

Department of Civil Engineering

Minor Programme in Civil Engineering

Minors are coherent sequences of courses taken in addition to the courses required for the Bachelor of Engineering students chosen from a considerable variety of complementary courses under the categories of technical and complementary studies.

Department of Civil Engineering, JUIT, Wagnaghat proudly offers minor in Civil Engineering for all concerned students. This minor program covers the most current theories and practices used in Civil Engineering. The program provides a valuable adjunct credential to engineering students pursuing their major degree in various fields. Engineering students from any branch may choose from a considerable variety of complementary courses under the categories of technical and complementary studies offered by Civil Engineering Department JUIT, Wagnaghat. This minor program is rigorous enough to serve as a introductory credential for students subsequently electing to pursue advanced studies in Civil Engineering.

Conditions for Award of Additional Certificate of Minor in Civil Engineering

1. Earning of minimum credits, as required for award of Major degree.
2. Earns 20 credits in addition to the credits as specified for the programme in the minor area.
3. Additional 20 credits in a minor discipline could be earned through MOOCs also and may include supporting courses from allied discipline limited to a maximum of 6 credits.
4. Successfully completing the Industrial Internship within the minimum period of 4 years.
5. Completing all the requirements of a degree in the minimum period of years.

Following is the course curriculum outline for proposed Minor programme in Civil Engineering, from which **subjects worth 20 credits (15 from mandatory course, 5 from remaining courses) may be chosen by the student:**

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN | | | | | | | |
|--|----------|-------------------------------|--------------|---|---|---------|-------------|
| COURSE CURRICULUM FOR MINOR PROGRAMME(160 +20 CREDITS) | | | | | | | |
| MINOR IN CIVIL ENGINEERING (Mandatory courses- 15 credits) | | | | | | | |
| S. No. | Semester | Name of the Subjects | Course Hours | | | Credits | Total Hours |
| | | | L | T | P | | |
| 1 | 3 | Surveying | 3 | 0 | 0 | 3 | 3 |
| 2 | 4 | Mechanics of Solids | 3 | 0 | 0 | 3 | 3 |
| 3 | 6 | Geotechnical Engineering | 3 | 0 | 0 | 3 | 3 |
| 4 | 7 | Design of Concrete Structures | 3 | 0 | 0 | 3 | 3 |
| 5 | 8 | Fluid Mechanics | 3 | 0 | 0 | 3 | 3 |

Can choose **remaining 5 credits** from any of the following courses

| S. No. | Semester | Name of the Subjects | Course Hours | | | Credits | Total Hours |
|--------|----------|--|--------------|---|---|---------|-------------|
| | | | L | T | P | | |
| 1 | 3 | Surveying Lab | 0 | 0 | 2 | 1 | 2 |
| 2 | 5 | Construction Technology and Management | 3 | 0 | 0 | 3 | 3 |
| 3 | 6 | Geotechnical Engineering Lab | 0 | 0 | 2 | 1 | 2 |
| 4 | 7 | Concrete Technology Lab | 0 | 0 | 2 | 1 | 2 |
| 5 | 7 | Water Supply Engineering | 3 | 0 | 0 | 3 | 3 |
| 6 | 8 | Transportation Engineering | 3 | 0 | 0 | 3 | 3 |
| 7 | 8 | Fluid Mechanics Lab | 0 | 0 | 2 | 1 | 2 |

* Elective courses from MOOC or NPTEL may be chosen by student (maximum 6 credits) in case course content matches with subjects mentioned above.

Proficiency Programme in Civil Engineering

Civil Engineering students can choose to either broaden their background or attain in-depth coverage of a particular subject by enrolling in a Proficiency Programme. Proficiency courses are coherent sequences of courses that may be taken in place of regular elective slots required for the B. Tech degree, in the chosen field of proficiency.

Conditions for award of additional certificate of proficiency in Civil Engineering

1. Qualify for the award of B. Tech. degree in the minimum period.
2. Have passed in minimum of >50% of B. Tech elective subjects taken from Civil Engineering Department.
3. Grade Point Average in the elective subjects of (2) is >7.0.
4. Major project has been done in Civil Engineering Department with at least 'A' grade
5. CGPA for 195 credits (pre 2018 batch) /160 credits (post 2018 batch) of B. Tech. level is >6.5.

At present Department of Civil Engineering JUIT, Waknaghat offers following proficiency programmes:

1. Proficiency in Computer Aided Design
2. Proficiency in Building Design and Construction
3. Proficiency in Geotechniques
4. Proficiency in Water Management
5. Proficiency in Transportation Engineering
6. Proficiency in Construction Technology and Management

The Proficiency programme offered in aforementioned areas are designed primarily for students of Civil Engineering Department, JUIT to experience the engineering approach to the solution of design problems. Students pursuing any of the proficiency course will be better prepared for careers in Civil Engineering. These proficiency courses will provide students with a technical and competitive edge over most traditional civil engineering undergraduates in the civil engineering job marketplace. As per 160 credit course curricula, a student must opt minimum 4 courses from chosen field of proficiency in place of regular elective courses to get additional certificate of proficiency in chosen field.

Following are the course curriculum outline for proposed 6 proficiency courses:

1. Proficiency in Computer Aided Design:

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN | | | | | | |
|---|--|--------------|---|---|---------|-------------|
| COURSE CURRICULUM FOR PROFICIENCY PROGRAMME (160 CREDITS) | | | | | | |
| PROFICIENCY IN COMPUTER AIDED DESIGN | | | | | | |
| S. No. | Name of the Subjects | Course Hours | | | Credits | Total Hours |
| | | L | T | P | | |
| 1 | Computer Applications in Environmental Engineering | 1 | 0 | 4 | 3 | 5 |
| 2 | Building Drawing | 1 | 0 | 4 | 3 | 5 |
| 3 | Simulations in Geotechnical Engineering | 1 | 0 | 4 | 3 | 5 |
| 4 | Computational models in Transportation Engineering | 1 | 0 | 4 | 3 | 5 |
| 5 | Construction Management Computations | 1 | 0 | 4 | 3 | 5 |
| 6 | Modelling, Simulation and Computer Applications | 3 | 0 | 0 | 3 | 3 |

* Elective courses from MOOC or NPTEL may be chosen by student (maximum 6 credits) in case course content matches with subjects mentioned above.

2. Proficiency in Building Design and Construction

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN | | | | | | |
|---|---|--------------|---|---|---------|-------------|
| COURSE CURRICULUM FOR PROFICIENCY PROGRAMME (160 CREDITS) | | | | | | |
| PROFICIENCY IN BUILDING DESIGN AND CONSTRUCTION | | | | | | |
| S. No. | Name of the Subjects | Course Hours | | | Credits | Total Hours |
| | | L | T | P | | |
| 1 | Advanced Reinforced Concrete Design | 3 | 0 | 0 | 3 | 3 |
| 2 | Building Drawing | 1 | 0 | 4 | 3 | 5 |
| 3 | Design of Prestressed Concrete Structures | 3 | 0 | 0 | 3 | 3 |
| 4 | Construction Safety and Health | 3 | 0 | 0 | 3 | 3 |
| 5 | Advanced Structural Analysis | 3 | 0 | 0 | 3 | 3 |
| 6 | Construction Technology and Management | 3 | 0 | 0 | 3 | 3 |

* Elective courses from MOOC or NPTEL may be chosen by student (maximum 6 credits) in case course content matches with subjects mentioned above.

3. Proficiency in Geotechniques:

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN | | | | | | |
|---|---|--------------|---|---|---------|-------------|
| COURSE CURRICULUM FOR PROFICIENCY PROGRAMME (160 CREDITS) | | | | | | |
| PROFICIENCY IN GEOTECHNIQUES | | | | | | |
| S. No. | Name of the Subjects | Course Hours | | | Credits | Total Hours |
| | | L | T | P | | |
| 1 | Geosynthetics | 3 | 0 | 0 | 3 | 3 |
| 2 | Geoenvironment | 3 | 0 | 0 | 3 | 3 |
| 3 | Underground Technology | 3 | 0 | 0 | 3 | 3 |
| 4 | Advanced Foundation Engineering | 3 | 0 | 0 | 3 | 3 |
| 5 | Simulations in Geotechnical Engineering | 1 | 0 | 4 | 3 | 5 |
| 6 | Ground Improvement Techniques | 3 | 0 | 0 | 3 | 3 |

* Elective courses from MOOC or NPTEL may be chosen by student (maximum 6 credits) in case course content matches with subjects mentioned above.

4. Proficiency in Water Management:

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN | | | | | | |
|---|---|--------------|---|---|---------|-------------|
| COURSE CURRICULUM FOR PROFICIENCY PROGRAMME (160 CREDITS) | | | | | | |
| PROFICIENCY IN WATER MANAGEMENT | | | | | | |
| S. No. | Name of the Subjects | Course Hours | | | Credits | Total Hours |
| | | L | T | P | | |
| 1 | Open Channel Flow and Hydraulic Machine | 3 | 0 | 0 | 3 | 3 |
| 2 | Dam and Reservoir Design | 3 | 0 | 0 | 3 | 3 |
| 3 | Hydropower Engineering | 3 | 0 | 0 | 3 | 3 |
| 4 | Process Design in Environment Engineering | 3 | 0 | 0 | 3 | 3 |
| 5 | Surface Water Quality Management | 3 | 0 | 0 | 3 | 3 |
| 6 | Industrial Wastewater Treatment | 3 | 0 | 0 | 3 | 3 |

* Elective courses from MOOC or NPTEL may be chosen by student (maximum 6 credits) in case course content matches with subjects mentioned above.

5. Proficiency in Transportation Engineering:

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN | | | | | | |
|---|--|--------------|---|---|---------|-------------|
| COURSE CURRICULUM FOR PROFICIENCY PROGRAMME (160 CREDITS) | | | | | | |
| PROFICIENCY IN TRANSPORTATION ENGINEERING | | | | | | |
| S. No. | Name of the Subjects | Course Hours | | | Credits | Total Hours |
| | | L | T | P | | |
| 1 | Pavement Analysis and Design | 3 | 0 | 0 | 3 | 3 |
| 2 | Highway Construction, Maintenance and Management | 3 | 0 | 0 | 3 | 3 |
| 3 | Transportation Engineering | 3 | 0 | 0 | 3 | 3 |
| 4 | Traffic Engineering | 3 | 0 | 0 | 3 | 3 |
| 5 | Advanced Highway Material and Construction | 3 | 0 | 0 | 3 | 3 |
| 6 | Computational models in Transportation Engineering | 1 | 0 | 4 | 3 | 5 |

* Elective courses from MOOC or NPTEL may be chosen by student (maximum 6 credits) in case course content matches with subjects mentioned above.

6. Proficiency in Construction Technology and Management:

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN | | | | | | |
|---|---|--------------|---|---|---------|-------------|
| COURSE CURRICULUM FOR PROFICIENCY PROGRAMME (160 CREDITS) | | | | | | |
| PROFICIENCY IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT | | | | | | |
| S. No. | Name of the Subjects | Course Hours | | | Credits | Total Hours |
| | | L | T | P | | |
| 1 | Construction Technology and Management | 3 | 0 | 0 | 3 | 3 |
| 2 | Construction Management Computations | 1 | 0 | 4 | 3 | 5 |
| 3 | Construction Planning and Control | 3 | 0 | 0 | 3 | 3 |
| 4 | Construction Techniques | 3 | 0 | 0 | 3 | 3 |
| 5 | Construction Financial Management | 3 | 0 | 0 | 3 | 3 |
| 6 | Heavy/Civil Construction Equipment, Methods, and Management | 3 | 0 | 0 | 3 | 3 |

* Elective courses from MOOC or NPTEL may be chosen by student (maximum 6 credits) in case course content matches with subjects mentioned above.