by faculty associated with 'Principles of Management and Quantitative Techniques', in T.E. Part II.

(2) Students shall undergo a field training of 15 days in the summer vacation after T.E. Part II. The training report shall be assessed in B.E. Part -I by the concerned project guides.

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

(4) 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.



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

Course	Theory Course Name	Hrs./week				Credits	Examination Scheme				
Code		L	Т	Р	D		ISE	ESI	E	ICA	Total
CV411	Engineering Economics, Estimation & Costing	3	-	-	-	3	30	70		-	100
CV412	Construction Engineering, Management & Construction Practices	3	-	-	-	3	30	70		-	100
CV413	Design of Concrete Structures-II	3	-	-	-	3	30	70		25	125
CV414	Earthquake Engineering	3	1	-	-	4	30	70		25	125
CV415	Professional Elective Course- II	3	-	-	-	3	30	70		25	125
	Total	15	1	-	-	16	150	350		75	575
	Laboratory/Drawings:							POE	OE		
CV411	Engineering Economics, Estimation & Costing		12-10	4	-	2	-	25	-	50	75
CV412	Construction Engineering , Management & Construction Practices		À	2	-	1	-	-	25	-	25
CV416	Project on R. C. C. Structures		7	-	4	2	-	-	25	50	75
CV417	Seminar	- (7		2	-	1	-	-	-	50	50
CV418	Project work	-/_		_2	-	1	-	-	-	25	25
CV419	Assessment of report on field training-II	पण्यश्लोक	अहिल्यादेव	। तोळकर	-	1	-	-	-	25	25
	Total	सोल	प्र विद्याप	ाठ १०	4	8	-	75		200	275
	Grand Total	15	1	10	4	24	150	425	5	275	850

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



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

Course	Theory Course Name	Hrs./week				Credits	Examination Scheme				
Code		L	Т	Р	D		ISE	ES	E	ICA	Total
CV421	Professional Elective Course- III	4	-	-	-	4	30	70	0	-	100
CV422	Professional Elective Course - IV	4	-	-	-	4	30	70	0	-	100
CV423	Railway & Harbour Engineering	3	1	-	-	4	30	70	0	-	100
CV424	Open Elective-III :Economic policies in India	3	-	-	-	3	30	70	0	-	100
CV425	Professional Practice, Law & Ethics	3	-	-	-	3	30	70	70		100
	Total	17	1	-	-	18	150	350		-	500
	Laboratory/Drawings							POE	OE		
CV421	Professional Elective Course- III)	2	-	1	-	-	25	25	50
CV422	Professional Elective Course - IV	-	A.	2	-	1	-	-	25	25	50
	Project work	-	1	8	-	4	-	-	100	100	200
	Total	_/_		12	-	6	-	15	50	150	300
	Grand Total	17	1	12	-	24	150	500		150	800

सोलापुर विद्यापीठ

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, class tests, quizzes, attendance and interaction during theory and lab sessions, journal writing, report presentation etc., as applicable.

Professional Elective Courses:

Elective No	Semester	(I) Structural Engineering	(II) Geotechnical Engineering & Transportation Engg	(III) Construction Engineering & Management	(IV) Environmental Engineering &Hydraulics, Hydrology & Water Resources Engineering
Prof Elective-I	Semester- VI	Masonry Structures	Structural Geology	Construction Engineering Materials	Ecological Engineering
		Structural Analysis by 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
			22		Hydraulic modelling
		र ए	प्रलोक अहिल्यादेवी होळकर		Urban Hydrology and Hydraulics
		Σ	सोलापूर विद्यापीठ ।। विद्यया संपन्नता ।।		Instrumentation & Sensor Technologies for Civil Engg. Applications
					Open Channel flow & River Hydraulics
Prof. Elective-II	Semester- VII	Reliability Analysis of Structures	Offshore Engineering	Construction Productivity	Environmental Laws and Policy
		Engineering Materials for Sustainability	Intelligent Transportation Systems	Entrepreneurship	Environmental Systems
		Metal Structure Behaviour- I	Port and Harbour Engineering		Transport of Water and Wastewater

		Advanced Structural Analysis	Advanced Engineering		Pipeline Engineering
			Geology		
		Repairs & Rehabilitation of	Traffic Engineering and		Water Power Engineering
		Structures	Management		
			Advanced foundation		
			Engineering		
			Geosynthetics and soil		
			structures		
Prof. Elective-III	Semester- VIII	Finite Element Method	Rock Mechanics	Construction Cost Analysis	Rural Water Supply and Onsite Sanitation Systems
		Bridge Engineering	Public Transportation Systems	Construction Equipment& Automation	Air and Noise Pollution and Control
		Industrial Structures	Airport Planning and Design	Contracts Management	Environmental Impact Assessment and Life Cycle Analyses
			High Speed Rail Engineering	Geographic Information Systems and Science	Surface Hydrology
			Advanced Railway Track		Groundwater
		da.	प्रलाक आंद्रल्यादवा राळकर सोलापुर विद्यापीठ Soil structure interaction		Water Quality Engineering
		Metal Structure Behaviour- II	Environmental Geo- technology	Sustainable Construction Methods	Water and Air Quality Modelling
Prof. Elective-IV	Semester- VIII	Design of Structural Systems	Infrastructure Planning and Design	Advanced Concrete Technology	Sustainable Engineering & Technology
		Modelling and Analysis of Uncertainty	Transportation Economics		Biological Processes for Contaminant Removal
		Design of Bridges	Railway Project Design & Planning for Civil Engineering		Water Resources Field Methods
			Ground improvement Techniques		River Engineering

