



**PUNYASHLOK AHILYADEVI HOLKARSOLAPUR UNIVERSITY, SOLAPUR**  
**Faculty of Science & Technology**  
**Credit System structure of S. Y. B. Tech. Civil Engg., Semester- III, (W.E.F. 2019-2020)**

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV211	Concrete Technology, Material Testing & Evaluation	3	-	-	-	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	
	<b>Total</b>	<b>17</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>18</b>	<b>205</b>	<b>420</b>	<b>-</b>	<b>625</b>	
	<b>Laboratory/Drawings</b>							<b>POE</b>	<b>OE</b>		
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	-	-	2	-	1	-	25	-	25	50
CV215	Engineering Geology	-	-	2	-	1	-	25	-	25	50
CV218	Lab practice	-	-	2	-	1	-	-	-	25	25
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>-</b>	<b>6</b>	<b>-</b>	<b>75</b>	<b>150</b>	<b>225</b>	
	<b>Grand Total</b>	<b>17</b>	<b>1</b>	<b>10</b>	<b>2</b>	<b>24</b>	<b>205</b>	<b>495</b>	<b>150</b>	<b>850</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.



**Punyashlok Ahilyadevi Holkar Solapur University, Solapur**  
**S. Y. B. Tech. (Civil Engineering) Semester- III**  
**CV213: BUILDING CONSTRUCTION AND DRAWING**

**Teaching Scheme**

Lectures – 2 Hours/week, 2 Credits  
Drawings – 2 Hour/week, 1Credit

**Examination Scheme**

ESE – 70 Marks  
(Theory Paper of 4 Hours duration)  
ISE – 30 Marks  
ICA- 25 Marks

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**Course Objectives:**

- 1) To introduce students to functional requirements of buildings.
- 2) To introduce students to Scale and various types of Scale.
- 3) The impart knowledge of various building components such as door, windows, arches, floors etc along with its functions and method of construction.
- 4) To explain methodology adopted for design of various types of staircases.
- 5) To enable students to draw perspective view of a building.
- 6) To make the student conversant with various building finishes, ventilation and air conditioning principles

**Course Outcomes:**

After successful completion of this course the students will be able to:

- 1) Elucidate functional requirements of buildings and types of foundation and its suitability.
- 2) Draw neat drawings of different building components such as doors, windows, stairs etc with the suitable scale using CADD software.
- 3) Design different types of staircases commonly used in residential and public buildings.
- 4) Draw neat perspective view drawings of an object and given small residential building.
- 5) Select appropriate ventilation systems and building finishes.

6. Doors
7. Windows
8. Staircases
9. Perspective drawing of object and one G+1 Residential building (Ready plan).

(B) Drawing using CADD software to be done:

1. Double leaf paneled doors
2. Double leaf paneled window
3. Open well staircase

Prints of these CADD drawings will form a part of 'Term work'.

- Site Visit for learning construction details of a residential building. A visit report to be drafted and submitted as a part of term work.

#### **TEXT BOOKS**

- 1) A text book of Building Construction- Arora & Bindra- Dhanpat Rai Publication, New Delhi.
- 2) Building Construction- Sushil Kumar- Standard Publishers, Delhi.
- 3) Building Construction – Arora & Gupta –Satya Prakashan, New Delhi.
- 4) Principles of Building Drawing- M.G. Shah and C.M. Kale.
- 5) A course in Civil Engineering Drawing- V.B. Sikka – S.K.Katariya & Sons, Delhi.
- 6) Civil Engineering Construction Materials, S.K. Sharma, KBP House
- 7) Engineering Drawing + AutoCAD , by K.Venugopal , New Age International Publishers
- 8) Mastering AutoCAD 2019 and AutoCAD LT 2019, George Omura and Brian C. Benton, SYBEX Publishers.

#### **REFERENCE BOOKS**

1. Building Technology- Ivor H. Seely.
2. Building Construction-Makay vol. I & II
3. National Building Code of India-SP7- Indian Standards Delhi.
4. Various IS Specifications for Drawings, Symbols, Conventional Signs as per IS 962-1967- Indian Standards Delhi.
5. Building Construction A to Z – Mantri.
6. Building Materials- TTTI, Chandigadh.
7. Building Construction- S.S. Bhavikatti- Vikas Publishing House Pvt. Ltd., Noida.
8. Building Materials- S.S. Bhavikatti- Vikas Publishing House Pvt. Ltd., Noida.



**PUNYASHLOK AHILYADEVI HOLKAR**  
**SOLAPUR UNIVERSITY, SOLAPUR**  
**S. Y. B. Tech. (Civil Engineering) Semester- III**  
**CV215: ENGINEERING GEOLOGY**

**Teaching Scheme**

**Lectures** – 2 Hrs/Week, 2 Credits

**Practical** – 2 Hr/Week, 1 Credit

**Examination Scheme**

**ESE** – 70 Marks

**ISE** - 30 Marks

**ICA**- 25 Marks

**ESE (POE)** - 25 Marks

**Course Objectives:**

- 1) To identify the main and most common igneous, sedimentary and metamorphic rocks encountered by foundations and construction.
- 2) To identify and define the main morphological and geological characteristics as shown on maps.
- 3) Analyse geological parameters important in geotechnical engineering studies.
- 4) To establish and describe topographical and geological sections,
- 5) Identify potential geological hazards such earthquakes, landslides, flooding to various civil engineering structures and ways of preventing and dealing with them

**Course Outcomes:** At the end of course students will be able to:

- 1) To describe issues concerning the geological formations and geological structure of a region
- 2) To distinguish the characteristics of the most important geological formations and problems that may arise in the various civil engineering projects in such formations.
- 3) To interpret and explain the geological structures in the geological maps and cross sections.
- 4) To assess and appropriately adjust the results of geological study in order to ascertain secure construction and operation of a civil engineering projects like dams, reservoirs hilly roads and railway tracks.
- 5) To receive, analyze and evaluate data and appropriately and solve technical as well as ground water related problems.

10) Identification of Subsurface rock with the help of Resistivity Instrument.

A Study tour to the place worth visiting from Engineering Geological point of view.

A journal containing complete record of above practical work shall be examined as 'Internal Continuous Assessment'. Practical Examination shall be based on practical course. Case study of any engineering structure with respect to geological investigation

**Text Books:**

- 1) Engineering and General Geology, Parbin Singh, 8th Edition (2010), S. K. Kataria & Sons. Text Book of Engineering Geology, N. Chenna Kesavulu, 2nd Edition (2009), Macmillan Publishers India.
- 2) Geology for Geotechnical Engineers, J. C. Harvey, Cambridge University Press (1982).
- 3) A Text Book of Engineering Geology by R.B. Gupte -P.V.G. Publications, Pune
- 4) A Text Book of Engineering Geology by N. Chenna Kesavulu.
- 5) Text Book of Engineering Geology, N. Chenna Kesavulu, Macmillan Publishers
- 6) Engineering Geology for Civil Engineers, Varghese P.C, PHI
- 7) Engineering Geology, Subinoy Gangopadhyay, Oxford University

**Reference Books**

- 1) Geology and Engineering by R. Legget- McGraw Hill Book Co., London.
- 2) Physical Geology by Arthur Holmes-ELBS Publication.
- 3) Principles of Petrology by G.W. Tyrrel.



**PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR**

Faculty of Science & Technology

Credit System structure of S. Y. B. Tech. Civil Engg., Semester – IV, W. E.F. 2019-2020

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV221	Water Supply Engineering	3	-	-	-	3	30	70	-	100	
CV222	Building Planning & Design	3	-	-	-	3	15	35	-	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	
	<b>Total</b>	<b>17</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>18</b>	<b>185</b>	<b>315</b>	<b>50</b>	<b>550</b>	
	<b>Laboratory/Drawings:</b>							<b>POE</b>	<b>OE</b>		
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	-	-	2	-	1	-	-	-	50	50
CV227	Computer Programming & Numerical Methods	2	-	2	-	3	-	50	-	25	75
	<b>Total</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>7</b>	<b>-</b>	<b>125</b>	<b>175</b>	<b>300</b>	
	<b>Grand Total</b>	<b>19</b>	<b>1</b>	<b>8</b>	<b>2</b>	<b>25</b>	<b>185</b>	<b>415</b>	<b>225</b>	<b>850</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.



## SOLAPUR UNIVERSITY, SOLAPUR

### S. Y. B. Tech. (Civil Engineering) Semester- IV CV221: WATER SUPPLY ENGINEERING

#### Teaching Scheme

Lectures – 3 Hrs/Week, 3 Credits

Practicals- 2 Hrs/Week, 1 Credit

#### Examination Scheme

ISE – 30 Marks

ESE –70 Marks

ICA-25 Marks

#### Course Objectives:

1. To acquaint the students with drinking water quality standards and forecast water demands.
2. To study the various units of water treatment plants, treatment procedures and sequencing of water treatment units for various sources of water.
3. To enable the students to carry out design of water distribution systems and appurtenances using appropriate methods.
4. To acquaint the students with various water supply systems, and their operation and maintenance.

#### Course Outcomes

Upon successful completion of course the student will be able to:

1. Plan and design water conveyance systems for a rural/urban area based on population forecasts.
2. Design various water treatment units and plan their operations on the basis of raw water quality and water demand.
3. Apply knowledge of advanced water treatment processes for individual water purification units.
4. Plan and design water distribution systems
5. Identify operation and maintenance problems in water supply systems and suggest suitable solutions.

### SECTION I

#### Unit 1: Quantity and Quality of Water

(6 Hrs)

Sources of water, Quality & Quantity of water sources, Intake work, Demand of water, factors affecting demand, Fluctuation in water demand and its effect, Design period, Population forecast. Calculations for fire demand, Water quality parameters, characteristics and their significance, Drinking water quality standards.

(B) Design /Analysis Problems on each water treatment unit / distribution system

(C) Visit to water treatment plant

Internal Continuous Assessment (ICA) submission shall consist of journals containing

1. Above mentioned Experiments
2. Visit report describing the water treatment units of the plants visited.
3. Design of distribution system by using software or programming.

### TEXT BOOKS

- 1) Environmental Engineering by Peavey, H. S. Rowe, D.R. and Tchobanoglous  
McGraw Hill Book Company.
- 2) Water Supply and Pollution Control by Viessman W. and Hammer M.J.  
Harper Collins College Publishers.
- 3) Water and Waste Water Technology by Hammer M.J. Prentice-Hall of India Private  
ltd.
- 4) Water and Wastewater Technology by G.S. Birdie and J.S. Birdie
- 5) Water Supply by Duggal K.N., S. Chand and Company.
- 6) Water Supply by Garg S.K., Khanna Publishers.
- 7) Water Supply and Waste water Disposal by Fair and Gayes, John Wiley Publication.
- 8) Water Supply Engineering by B.C. Punmia, Ashok Jain, Arun Jain, Laxmi  
Publications
- 9) Environmental Engineering, S.C. Sharma, Khanna Publishing House
- 10) Basic Environmental Engineering, R.C. Gaur, Newage Publications
- 11) Water Supply and Sanitary Engineering, Rangwala, Charotar Publications

### Reference Books

1. Manual on Water Supply and Treatment- Government of India Publication.-1993.
2. "Water and Waste Water Engineering Vol. I & II", John Wiley Publication, 1966. Fair  
G.M, Geyer J. C, and Okun D. A.
3. "Water and Waste Water Technology", Prentice Hall of India Private Limited, 1996.  
Hammer M. J.





**SOLAPUR UNIVERSITY, SOLAPUR**  
**Faculty of Engineering & Technology**

**Credit System structure of T. E. Civil-I, Semester- V, (Revised from 2018-2019)**

Course code	Theory Course Name	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
CV-311	Design of Steel Structures	3	-	-	-	3	30	70	-	100
CV-312	Geotechnical Engg.-I	3	-	-	-	3	30	70	-	100
CV-313	Environmental Engg.-I	3	-	-	-	3	30	70	-	100
CV-314	Water Resources Engg. II	3	-	-	-	3	30	70	-	100
CV-315	Transportation Engg.-I	3	-	-	-	3	30	70	-	100
SLH-31	Self Learning (H.S.S. course)	-	-	-	-	2	-	50	-	50
	<b>Total</b>	<b>15</b>				<b>17</b>	<b>150</b>	<b>400</b>	<b>-</b>	<b>550</b>
	<b>Laboratory/Drawings</b>							<b>POE</b>	<b>OE</b>	
CV-311	Design of Steel Structures	-	-	2	-	1	-	-	-	25
CV-312	Geotechnical Engg.I	-	-	2	-	1	-	25	-	25
CV-316	Building Planning & Design using CADD	1	-	-	4	3	-	-	25	50
CV-313	Environmental Engg.I	-	-	2	-	1	-	-	-	25
CV-314	Water Resources Engg. II	-	-	2	-	1	-	-	25	25
CV-315	Transportation Engg.-I	-	-	2	-	1	-	-	-	25
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>4</b>	<b>8</b>	<b>-</b>	<b>75</b>	<b>175</b>	<b>250</b>
	<b>Grand Total</b>	<b>16</b>		<b>10</b>	<b>4</b>	<b>25</b>	<b>150</b>	<b>475</b>	<b>175</b>	<b>800</b>

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

**Note:**

- 1) Students shall undergo a field training of total 30 days in two phases including at least 15 days in the winter vacation after T.E. Civil Part -I and at least 15 days in summer vacation after T.E. Civil Part-II. They shall submit the field training report of the first phase to the faculty associated with subject Engineering Management- I in their T.E. Part-II. They shall submit field training report of the second phase to concerned 'Project' guides in B.E. Part-I.
- 2) Internal Continuous Assessment (ICA) shall be a continuous process based on the performance of the student in assignments, class tests, quizzes, attendance and interaction during theory and lab sessions, syllabus, report presentation etc., as applicable.
- 3) The batch size for the practical/tutorial is of 15 students. On forming the batches, if the number of remaining students exceeds 7, then a new batch be formed.
- 4) Curriculum for Humanities and Social Sciences (HSS) Self Learning Courses is common for all under graduate programmes of Faculty of Engineering and Technology.
- 5) For self Learning at T.E. Civil Part I –
  - A. Student shall select a 'Self Learning Course' from Solapur University, Solapur 'HSS Course List' and appear for its examination as and when conducted by Solapur University, Solapur.  
Minimum four assignments for Self Learning Modules at T. E. Part I shall be submitted by the students which shall be evaluated by a 'Module Coordinator' assigned by institute / department.

**OR**

- B. Student with prior approval of the institute shall select and enroll for 'National Programme on Technology Enhanced Learning (NPTEL)' course from HSS domain with minimum eight weeks duration, complete necessary assignments and appear for certificate examination as per the NPTEL schedule during respective semester.  
*For more details about Self Learning Course (HSS) please refer to separate rule document available from Solapur University, Solapur. More details about NPTEL are available at <http://nptel.ac.in>*



**T.E. (CIVIL ENGINEERING) PART- I**  
**CV- 313 ENVIRONMENTAL ENGINEERING –I**

<b>Teaching Scheme:</b>		<b>Examination Scheme:</b>	
<b>Lectures:</b>	3Hrs/Week, 3 Credits	<b>ICA:</b>	25 Marks
<b>Practical :</b>	2 Hrs/Week, 1 Credit	<b>ISE:</b>	30 Marks
		<b>ESE (Theory)</b>	70 Marks

### Course Objectives

1. To acquaint the students with drinking water quality standards and forecast water demands.
2. To study the various units of water treatment plants, treatment procedures and sequencing of water treatment units for various sources of water.
3. To enable the students to carry out design of water distribution systems and appurtenances using appropriate methods.
4. To acquaint the students with various water supply systems, and their operation and maintenance.

### Course Outcomes

Upon successful completion of course the student will be able to:

1. Plan and design water conveyance systems for a rural/urban area based on population forecasts.
2. Design various water treatment units and plan their operations on the basis of raw water quality and water demand.
3. Apply knowledge of advanced water treatment processes for individual water purification units.
4. Plan and design water distribution systems
5. Analyze operation and maintenance problems in water supply systems.

6. Turbidity
7. Residual Chlorine
8. Total Dissolved Solids through measurement of conductivity
9. Solids – Total, Suspended, dissolved, volatile and fixed
10. Dissolved Oxygen
11. Most Probable Number
12. Optimum dose of alum by jar test
13. Fluorides
14. Nitrogen
15. Irons and Manganese

(B) Design /Analysis Problems on each water treatment unit / distribution system

(C) Visit to water treatment plant

Internal Continuous Assessment (ICA) submission shall consist of journals containing

1. Above mentioned Experiments
2. Visit report describing the water treatment units of the plants visited.
3. Design of distribution system by using software or programming.

### TEXT BOOKS

1. Environmental Engineering by Peavey, H. S. Rowe, D.R. and Tchobanoglous McGraw Hill Book Company.
2. Water Supply and Pollution Control by Viessman W. and Hammer M.J. Harper Collins College Publishers.
3. Water and Waste Water Technology by Hammer M.J. Prentice-Hall of India Private Ltd.
4. Water and Wastewater Technology by G.S. Birdie and J.S. Birdie
5. Water Supply by Duggal K.N., S. Chand and Company.
6. Water Supply by Garg S.K., Khanna Publishers.
7. Water Supply and Waste water Disposal by Fair and Gayes, John Wiley Publication.
8. Water Supply Engineering by B.C. Punmia, Ashok Jain, Arun Jain, Laxmi Publications



**T.E. Civil – Part I**  
**CV- 314 WATER RESOURCES ENGINEERING – II**

<b>Teaching Scheme:</b>		<b>Examination Scheme:</b>	
<b>Lectures:</b>	3Hrs/Week, 3 Credits	<b>ICA:</b>	25 Marks
<b>Practical :</b>	2 Hrs/Week, 1 Credit	<b>ISE:</b>	30 Marks
		<b>ESE (Lab) :</b>	25 Marks
		<b>ESE(Theory):</b>	70 Marks

**Course Objectives:**

- 1) To study the different aspects of design of hydraulic structures
- 2) To design different types of dams
- 3) To provide knowledge on various hydraulic structures such as energy dissipaters, head and Cross regulators, canal falls and structures involved in cross drainage works
- 4) To understand the analysis of seepage and hydraulic jump

**Course Outcomes:**

After studying this subject the students will be able to

- 1) Plan and design the reservoirs depending upon the water resources potential.
- 2) Analyze and design Gravity dams and Earth dams (Simple Designs).
- 3) Demonstrate the design principles of Arch dams.
- 4) Solve seepage problems for Weirs on Permeable Foundations
- 5) Demonstrate the knowledge of water power engineering and river training.

**SECTION – I**

**Unit 1:**

**(5)**

- a) Planning of Reservoirs: Storage calculations, Control levels, silting of reservoirs, reservoir sedimentation surveys, reservoir losses. Use of remote sensing for reservoir sedimentation surveys.
- b) Dams – Necessity, types of dams, selection of site for dams, selection of type of dam, Introduction to dam instrumentation

**B) Report based on Field visits to Irrigation and Water Power Engineering Projects**

**END SEMESTER EXAMINATION  
ORAL EXAMINATION**

Oral Examination will be based on the ICA.

**TEXT BOOKS:**

1. Irrigation Engineering – S. K. Garg , Khanna Pub. Delhi
2. Irrigation and Water Power Engineering - Priyani , Charoter pub. House, Anand
3. Irrigation and Water Power Engineering – Punmia, B. C.
4. Irrigation – Bharat Singh, NEW CHAND & bros. Roorkee
5. Irrigation Engineering Vol. I – Varshhey and Gupta
6. Engineering Hydrology - K. Subramanya
7. Design of Canals – Circular of Government of Maharashtra, 18 February 1995

**REFERENCE BOOKS:**

1. Design of Small Dam – U. S. B. R., OXFORD & IBH pub.co.
2. Engineering for Dam Vol. I, II, III – Justinn, Creager and Hinds
3. Design of Hydraulic Structures Vol. I & II – Leliavsky
4. River Behaviour, Management and Training - CBIP Publication



**SOLAPUR UNIVERSITY, SOLAPUR**  
**Faculty of Engineering & Technology**

**Credit System structure of T. E. Civil-II, Semester - VI, W. E.F. 2018-2019**

Course code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV-321	Structural Mechanics-III	3	-	-	-	3	30	70	-	100	
CV-322	Geotechnical Engg.II	4	-	-	-	4	30	70	-	100	
CV-323	Environmental Engg.II	3	-	-	-	3	30	70	-	100	
CV-324	Engineering Management- I	3	-	-	-	3	30	70	25	125	
CV-325	Elective-I	3	-	-	-	3	30	70	-	100	
CV-326	Self Learning (Technical course)	-	-	-	-	2	-	50	-	50	
	<b>Total</b>	<b>16</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>18</b>	<b>150</b>	<b>400</b>	<b>25</b>	<b>575</b>	
	<b>Laboratory/Drawings:</b>						-	<b>POE</b>	<b>OE</b>		
CV-321	Structural Mechanics-III	-	-	2	-	1	-	-	-	25	<b>25</b>
CV-322	Geotechnical Engg.II	-	-	2	-	1	-	-	-	25	<b>25</b>
CV-323	Environmental Engg.II	-	-	2	-	1	-	-	25	25	<b>50</b>
CV-325	Elective-I	-	-	2	-	1	-	-	-	25	<b>25</b>
CV-327	Project on Steel Structures	-	-	-	4	2	-	-	25	50	<b>75</b>
CV-328	Mini Project in SM-III/GE-II/EE-II/EM-I using Application Software	-	-	2	-	1				50	<b>50</b>
CV-329	Assessment of field training report	-	-	-	-	1				25	<b>25</b>
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>4</b>	<b>8</b>			<b>50</b>	<b>225</b>	<b>275</b>
	<b>Grand Total</b>	<b>16</b>	<b>0</b>	<b>10</b>	<b>4</b>	<b>26</b>	<b>150</b>	<b>450</b>	<b>250</b>	<b>850</b>	

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

**Note:**

- 1) Student/s shall carry out 'Mini Project' in any one of the following subjects: Structural Mechanics-III, Geotechnical Engg. II, Environmental Engg. II or Engineering Management-I by preferably employing relevant application software. The Mini project shall be assessed by the domain subject teachers for ICA.
  - 2) Students shall undergo a field training of total 30 days in two phases including at least 15 days in the winter vacation after T.E. Civil Part I and at least 15 days in summer vacation after T.E. Civil Part-II. They shall submit the field training report of the first phase to the faculty associated with subject Engineering Management- I in their T.E. Part-II. They shall submit field training report of the second phase to concerned 'Project' guides in B.E. Part-I.
  - 3) Internal Continuous Assessment (ICA) shall be a continuous process based on the performance of the student in assignments, class tests, quizzes, attendance and interaction during theory and lab sessions, syllabus, report presentation etc., as applicable.
  - 4) The batch size for the practical/tutorial is of 15 students. On forming the batches, if the number of remaining students exceeds 7, then a new batch be formed.
  - 5) For Self Learning at T.E. Civil Part II -
    - A. Student shall select a 'Self Learning Technical Course' from Solapur University, Solapur Technical Course List (Civil Engineering) and appear for its examination, as and when conducted by Solapur University, Solapur. Minimum four assignments for Self Learning Modules at T.E. Part II shall be submitted by the students which shall be evaluated by a Module Coordinator assigned by institute / department.
- OR**
- B. Student with prior approval of the institute shall select and enroll for any 'National Programme on Technology Enhanced Learning (NPTEL)' course from Civil Engineering domain/Interdisciplinary course, with minimum eight weeks duration, complete necessary assignments and appear for certificate examination as per the NPTEL schedule during respective semester.

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





**T.E. (CIVIL ENGINEERING) PART II  
CV- 323 ENVIRONMENTAL ENGINEERING –II**

<b>Teaching Scheme:</b>		<b>Examination Scheme:</b>	
<b>Lectures:</b>	3Hrs/Week, 3 Credits	<b>ICA:</b>	25 Marks
<b>Practical :</b>	2 Hrs/Week, 1 Credit	<b>ISE:</b>	30 Marks
		<b>ESE (Lab):</b>	25 Marks
		<b>ESE(Theory):</b>	70 Marks

### Course Objectives

1. To acquaint the students with the characterization of municipal waste, as well as sewage collection & conveyance systems.
2. Study of Primary and Secondary treatment methods of sewage, and concept of recycling the wastewater.
3. Familiarize the students with stream pollution due to waste disposal and suitable centralized/decentralized wastewater Treatment system
4. Learning solid waste and hazardous waste management systems for urban areas.
5. Understanding various sources of air pollution, its measurement and control.

### Course Outcomes

Upon successful completion of course the student will be able to:

1. Plan the layout of sewage collection system, matching the topography of the region and characterization of sewage.
2. Decide sequence and design of wastewater treatment units to meet the sewage treatment standards.
3. Design the wastewater treatment plant using Trickle filter, anaerobic treatment and low cost treatment methods
4. Adopt appropriate methods of Solid waste Disposal and Management of hazardous waste.
5. Measure air pollution and adopt control measures to control of industrial air pollution.

2. Total Solids
3. Biochemical Oxygen Demand
4. Chemical Oxygen Demand
5. Chlorides
6. Oil & Grease
7. Sulphate Content
8. Total Nitrogen
9. Demonstration of High Volume Sampler
10. Demonstration of Auto Exhaust Analyzer.

(B) Design of sewerage system & Treatment system for a small urban area.

**(C) Visit to sewage treatment plant**

Internal Continuous Assessment (ICA) submission shall consist of the following –

1. Journal containing experiments carried out in part A of the Internal Continuous Assessment (ICA) and visit Report on C
2. Detail design and appropriate drawings required for part B of the Internal Continuous Assessment (ICA) work.

**END SEMESTER EXAMINATION (oral)**

Oral examination will be based on the above syllabus.

**TEXT BOOKS**

1. Environmental Engineering by Peavey- H. S. Rowe, D.R. and Thobanoglous, [McGraw – Hill Book Company]
2. Water supply and pollution control - Viessman W. and Hammer M.J. [Harper Collins College Publishers.]
3. Waste Water Engineering Treatment & Disposal - Metcalf & Eddy, [Tata McGraw Hill, 1982]
4. Sewage Disposal and Air Pollution Engineering - Garg S.K., [Khanna Publishers]
5. Sewage Disposal and Air Pollution Engineering - Garg S.K., [Khanna Publishers]
6. Waste water Supply Engineering by B. C. Punmia



**T.E. (CIVIL ENGINEERING) PART- II**  
**CV- 328 Mini Project**

<b>Teaching Scheme:</b>		<b>Examination Scheme:</b>	
<b>Practical :</b>	2 Hrs/Week, 1 Credit	<b>ICA:</b>	50 Marks

Student/s shall carry out 'Mini Project' in any one of the following subjects: Structural Mechanics-III, Geotechnical Engg. II, Environmental Engg. II or Engineering Management-I, by preferably employing relevant application software.

The project shall consist of Civil Engineering Prototype design, Working models, Laboratory experiments, Process modification/development, Simulation, Software development, Data analysis, Survey etc.

The student is required to submit a 'Project Report' based on the work.

The Mini project shall be assessed by the domain subject teachers for ICA.





**T.E. (CIVIL ENGINEERING) PART- II**  
**CV- 329 Assessment of Field Training Report**

		<b>Examination Scheme:</b>	
<b>Credit:</b>	1	<b>ICA:</b>	25 Marks

Students shall undergo a field training of at least 15 days in the winter vacation after T.E. Civil Part I and submit the field training report, which shall be assessed by faculty associated with Engineering Management-I, in T.E. Civil Part II.





PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

Faculty of Science & Technology

Choice Based Credit System structure of B. E. Civil –I; Semester – VII, W. E.F. 2019-2020

Theory Course Name	Hrs./week				Credits	Examination Scheme				
	L	T	P	D		ISE	ESE	ICA	Total	
Design of Concrete Structures-I	3	1	-	-	4	30	70	25	125	
Quantity Surveying & Valuation	3	-	-	-	3	30	70	-	100	
Earthquake Engg.	3	-	-	-	3	30	70	-	100	
Engineering Management- II	3	-	-	-	3	30	70	-	100	
Elective - II	3	-	-	-	3	30	70	-	100	
<b>Total</b>	<b>15</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>150</b>	<b>350</b>	<b>25</b>	<b>525</b>	
<b>Laboratory/Drawings:</b>							<b>POE</b>	<b>OE</b>		
Quantity Surveying & Valuation	-	-	4	-	2	-	50	-	50	100
Earthquake Engg.	-	-	2	-	1	-	-	-	50	50
Engineering Management- II	-	-	2	-	1	-	-	25	-	25
Elective - II	-	-	2	-	1	-	-	25	25	50
Seminar	-	-	2	-	1	-	-	-	50	50
a) Project work	-	-	2	-	1	-	-	-	25	25
b) Assessment of report on field training-II	-	-	-	-	1	-	-	-	25	25
<b>Total</b>	<b>-</b>	<b>-</b>	<b>14</b>	<b>-</b>	<b>8</b>	<b>-</b>	<b>100</b>	<b>225</b>	<b>325</b>	
<b>Grand Total</b>	<b>15</b>	<b>1</b>	<b>14</b>	<b>-</b>	<b>24</b>	<b>150</b>	<b>450</b>	<b>250</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.

w. e. f. Academic Year 2019-20



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

B.E. (Civil) Part-I

## 7. PROJECT WORK

**Teaching Scheme:**

**Practical** – 2 Hrs/Week, 1 Credits

**Examination Scheme:**

**ICA** –25 Marks

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### Course Objectives:

- 1) To carry out a thematic design project in one of the specializations of civil engineering
- 2) To carry out a project that will make the students aware of the different facets of civil engineering.
- 3) To explore the skill and abilities of student to work in team

### Course Outcome:

At the end of the course student will be able

- 1) Develop an ability to apply the basic knowledge of mathematics, science and engineering to real-life problems.
- 2) Identify the real life problem and present the solution by conducting experimental/ analytical study and in and off the laboratory.
- 3) Apply modern tools such as different application software, modern instrumentation for the most precise study of the project undertaken
- 4) Demonstrate a commitment to teamwork while working with other students of diverse culture and different intellectual backgrounds.

The topic for the Project Work may be from any Civil Engineering and inter-disciplinary area related to Civil Engineering as mentioned in content at B.E. (Civil) Part-I. Practical work at B.E. (Civil) part-I will comprise of literature survey / problem formulation / preparation of experimental setup as the case may be of the identified problem.

*w. e. f. Academic Year 2019-20*



PUNYASHLOK AHILYADEVI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

B.E. (Civil) Part-I

**7. ASSESSMENT OF REPORT ON FIELD TRAINING- II**

**Credit - 1**

**ICA – 25 Marks**

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The students are required to undergo training in any of the areas of Civil Engineering for 30 working days beyond the academic schedule between the completion of T.E. (Civil) Part-I and B.E. (Civil) Part-I term end.

The training may be related to any of the Civil Engineering areas or inter-disciplinary areas such as:

- 1) Structural Engineering
- 2) Environmental Engineering
- 3) Geotechnical Engineering
- 4) Transportation Engineering
- 5) Infrastructural Engineering
- 6) Water Resources Engineering
- 7) Town & Country Planning
- 8) Construction Engineering
- 9) Surveying & Remote Sensing Techniques
- 10) Project Management
- 11) Legal Aspects in Civil Engineering
- 12) Earthquake Engineering
- 13) Disaster Management

Student shall submit a report of the field training undergone. The students should obtain a certificate of completion of training from the concerned organization and submit it to the department office. Assessment of the training report will be done by the 'Project Guide' to whom the concerned student is allotted.

*w. e. f. Academic Year 2019-20*



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

**Choice Based Credit System structure of B. E. Civil –II, Semester – VIII, W. E.F. 2019-2020**

Theory Course Name	Hrs./week				Credits	Examination Scheme				
	L	T	P	D		ISE	ESE	ICA	Total	
Design of Concrete Structures-II	4	-	-	-	4	30	70	-	100	
Construction Practices and Town Planning	4	-	-	-	4	30	70	25	125	
Transportation Engineering-II	4	-	-	-	4	30	70	25	125	
Elective - III	4	-	-	-	4	30	70	-	100	
<b>Total</b>	<b>16</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>16</b>	<b>120</b>	<b>280</b>	<b>50</b>	<b>450</b>	
<b>Laboratory/Drawings</b>							<b>POE</b>	<b>OE</b>		
Design of Concrete Structures-II	-	-	2	-	1	-	-	-	50	50
Elective - III	-	-	2	-	1	-	-	25	25	50
Project on R. C. C. Structures	-	-	-	4	2	-	-	50	50	100
<b>Project work</b>	-	-	6	-	3	-	-	100	100	200
<b>Total</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>4</b>	<b>7</b>	<b>-</b>	<b>175</b>	<b>225</b>	<b>400</b>	
<b>Grand Total</b>	<b>16</b>	<b>-</b>	<b>10</b>	<b>4</b>	<b>23</b>	<b>120</b>	<b>455</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.

**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.

*w. e. f. Academic Year 2019-20*





PUNYASHLOK AHILYADEVJI HOLKAR SOLAPUR UNIVERSITY, SOLAPUR

B.E. (Civil) Part-II (CBCS)

### 6. PROJECT WORK

**Teaching Scheme:**

**Practical** – 6 Hrs/Week, 3 Credits

**Examination Scheme:**

**ICA** – 100 Marks

**ESE ( OE)** – 100 Marks

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**Course Objectives:**

- 1) To carry out a thematic design project in one of the specializations of civil engineering
- 2) To carry out a project that will make the students aware of the different facets of civil engineering.
- 3) To explore the skill and abilities of student to work in team

**Course Outcome:**

At the end of the course student will be able

- 5) Develop an ability to apply the basic knowledge of mathematics, science and engineering to real-life problems.
- 6) Identify the real life problem and present the solution by conducting experimental/ analytical study and in and off the laboratory.
- 7) Apply modern tools such as different application software, modern instrumentation for the most precise study of the project undertaken
- 8) Demonstrate a commitment to teamwork while working with other students of diverse culture and different intellectual backgrounds.

Project work at B.E. (Civil) Part-II is continuation of Project Work of B.E. (Civil) Part-I on any topic from Civil Engineering area or interdisciplinary area related to Civil Engineering.

The project work should be completed at B.E. (Civil) Part-II level.

Student shall submit the report and prepare presentation for defense.

*w. e. f. Academic Year 2019-20*