

Department of Civil Engineering and Planning

COEP TECHNOLOGICAL UNIVERSITY, PUNE

Courses Offered



6
COURSES



2
SEMESTER



Courses Offered In Semester –I and Semester –II

9 courses across two semesters to build your foundation

SEMESTER I

- 1 Essentials of Civil Engineering**
Engineering Science Course · ES-I **3 credits**
- 2 Basics of Civil Engineering**
Engineering Science Course · ES-II **3 credits**
- 3 Applied Mechanics**
Engineering Science Elective Course · ES-III **3 credits**
- 4 Geomatic Engineering**
Vocational & Skill Enhancement Course · VSEC **2 credits**
- 5 Fundamentals of Construction Practices**
Vocational & Skill Enhancement Course · VSEC **2 credits**

SEMESTER II

- 1 Basics of Civil Engineering**
Engineering Science Elective · ES-IV **3 credits**
- 2 Engineering Mechanics**
Program Core Course · PCC **3 credits**
- 3 Geomatic Engineering**
Vocational & Skill Enhancement Course · VSEC **2 credits**
- 4 Fundamentals of Construction Practices**
Vocational & Skill Enhancement Course · VSEC **2 credits**



ESSENTIALS OF CIVIL ENGINEERING

Engineering Science Course – I (Compulsory for Civil Engineering Students)

Offered In Semester - I

3
Credits



Teaching Scheme

L-2

T-0

P-2

S-1



Evaluation Scheme

MSE-30

TA-20

ESE-50



IMPORTANCE

Why this course matters

- **Builds a strong foundation** in the core areas of civil engineering.
- **Helps relate** engineering concepts to real-world infrastructure systems.
- **Develops holistic understanding** of the planning, design, construction and maintenance of civil infrastructure.
- **Enhances problem-solving** and decision-making skills for future specialized courses.
- **Creates awareness** of societal needs, environmental responsibility and sustainable development.



KEY LEARNINGS

What you will learn and be able to do

- **Understand** the role of Civil Engineering in society and nation building.
- **Learn** basic principles of structural, transportation, water, geotechnical and construction engineering.
- **Identify and interpret** common civil engineering drawings, maps and data.
- **Apply** fundamental concepts to simple civil engineering problems.
- **Develop** awareness of sustainability, safety and professional ethics in civil engineering.



APPLICATION AREAS

Relevance Beyond Civil Engineering



Civil Engineering:

- Foundation for structural design, transportation, water and construction works.



Mechanical Engineering:

- Analysis of forces, statics and material behaviour in machines and structures.



Electrical Engineering:

- Support design of transmission towers, substation structures and building services.



Electronics & Communication:

- Design of support structures for communication towers and infrastructure facilities.



Environmental Engineering:

- Planning and analysis of water supply, drainage and solid waste management systems.



Computer Science/IT:

- Infrastructure planning using GIS, BIM and digital modelling tools.



BASICS OF CIVIL ENGINEERING

Engineering Science Course – II & IV

Offered in Semester I (ES-II) and Semester II (ES-IV)

3
Credits



Teaching Scheme

L-3

T-0

P-0

S-1



Evaluation Scheme

MSE-30

TA-20

ESE-50



IMPORTANCE

Why this course matters

- **Builds a strong foundation** for further learning in core and advanced Civil Engineering subjects.
- **Develops an understanding** of the built environment and its interdisciplinary nature.
- **Enhances awareness** of sustainable and resilient infrastructure practices.
- **Prepares students to contribute** to real-world infrastructure development and societal well-being.



KEY LEARNINGS

What you will learn and be able to do

- **Demonstrate** the role of Civil Engineers and use key terminologies in the field.
- **Select** suitable structural components or services for a given situation.
- **Apply** basic concepts of environmental engineering in practice.
- **Assess** the suitability of construction materials or type of foundation for a particular situation.
- **Explore** modern advancements in Civil Engineering and their impact on society.



APPLICATION AREAS



Buildings & Infrastructure

Planning and selection of structural components and services.



Environmental Engineering

Sustainable design and environmental management practices.



Transportation

Planning and development of roads, railways and urban infrastructure.



Urban Development

Town planning and smart cities.



Construction Management

Materials, methods and modern construction practices.



APPLIED MECHANICS

Engineering Science Course – III

Offered In Semester - I

3
Credits



Teaching Scheme

L-2

T-0

P-2

S-1



Evaluation Scheme

MSE-30

TA-20

ESE-50



KEY LEARNINGS

What you will learn and be able to do

1

Analyse

concurrent force systems and their resultants.

2

Determine

conditions for equilibrium of rigid bodies and simple structures.

3

Apply

principles of kinematics to the motion of a point.

4

Solve

problems using the relationships between force, mass and acceleration.



IMPORTANCE

Why this course matters

- **Builds a strong foundation** in the fundamentals of statics and dynamics.
- **Develops analytical skills** to evaluate forces, structures and motion.
- **Supports** structural, mechanical and allied engineering analysis.



APPLICATION AREAS

Where you can apply this knowledge



Mechanical

Machine design, dynamics of machinery and vibration analysis.



Electrical

Support structures for equipment, switchgear and towers.



Electronics & Communication

Mechanical design of antenna and tower systems.



Computer Science / IT

Simulation and modelling of mechanical systems.



Civil Engineering

Analysis and design of structural components.





ENGINEERING MECHANICS

Programme Core Course (PCC) - Compulsory for Civil Engineering Students

Offered In Semester - II

3
Credits



Teaching Scheme

L-2

T-0

P-2

S-1



Evaluation Scheme

MSE-30

TA-20

ESE-50



IMPORTANCE

Why this course matters

- **Builds a strong foundation** for structural analysis and design.
- **Develops analytical and problem-solving skills** essential for civil engineering.
- **Helps in understanding** the behavior of structures under different load conditions.
- **Supports** the design and analysis of buildings, bridges and other infrastructure.
- **Enhances** logical reasoning and quantitative skills for advanced civil engineering subjects.



KEY LEARNING

What you will learn and be able to do

- **Understand** the concepts of force systems and their effect on rigid bodies.
- **Determine** equilibrium conditions for particles and rigid bodies.
- **Analyze** internal forces in beams, trusses and frames.
- **Apply** principles of friction, centroid and moment of inertia in problem solving.
- **Solve** engineering problems using statics and dynamics for real-life civil engineering situations.



APPLICATION AREAS

Where you can apply this knowledge



Structural Engineering:
analysis and design of buildings, bridges, trusses and frames.



Geotechnical Engineering:
stability analysis of retaining walls, slopes and earth structures.



Transportation Engineering:
analysis of pavements, bridges and highway structures.



Water Resources Engineering:
design and analysis of hydraulic structures such as dams, spillways and water tanks.



Construction Engineering:
planning and analysis of temporary and permanent structures at site.



GEOMATIC ENGINEERING

Vocational & Skill Enhancement Course (VSEC)

Offered In Semester I and Semester I

2
Credits



Teaching Scheme

L-1

T-0

P-2

S-1



Evaluation Scheme

MSE-30

TA-20

ESE-50



KEY LEARNINGS

What you will learn and be able to do

- **Demonstrate** the principles of surveying and mapping.
- **Select and apply** suitable surveying techniques and instruments for data collection.
- **Determine** locations, elevations, distances and areas using appropriate methods.
- **Use** computer-aided drafting (AutoCAD) to prepare plans, maps and layouts.
- **Apply** map projections and coordinate systems for geo-spatial analysis.



IMPORTANCE

Why this course matters

- **Builds a strong foundation** in geospatial data acquisition, processing and mapping.
- **Develops practical skills** using Total Station, DGPS and levelling equipment.
- **Enhances spatial visualization** and data analysis skills for planning and design.
- **Supports advanced learning** in GIS, remote sensing and modern surveying technologies.



APPLICATION AREAS

Where you can apply this knowledge



Civil Engineering: site surveying, mapping and layout for construction projects, roads, bridges and infrastructure.



Mechanical: precision measurement and alignment for industrial and plant layout projects.



Electrical: route surveying for transmission lines, substations and utility networks.



Electronics & Communication: site planning for towers and network infrastructure.



Computer Science/IT: GIS data processing, spatial analysis and geospatial applications.





FUNDAMENTALS OF CONSTRUCTION PRACTICES

Vocational & Skill Enhancement Course (VSEC)

Offered In Semester I and Semester II

2
Credits



Teaching Scheme

L-1

T-0

P-2

S-1



Evaluation Scheme

MSE-30

TA-20

ESE-50



IMPORTANCE

Why this course matters

- **Builds** practical grounding in site tools, materials, construction methods and safety procedures.
- **Develops** hands-on understanding of masonry, foundations, concreting and formwork execution.
- **Supports** further learning in construction technology, project execution and site management.
- **Enhances** readiness for real site coordination, quality practices and building maintenance tasks.



KEY LEARNING

What you will learn and be able to do

- **Demonstrate** safe use of basic construction tools, equipment and PPE in simple site activities.
- **Select** suitable masonry types, mortar applications and basic foundation practices for common works.
- **Apply** knowledge of concrete ingredients, grades, batching, mixing, formwork and scaffolding practices.
- **Evaluate** common construction defects, maintenance needs and simple repair methods.



APPLICATION AREAS

Where you can apply this knowledge



Civil Engineering: construction execution, site supervision, quality control and maintenance works.



Mechanical: installation and alignment of equipment, machinery supports and site utilities.



Electrical: coordination for conduit routing, cable laying and service installation in buildings.



Electronics & Communication: support infrastructure for sensors, communication lines and site monitoring systems.



Computer Science/IT: digital site documentation, progress tracking and construction management tools.

