



# **SOLAPUR UNIVERSITY, SOLAPUR**

**FACULTY OF ENGINEERING & TECHNOLOGY**

**CIVIL ENGINEERING**

**Syllabus Structure for**

**S.E. (Civil Engineering) w. e. f. Academic Year 2017-18**

**T.E. (Civil Engineering) w. e. f. Academic Year 2018-19**

**B.E. (Civil Engineering) w. e. f. Academic Year 2019-20**

**Choice Based Credit System**

**॥ विद्यया संपन्नता ॥**



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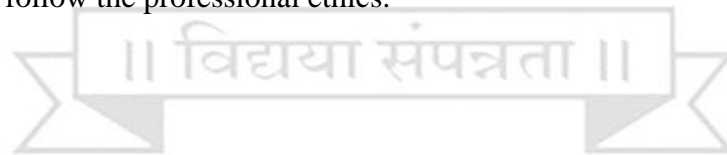
**Civil Engineering**

**Program Educational Objectives and Outcomes**

**Program Educational Objectives (PEOs): Civil Engineering**

The Program Educational Objectives for 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:

1. 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 life-long 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): Civil Engineering**

The program outcomes of 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.





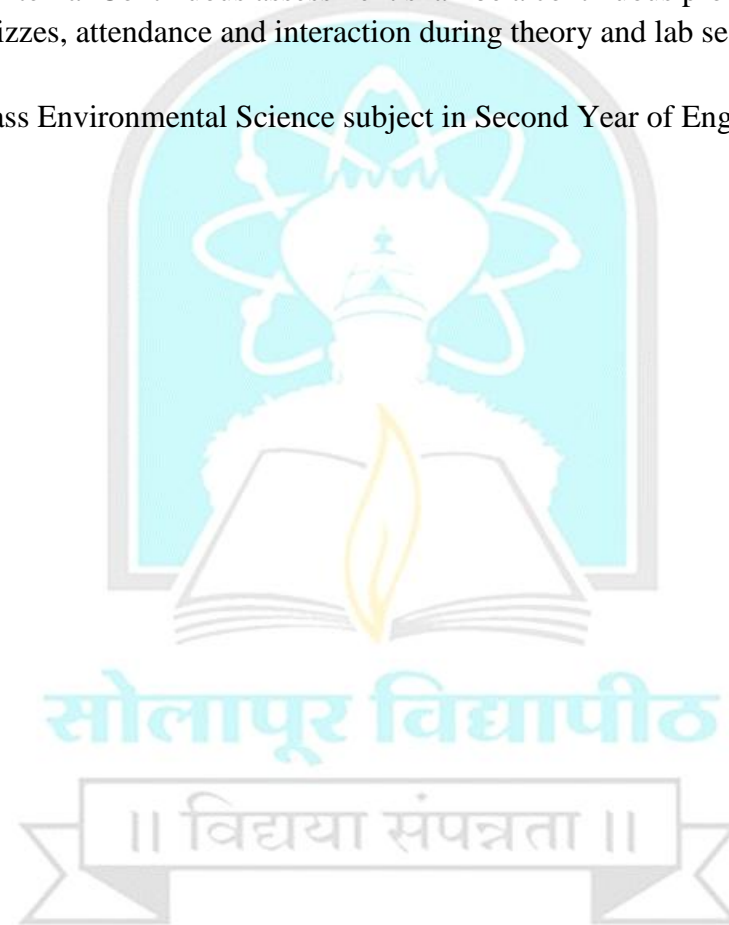
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**Credit System structure of S. E. Civil- I, Semester- I, (W.E.F. 2017-2018)**

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV211	Concrete Technology	3	-	-	-	3	30	70	-	100	
CV212	Structural Mechanics-I	3	1	-	-	4	30	70	25	125	
CV213	Surveying –I	3	-	-	-	3	30	70	-	100	
CV214	Building Construction & Drawing	3	-	-	-	3	30	70	-	100	
CV215	Fluid Mechanics-I	3	-	-	-	3	30	70	-	100	
CV216	Engineering Geology	2	-	-	-	2	30	70	-	100	
	<b>Total</b>	<b>17</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>18</b>	<b>180</b>	<b>420</b>	<b>25</b>	<b>625</b>	
	<b>Laboratory/Drawings</b>							<b>POE</b>	<b>OE</b>		
CV211	Concrete Technology	-	-	2	-	1	-	-	-	25	25
CV213	Surveying –I	-	-	2	-	1	-	25	-	25	50
CV214	Building Construction & Drawing	-	-	-	2	1	-	-	-	25	25
CV215	Fluid Mechanics-I	-	-	2	-	1	-	25	-	25	50
CV216	Engineering Geology	-	-	2	-	1	-	25	-	25	50
CV217	Laboratory Practice	-	-	2	-	1	-	-	-	25	25
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>2</b>	<b>7</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>25</b>	<b>180</b>	<b>495</b>	<b>175</b>	<b>850</b>	
ENV21	Environmental Studies	<b>1</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) 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: Internal Continuous 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.





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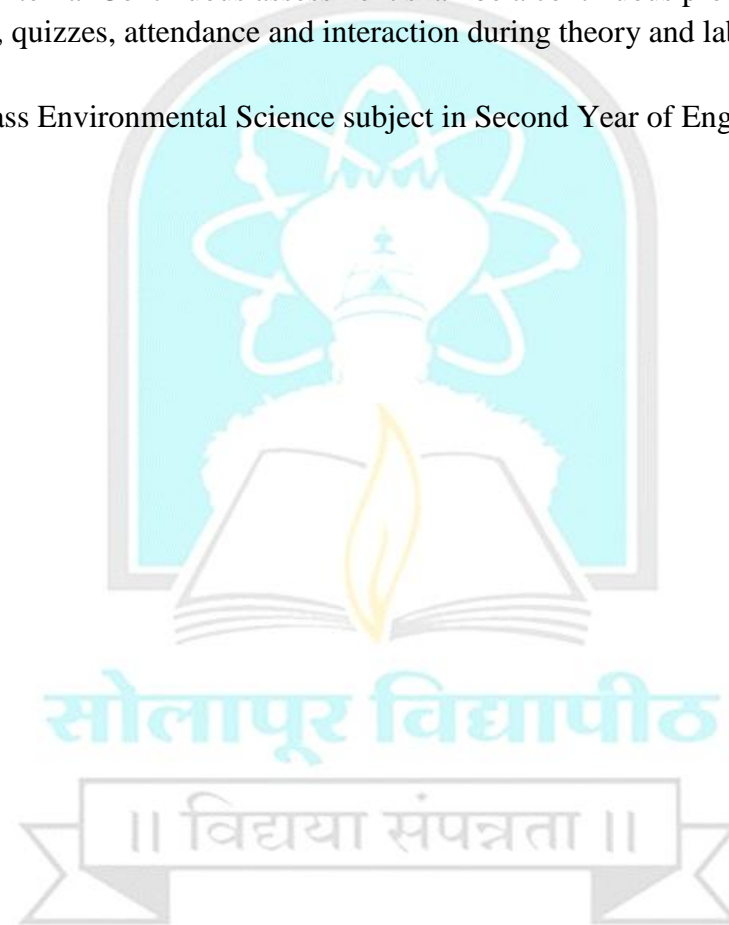
**Credit System structure of S. E. Civil Engineering; Semester – II, W. E.F. 2017-2018**

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV221	Structural Mechanics-II	3	1	-	-	4	30	70	25	<b>125</b>	
CV222	Surveying –II	3	-	-	-	3	30	70	-	<b>100</b>	
CV223	Building Planning & Design	3	-	-	-	3	30	70	-	<b>100</b>	
CV224	Fluid Mechanics-II	3	-	-	-	3	30	70	-	<b>100</b>	
CV225	Water Resources Engineering- I	3	-	-	-	3	30	70	25	<b>125</b>	
CV226	Engineering Mathematics-III	3	1	-	-	4	30	70	25	<b>125</b>	
	<b>Total</b>	<b>18</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>20</b>	<b>180</b>	<b>420</b>	<b>75</b>	<b>675</b>	
	<b>Laboratory/Drawings:</b>							<b>POE</b>	<b>OE</b>		
CV222	Surveying –II	-	-	2	-	1	-	-	--	25	<b>25</b>
CV223	Building Planning & Design	-	-	-	2	1	-	-	25	25	<b>50</b>
CV224	Fluid Mechanics-II	-	-	2	-	1	-	-	-	25	<b>25</b>
CV227	Computer Programming & Numerical Methods	2	-	2	-	3	-	50	-	25	<b>75</b>
	<b>Total</b>	<b>2</b>	<b>-</b>	<b>6</b>	<b>2</b>	<b>6</b>	<b>-</b>	<b>50</b>	<b>25</b>	<b>100</b>	<b>175</b>
	<b>Grand Total</b>	<b>20</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>26</b>	<b>180</b>	<b>495</b>	<b>175</b>	<b>850</b>	
ENV22	Environmental Studies	<b>1</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) 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: Internal Continuous 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.





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

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme			
		L	T	P	D		ISE	ESE	ICA	Total
CV311	Design of Steel Structures	3	-	-	-	3	30	70	-	100
CV312	Geotechnical Engineering.-I	3	-	-	-	3	30	70	-	100
CV313	Environmental Engineering.-I	3	-	-	-	3	30	70	-	100
CV314	Water Resources Engineering- II	3	-	-	-	3	30	70	-	100
CV315	Transportation Engineering-I	3	-	-	-	3	30	70	-	100
SLH31	Self Learning Module I	-	-	-	-	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>	
CV311	Design of Steel Structures	-	-	2	-	1	-	-	-	50
CV312	Geotechnical Engineering I	-	-	2	-	1	-	25	-	25
CV313	Environmental Engineering I	-	-	2	-	1	-	-	-	25
CV314	Water Resources Engineering II	-	-	2	-	1	-	-	25	25
CV315	Transportation Engineering -I	-	-	2	-	1	-	-	-	25
CV316	Building Planning & Design using CADD	1	-	-	4(CADD)	3	-	-	50	50
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>10</b>	<b>4</b>	<b>8</b>	<b>-</b>	<b>100</b>	<b>200</b>	<b>300</b>
	<b>Grand Total</b>	<b>16</b>		<b>10</b>	<b>4</b>	<b>25</b>	<b>150</b>	<b>475</b>	<b>200</b>	<b>850</b>

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

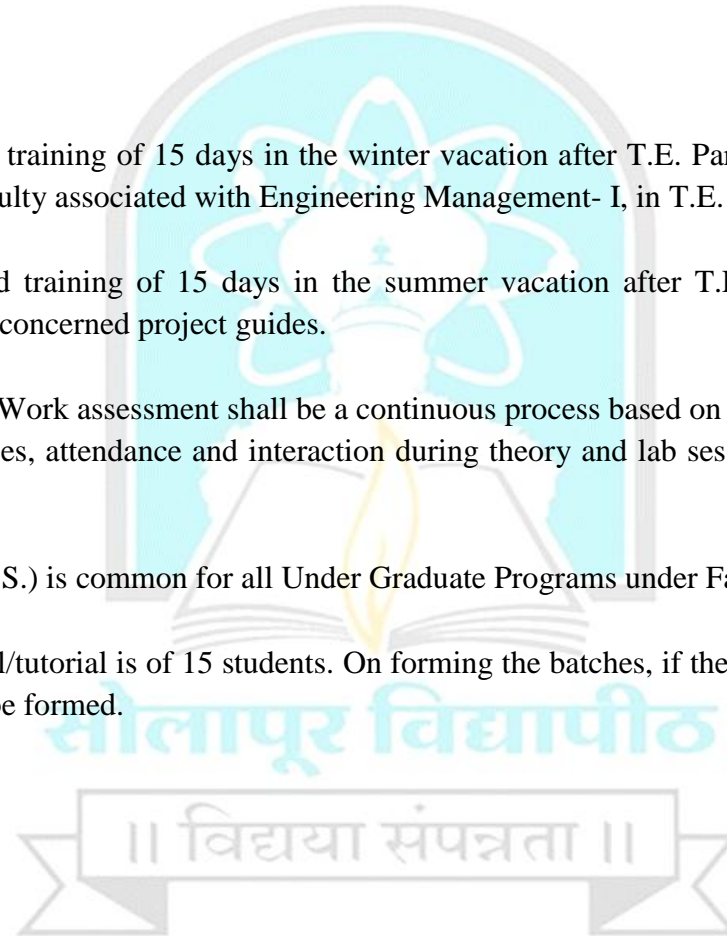
Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV321	Structural Mechanics-III	3	-	-	-	3	30	70	-	100	
CV322	Geotechnical Engineering II	4	-	-	-	4	30	70	-	100	
CV323	Environmental Engineering II	3	-	-	-	3	30	70	-	100	
CV324	Engineering Management- I	3	-	-	-	3	30	70	25	125	
CV325	Elective-I	3	-	-	-	3	30	70	-	100	
SLT326	Self Learning Module II	-	-	-	-	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>		
CV321	Structural Mechanics-III	-	-	2	-	1	-	-	-	25	<b>25</b>
CV322	Geotechnical Engineering II	-	-	2	-	1	-	-	-	25	<b>25</b>
CV323	Environmental Engineering II	-	-	2	-	1	-	-	25	25	<b>50</b>
CV325	Elective-I	-	-	2	-	1	-	-	-	25	<b>25</b>
CV327	Project on Steel Structures	-	-	-	4	2	-	-	25	50	<b>75</b>
CV328	Mini Project in SM-III/GE-II/EE-II/EM-II using Application Software	-	-	2	-	1				50	<b>50</b>
CV329	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>	

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\*The students shall carry out 'Mini Project' in any one of the following subjects viz. Structural Mechanics-III, Geotechnical Engg. II, Environmental Engg. II, or Engineering Management- II 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 winter vacation after T.E. Part I and submit the field training report, which shall be assessed by faculty associated with Engineering Management- I, 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) Syllabus of Self learning (H.S.S.) is common for all Under Graduate Programs under Faculty of Engineering and Technology.
- 5) 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.





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**Credit System structure of B. E. Civil Engineering, Semester - I, W. E.F. 2019-2020**

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV411	Design of Concrete Structures-I	3	1	-	-	4	30	70	25	<b>125</b>	
CV412	Quantity Surveying & Valuation	3	-	-	-	3	30	70	-	<b>100</b>	
CV413	Earthquake Engineering	3	-	-	-	3	30	70	-	<b>100</b>	
CV414	Engineering Management- II	3	-	-	-	3	30	70	-	<b>100</b>	
CV415	Elective - II	3	-	-	-	3	30	70	-	<b>100</b>	
	<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>		
CV412	Quantity Surveying & Valuation	-	-	4	-	2	-	50	-	50	<b>100</b>
CV413	Earthquake Engineering	-	-	2	-	1	-	-	-	50	<b>50</b>
CV414	Engineering Management- II	-	-	2	-	1	-	-	25	-	<b>25</b>
CV415	Elective - II	-	-	2	-	1	-	-	25	25	<b>50</b>
CV416	Seminar	-	-	2	-	1	-	-	-	50	<b>50</b>
CV417	Project Work	-	-	2	-	1	-	-	-	25	<b>25</b>
CV418	Assessment of Report on Field Training	-	-	-	-	1	-	-	-	25	<b>25</b>
	<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>	

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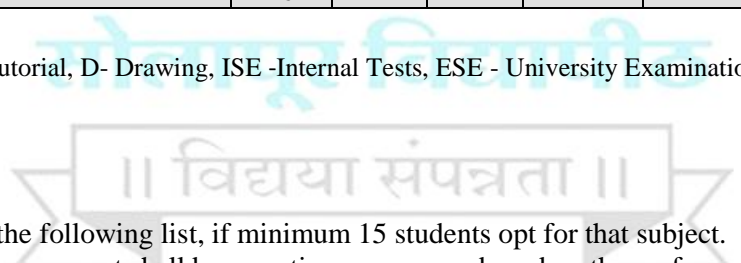
**Credit System structure of B. E. Civil Engineering, Semester-II, W. E.F. 2019-2020**

Course Code	Theory Course Name	Hrs./week				Credits	Examination Scheme				
		L	T	P	D		ISE	ESE	ICA	Total	
CV421	Design of Concrete Structures-II	4	-	-	-	4	30	70	-	<b>100</b>	
CV422	Construction Practices and Town Planning	4	-	-	-	4	30	70	25	<b>125</b>	
CV423	Transportation Engineering-II	4	-	-	-	4	30	70	25	<b>125</b>	
CV424	Elective - III	4	-	-	-	4	30	70	-	<b>100</b>	
	<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>		
CV421	Design of Concrete Structures-II	-	-	2	-	1	-	-	-	50	<b>50</b>
CV424	Elective - III	-	-	2	-	1	-	-	25	25	<b>50</b>
CV425	Project on R. C. C. Structures	-	-	-	4	2	-	-	50	50	<b>100</b>
CV426	Project work	-	-	6	-	3	-	-	100	100	<b>200</b>
	<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>	

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**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.



## LIST OF ELECTIVE SUBJECTS

T. E. Civil Part-II		B. E. Civil Part-I		B. E. Civil Part-II	
ELECTIVE- I		ELECTIVE- II		ELECTIVE III	
CV324A	Advanced Design of Steel Structures	CV415A	Open Channel & River Hydraulics	CV424A	Advanced Engineering Geology
CV324B	Industrial Waste Treatment	CV415B	Air Pollution & control	CV424B	Ground improvement Techniques
CV324C	Water Power Engineering	CV415C	Design of Foundations	CV424C	Traffic Engineering & Control
CV324D	Advanced Concrete Technology	CV415D	Advanced Design of Concrete Structures	CV424D	Infrastructural Engineering
CV324E	Reliability Engineering	CV415E	Managerial Techniques	CV424E	Project Appraisal
CV324F	Finite Element Method	CV415F	Computer Applications in Civil Engineering	CV424F	Solid and Hazardous & Waste Management
CV324G	Experimental Stress Analysis	CV415G	Advanced structures	CV424G	Dynamics of Structures
CV324H	Optimization Techniques	CV415H	Entrepreneurship	CV424H	Environmental Management
CV324I	Disaster Management	CV415I	Remote Sensing and GIS Applications	CV424I	Design of Bridges