

**GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT (GITAM)**

(Deemed to be University)

VISAKHAPATNAM \* HYDERABAD \* BENGALURU

Accredited by NAAC with A<sup>++</sup> Grade

**GITAM School of Technology**



**CURRICULUM AND SYLLABUS**

**4 Year Undergraduate Programme**  
**UCIVL02: B.Tech. Civil Engineering with**  
**Computer Application**

w.e.f. 2024-25 admitted batch

(Updated on July 2025)

# **Academic Regulations**

**Applicable for the Undergraduate Programmes in the  
School of Technology (except B.Tech.CSBS)**

**<https://www.gitam.edu/academics/academic-regulations>**

# **GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT**

## **Vision**

GITAM will be an exceptional knowledge-driven institution advancing on a culture of honesty and compassion to make a difference to the world.

## **Mission**

- Build a dynamic application-oriented education ecosystem immersed in holistic development.
- Nurture valuable futures with global perspectives for our students by helping them find their ikigai.
- Drive impactful integrated research programmes to generate new knowledge, guided by integrity, collaboration, and entrepreneurial spirit.
- Permeate a culture of kindness within GITAM, fostering passionate contributors.

## **Quality Policy**

To achieve global standards and excellence in teaching, research, and consultancy by creating an environment in which the faculty and students share a passion for creating, sharing and applying knowledge to continuously improve the quality of education.

## **VISION AND MISSION OF THE SCHOOL**

### **VISION**

To become a global leader in holistic engineering education and research

### **MISSION**

- To impart a strong academic foundation and practical education through a flexible curriculum, state-of-the-art infrastructure, and best learning resources
- To actively pursue academic and collaborative research with industries and research institutions, both in India and abroad
- To build a congenial and innovative eco system by enabling the latest technologies, thus helping the students, to solve the challenges of societal importance
- To provide our students with the appropriate leadership, management, communication skills and professional ethics for career success and to continuously impact the global lives

## **VISION AND MISSION OF THE DEPARTMENT**

### **VISION**

GITAM will be an exceptional knowledge-driven institution advancing on a culture of honesty and compassion to make a difference to the world

### **MISSION**

- Empower students with knowledge and skills to face challenges in Civil engineering and allied domains through computer applications, experiential learning, and futuristic curriculum.
- Enhance the culture of a multi-disciplinary research ecosystem, fostering innovation and knowledge-based value addition to develop resilient and sustainable infrastructure addressing societal needs.
- Provide a transformative education to students by inculcating lifelong learning and societal values ensuring a joyful experience and overall well-being.
- Cultivate leadership qualities and professional experience and develop entrepreneurial skills through industry collaborations, outreach programs, and service-oriented projects.

**UCIVL02: B.Tech. Civil Engineering with Computer Applications**  
**(w.e.f. academic year 2024-25 admitted batch)**

**Programme Educational Objectives (PEOs)**

|              |                                                                                                                                                                                                                                |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PEO 1</b> | Demonstrate professional excellence by applying their knowledge and skills to solve complex engineering problems, innovate solutions, and contribute effectively to their respective fields.                                   |
| <b>PEO 2</b> | Possess strong communication and collaboration skills, enabling them to be involved in multidisciplinary research areas with ethical values to achieve shared goals and objectives.                                            |
| <b>PEO 3</b> | Engage in lifelong learning and professional development to adapt technologies and emerging trends in construction, sustainable infrastructure, and facility management industries, ensuring success throughout their careers. |
| <b>PEO 4</b> | Exhibit leadership qualities and social responsibility by actively contributing to their communities, promoting ethical conduct, and addressing societal challenges through engineering solutions.                             |

**PEO Articulation**

|           | <b>PEO1</b> | <b>PEO2</b> | <b>PEO3</b> | <b>PEO4</b> |
|-----------|-------------|-------------|-------------|-------------|
| <b>M1</b> | H           | M           | M           | M           |
| <b>M2</b> | H           | H           | M           | H           |
| <b>M3</b> | M           | H           | H           | H           |
| <b>M4</b> | M           | M           | H           | H           |

H – High, M – Medium, L – Low

**Programme Outcomes (POs) and Programme Specific Outcomes (PSOs):**

At the end of the Programme the students would be able to:

|             |                                                                                                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO1</b>  | Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.                                                                                                                  |
| <b>PO2</b>  | Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.                                                                 |
| <b>PO3</b>  | Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.         |
| <b>PO4</b>  | Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.                                                                |
| <b>PO5</b>  | Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.                                                                 |
| <b>PO6</b>  | The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.                                                               |
| <b>PO7</b>  | Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.                                                                                   |
| <b>PO8</b>  | Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.                                                                                                                                                                    |
| <b>PO9</b>  | Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.                                                                                                                                                    |
| <b>PO10</b> | Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| <b>PO11</b> | Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.                                               |

|             |                                                                                                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO12</b> | Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.               |
| <b>PSO1</b> | Graduates shall demonstrate sound knowledge in analysis, design and execution of Civil engineering infrastructure projects with appropriate consideration for cost, safety and sustainability. |
| <b>PSO2</b> | Serve the society by solving various Civil engineering problems focusing on sustainable development and following professional ethics and integrity.                                           |
| <b>PSO3</b> | Graduates will be able to provide sustainable solution for real time problems through research.                                                                                                |

# **Curriculum Structure**

## *(Flexible Credit System)*

**Minimum Credit Requirements for the Award of Degree**

| <b>S.No.</b> | <b>Course Category and Category Code</b> | <b>Minimum Credits</b> | <b>% of credits in the Programme</b> |
|--------------|------------------------------------------|------------------------|--------------------------------------|
| 1.           | University Core (UC)                     | 19                     | 11.87                                |
| 2.           | Faculty Core (FC)                        | 53                     | 33.13                                |
| 3.           | Programme Core (PC)                      | 49                     | 30.62                                |
| 4.           | Programme Electives (PE)                 | 15                     | 9.38                                 |
| 5.           | Open Electives (OE)                      | 24                     | 15.00                                |
|              | <b>Total</b>                             | <b>160</b>             | <b>100</b>                           |

| University Core (UC) : 19 Credits                        |       |                                                                  |   |   |   |   |   |   |
|----------------------------------------------------------|-------|------------------------------------------------------------------|---|---|---|---|---|---|
| Course code                                              | Level | Course Title                                                     | L | T | P | S | J | C |
| <b>Ability Enhancement Courses</b>                       |       |                                                                  |   |   |   |   |   |   |
| LANG1201                                                 | 100   | <a href="#">Critical Thinking</a>                                | 2 | 0 | 0 | 0 | 0 | 2 |
| LANG1241                                                 | 100   | <a href="#">Communicative English - I</a>                        | 0 | 0 | 4 | 0 | 0 | 2 |
| LANG1251                                                 | 100   | <a href="#">Communicative English - II</a>                       | 0 | 0 | 4 | 0 | 0 | 2 |
| IENT1051                                                 | 100   | <a href="#">Fundamentals of Entrepreneurship</a>                 | 2 | 0 | 0 | 0 | 0 | 2 |
| <b>Skill Enhancement Courses</b>                         |       |                                                                  |   |   |   |   |   |   |
| GCGC1001                                                 | 100   | <a href="#">Aptitude and Self-Management Skills</a>              | 0 | 0 | 2 | 0 | 0 | 1 |
| GCGC1011                                                 | 100   | <a href="#">Integrated Aptitude and Ethical Communications</a>   | 0 | 0 | 2 | 0 | 0 | 1 |
| GCGC1021                                                 | 100   | <a href="#">Applied Communication and Quantitative Skills</a>    | 0 | 0 | 2 | 0 | 0 | 1 |
| GCGC1031                                                 | 100   | <a href="#">Placement Preparation and Professional Readiness</a> | 0 | 0 | 2 | 0 | 0 | 1 |
| <b>Value Added Courses</b>                               |       |                                                                  |   |   |   |   |   |   |
| ENVS1003                                                 | 100   | <a href="#">Environmental Studies*</a>                           | 3 | 0 | 0 | 0 | 0 | 3 |
| POLS1051                                                 | 100   | <a href="#">The Indian Constitution</a>                          | 1 | 0 | 0 | 0 | 0 | 1 |
| <b>Pass / Fail Courses (Mandatory)</b>                   |       |                                                                  |   |   |   |   |   |   |
| FINA1081                                                 | 100   | <a href="#">Personal Financial Planning *</a>                    | 1 | 0 | 0 | 0 | 0 | 1 |
| PHPY1011                                                 | 100   | <a href="#">Gandhi and the Contemporary World *</a>              | 1 | 0 | 0 | 0 | 0 | 1 |
| <b>Pass / Fail Courses (Any one course to be chosen)</b> |       |                                                                  |   |   |   |   |   |   |
| DOSP1181                                                 | 100   | <a href="#">Yogasana</a>                                         | 0 | 0 | 0 | 2 | 0 | 1 |
| MFST1002                                                 | 100   | <a href="#">Health and Wellbeing *</a>                           | 0 | 0 | 2 | 0 | 0 | 1 |
| DOSL1081                                                 | 100   | <a href="#">Student Life Activities (Participant)</a>            | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1091                                                 | 100   | <a href="#">Student Life Activities (Organizer)</a>              | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1101                                                 | 100   | <a href="#">Student Life Activities (Competitor)</a>             | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1111                                                 | 100   | <a href="#">Foundations of Student (Leadership)</a>              | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1042                                                 | 100   | <a href="#">Community Services – Volunteer</a>                   | 0 | 0 | 2 | 0 | 0 | 1 |
| DOSL1052                                                 | 100   | <a href="#">Community Services – Mobilizer</a>                   | 0 | 0 | 2 | 0 | 0 | 1 |
| DOSP1003                                                 | 100   | <a href="#">Badminton</a>                                        | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1033                                                 | 100   | <a href="#">Football</a>                                         | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1043                                                 | 100   | <a href="#">Volleyball</a>                                       | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1053                                                 | 100   | <a href="#">Kabaddi</a>                                          | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1073                                                 | 100   | <a href="#">Table Tennis</a>                                     | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1083                                                 | 100   | <a href="#">Handball</a>                                         | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1093                                                 | 100   | <a href="#">Basketball</a>                                       | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1113                                                 | 100   | <a href="#">Throw ball</a>                                       | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1142                                                 | 100   | <a href="#">Cricket</a>                                          | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1132                                                 | 100   | <a href="#">Functional Fitness</a>                               | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1171                                                 | 100   | <a href="#">Martial Arts/Self Defence</a>                        | 0 | 0 | 0 | 2 | 0 | 1 |

\* Massive Open Online Course (MOOC)

| FACULTY CORE (FC) : 53 credits             |       |                                                                                  |   |   |   |   |    |   |
|--------------------------------------------|-------|----------------------------------------------------------------------------------|---|---|---|---|----|---|
| Course code                                | Level | Course title                                                                     | L | T | P | S | J  | C |
| MATH1341                                   | 100   | <a href="#">Calculus and Differential Equations</a>                              | 3 | 1 | 0 | 0 | 0  | 4 |
| MATH1272                                   | 100   | <a href="#">Linear Algebra</a>                                                   | 3 | 1 | 0 | 0 | 0  | 4 |
| MATH2561                                   | 200   | <a href="#">Probability and Statistics for Engineering</a>                       | 3 | 1 | 0 | 0 | 0  | 4 |
| MATH2601                                   | 200   | <a href="#">Numerical Methods</a>                                                | 3 | 0 | 2 | 0 | 0  | 4 |
| PHYS1301                                   | 100   | <a href="#">Basics of Engineering Physics</a>                                    | 3 | 0 | 2 | 0 | 0  | 4 |
| CHEM1111                                   | 100   | <a href="#">Engineering Chemistry</a>                                            | 2 | 1 | 2 | 0 | 0  | 4 |
| 24CSEN1031                                 | 100   | <a href="#">Programming for Problem Solving - 1</a><br>(Programming with Python) | 0 | 0 | 6 | 0 | 0  | 3 |
| 24CSEN1041                                 | 100   | <a href="#">Programming for Problem Solving - 2</a><br>(Programming with C)      | 0 | 0 | 6 | 0 | 0  | 3 |
| 24XXXXXXX                                  | xxx   | Engineering Basket - Choice 1                                                    | 2 | 0 | 2 | 0 | 0  | 3 |
| 24XXXXXXX                                  | xxx   | Engineering Basket - Choice 2                                                    | 2 | 0 | 2 | 0 | 0  | 3 |
| MECH1011                                   | 100   | <a href="#">Engineering Visualization and Product Realization</a>                | 0 | 0 | 4 | 0 | 0  | 2 |
| MECH1041                                   | 100   | <a href="#">Technology Exploration and Product Engineering</a>                   | 0 | 0 | 4 | 0 | 0  | 2 |
| 24PROJ4777                                 | 400   | Capstone Project - Introduction                                                  | 0 | 0 | 0 | 0 | 2  | 1 |
| 24IENT3777                                 | 300   | Internship-1                                                                     | 0 | 0 | 0 | 0 | 2  | 1 |
| 24PROJ4888 /<br>24IENT4888 /<br>24RESH4888 | 400   | Capstone Project - Final /<br>Internship-2 /<br>Research                         | 0 | 0 | 0 | 0 | 16 | 8 |
| HSMCH102                                   | 100   | Universal Human Values 2:<br>Understanding Harmony                               | 2 | 1 | 0 | 0 | 0  | 3 |

## Engineering Basket 1 &amp; 2

Six credits have to be chosen from the basket other than Parent Department course.

| Course code | Level | Course title                                                           | L | T | P | S | J | C |
|-------------|-------|------------------------------------------------------------------------|---|---|---|---|---|---|
| 24EECE2221  | 200   | <a href="#">Fundamentals of Sensors and Internet of Things</a>         | 2 | 0 | 2 | 0 | 0 | 3 |
| 24EECE 2211 | 200   | <a href="#">Fundamentals of Electrical and Electronics Engineering</a> | 2 | 0 | 2 | 0 | 0 | 3 |
| 24EECE2231  | 200   | <a href="#">Foundations of Electrical and Electronics Engineering</a>  | 3 | 0 | 2 | 0 | 0 | 4 |
| 24MECH1001  | 100   | <a href="#">Introduction to Mechanical Engineering</a>                 | 2 | 0 | 2 | 0 | 0 | 3 |
| 24CIVL1001  | 100   | <a href="#">Introduction to Civil Engineering</a>                      | 2 | 0 | 2 | 0 | 0 | 3 |
| 24BTEN1021  | 100   | <a href="#">Biotechnology and Bioengineering</a>                       | 2 | 0 | 2 | 0 | 0 | 3 |
| 24BTEN1031  | 100   | <a href="#">Introduction to Biomedical Engineering</a>                 | 2 | 0 | 2 | 0 | 0 | 3 |
| 24CSEN2261  | 200   | <a href="#">Data Structures and Algorithms</a>                         | 2 | 0 | 2 | 0 | 0 | 3 |

| <b>Programme Core (PC) : 49 credits</b>                        |              |                                                                             |          |          |          |          |          |          |
|----------------------------------------------------------------|--------------|-----------------------------------------------------------------------------|----------|----------|----------|----------|----------|----------|
| <b>49 credits to be earned through programme core courses.</b> |              |                                                                             |          |          |          |          |          |          |
| <b>Course code</b>                                             | <b>Level</b> | <b>Course Title</b>                                                         | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>J</b> | <b>C</b> |
| 24CIVL2001                                                     | 200          | <a href="#">Surveying and Geomatics</a>                                     | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CIVL2011                                                     | 200          | <a href="#">Principles of Mechanics</a>                                     | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CIVL2021                                                     | 200          | <a href="#">Mechanics of Solids</a>                                         | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CIVL2031                                                     | 200          | <a href="#">Fluid Mechanics and Hydraulic Machines</a>                      | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CIVL2041                                                     | 200          | <a href="#">Structural Analysis</a>                                         | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CIVL2051                                                     | 200          | <a href="#">Building Materials and Concrete Technology</a>                  | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CIVL2061                                                     | 200          | <a href="#">Water Resources Engineering</a>                                 | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CIVL3001                                                     | 300          | <a href="#">Environmental Engineering</a>                                   | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CIVL3011                                                     | 300          | <a href="#">Geotechnical Engineering</a>                                    | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CIVL3021                                                     | 300          | <a href="#">Highway Engineering</a>                                         | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CIVL3031                                                     | 300          | <a href="#">Design of Reinforced Concrete Structures</a>                    | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CIVL3041                                                     | 300          | <a href="#">Building Planning, Estimation and Scheduling</a>                | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CIVL3051                                                     | 300          | <a href="#">Design of Steel Structures</a>                                  | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CIVL3061                                                     | 300          | <a href="#">Computer Aided Analysis and Design of Structures Laboratory</a> | 0        | 0        | 6        | 0        | 0        | 3        |

| <b>Programme Elective (PE) : 15 credits</b>                                    |              |                                                               |          |          |          |          |          |          |
|--------------------------------------------------------------------------------|--------------|---------------------------------------------------------------|----------|----------|----------|----------|----------|----------|
| <b>A minimum of 15 credits from any one of the tracks</b>                      |              |                                                               |          |          |          |          |          |          |
| <b>Program Electives of Construction Technology and Management (CTM) Track</b> |              |                                                               |          |          |          |          |          |          |
| <b>Course code</b>                                                             | <b>Level</b> | <b>Course Title</b>                                           | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>J</b> | <b>C</b> |
| 24CIVL3071                                                                     | 300          | <a href="#">Construction Methods and Equipment Management</a> | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CIVL3081                                                                     | 300          | <a href="#">Construction Contracts Finance and Valuation</a>  | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CIVL3091                                                                     | 300          | <a href="#">Construction Quality Control and Monitoring</a>   | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CIVL3101                                                                     | 300          | <a href="#">Advanced Project Planning and Management</a>      | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CIVL3111                                                                     | 300          | <a href="#">Contract Management and Arbitration</a>           | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CIVL3121                                                                     | 300          | <a href="#">Project Appraisal and Financing</a>               | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CIVL3131                                                                     | 300          | <a href="#">Applications of BIM in Civil Engineering</a>      | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CIVL3141                                                                     | 300          | <a href="#">Construction Safety and Risk Management</a>       | 2        | 1        | 0        | 0        | 0        | 3        |

| Program Electives of Geospatial Technology and Geoinformatics (GTG) Track |       |                                                                              |   |   |   |   |   |   |
|---------------------------------------------------------------------------|-------|------------------------------------------------------------------------------|---|---|---|---|---|---|
| Course code                                                               | Level | Course Title                                                                 | L | T | P | S | J | C |
| 24CIVL3151                                                                | 300   | <a href="#">Remote sensing and Geographic Information System</a>             | 3 | 0 | 0 | 0 | 0 | 3 |
| 24CIVL3161                                                                | 300   | <a href="#">Cartography, Geodesy and Global Navigation Satellite Systems</a> | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3171                                                                | 300   | <a href="#">Photogrammetry and LiDAR</a>                                     | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3181                                                                | 300   | <a href="#">Spatial Data Analytics &amp; Spatial Database System</a>         | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3191                                                                | 300   | <a href="#">Unmanned Aerial System (UAS) and Applications</a>                | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3201                                                                | 300   | <a href="#">Earth and atmospheric science</a>                                | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3211                                                                | 300   | <a href="#">Advanced Remote Sensing</a>                                      | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3221                                                                | 300   | <a href="#">Advanced Earth Observation Systems and Applications</a>          | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3231                                                                | 300   | <a href="#">Geoinformatics in Civil Engineering</a>                          | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3241                                                                | 300   | <a href="#">Geoinformatics in Disaster Management</a>                        | 2 | 1 | 0 | 0 | 0 | 3 |
| Program Electives of Civil Engineering (CE) Track                         |       |                                                                              |   |   |   |   |   |   |
| Structural Engineering                                                    |       |                                                                              |   |   |   |   |   |   |
| Course code                                                               | Level | Course Title                                                                 | L | T | P | S | J | C |
| 24CIVL3251                                                                | 300   | <a href="#">Computational Matrix Methods of Analysis</a>                     | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3261                                                                | 300   | <a href="#">Advanced Structural Analysis</a>                                 | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3271                                                                | 300   | <a href="#">Finite Element Method</a>                                        | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3281                                                                | 300   | <a href="#">Prestressed Concrete</a>                                         | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3291                                                                | 300   | <a href="#">Computer Aided Advanced Analysis and Design</a>                  | 2 | 1 | 0 | 0 | 0 | 3 |
| Geotechnical Engineering                                                  |       |                                                                              |   |   |   |   |   |   |
| 24CIVL3301                                                                | 300   | <a href="#">Foundation Engineering</a>                                       | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3311                                                                | 300   | <a href="#">Advanced Foundation Engineering</a>                              | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3321                                                                | 300   | <a href="#">Ground Improvement Techniques</a>                                | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3331                                                                | 300   | <a href="#">Tunnel Engineering</a>                                           | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3341                                                                | 300   | <a href="#">Computer Applications in Geotechnical Engineering</a>            | 2 | 1 | 0 | 0 | 0 | 3 |
| Transportation Engineering                                                |       |                                                                              |   |   |   |   |   |   |
| 24CIVL3351                                                                | 300   | <a href="#">Transportation Infrastructure Engineering</a>                    | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3361                                                                | 300   | <a href="#">Traffic and Road Safety Engineering</a>                          | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3371                                                                | 300   | <a href="#">Urban Transportation Planning</a>                                | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3381                                                                | 300   | <a href="#">Pavement Analysis and Design</a>                                 | 2 | 1 | 0 | 0 | 0 | 3 |
| 24CIVL3391                                                                | 300   | <a href="#">Computer Applications in Transportation Engineering</a>          | 2 | 1 | 0 | 0 | 0 | 3 |

| Water Resources and Environmental Engineering |     |                                                                              |   |   |   |   |   |
|-----------------------------------------------|-----|------------------------------------------------------------------------------|---|---|---|---|---|
| 24CIVL3401                                    | 300 | <a href="#">Sanitary Engineering</a>                                         | 2 | 1 | 0 | 0 | 3 |
| 24CIVL3411                                    | 300 | <a href="#">Irrigation and Hydraulic Structures</a>                          | 2 | 1 | 0 | 0 | 3 |
| 24CIVL3421                                    | 300 | <a href="#">Waste Management</a>                                             | 2 | 1 | 0 | 0 | 3 |
| 24CIVL3431                                    | 300 | <a href="#">Watershed Management</a>                                         | 2 | 1 | 0 | 0 | 3 |
| 24CIVL3441                                    | 300 | <a href="#">Computer Applications in Water and Environmental Engineering</a> | 2 | 1 | 0 | 0 | 3 |

## Open Electives (OE)

A minimum of 24 credits are to be earned under this category of courses, out of which 9 credits are from other departments from the School of Technology and the remaining 15 credits are from schools other than the School of Technology.

## Minor

Students may opt to enroll in a Minor programme for 20 Credits extra beyond the academic requirement of 160 Credits to obtain the B.Tech. degree.

The list of available Minor Programmes are listed [here](#)



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**GITAM School of Technology**  
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