

**masters**week

# Structural Engineering



# Description

Structural engineering – a sub-discipline of civil engineering – focuses on the framework and designing of structures. Mainly, structural engineers ensure a stable, strong, and rigid structural design. The designs created by professional structural engineers are then integrated with the architects and service engineers for constructing the building. Structural engineers are sometimes also responsible for creating the design of machinery, medical equipment, and vehicles with structural integrity, rendering utmost safety. In structural engineering, the theories of physical laws are applied to different materials and geometries for creating a stable structure.



# Requirements



- O1** Structural analysis with a creative mindset
- O2** Supervision and managerial skills
- O3** Attractive storage and industrial structures
- O4** Pre-stress and post-stress structural management
- O5** Sustainable and modern structural approach

# Career



Structural engineers are required to consider an appropriate framework for strong and reliable structures. While designing a structure, they need to incorporate multiple factors, such as safety, cost-efficiency, and creativity. For becoming a professional structural engineer, one needs to specialize in the structures they draw. Needless to say, there will be a heap of career opportunities for those who keep abreast of the technological enhancements. Concisely, structural engineers can begin their career as construction designers, project managers, or more in the private and public sector.

# Curriculum



While designing any new building, analysing pre-disaster and post-disaster impacts is a must. Hence, structural engineers play a major role in the construction industry, be it domestic or international market. However, to become an expert structural engineer, one needs to have a strong grasp of related concepts. That being said, our certified course of structural engineering helps you bridge the current and required knowledge gap with a detail-oriented curriculum.

01 Advanced Structural Analysis

02 Finite Element Methods in Structural Engineering

03 Solid Mechanics in Structural Engineering

04 Structural Dynamics

05 Theory of Concrete Structures

06 Theory of Steel Structures

07 Earthquake Analysis and Design

08 Structural Engineering Laboratory

09 Analytical and Numerical Methods

10 Blast Resistant Design of Structures

11 Concrete Mechanics

12 Design of Bridge Structure

13 Design of Fiber Reinforced Composite Structure

14 Design of Masonry Structure

15 Design of Tall Buildings

16 Prestressed and Composite Structures

17 Strengthening and Retrofitting of Structures

18 Structural Safety and Reliability

19 Theory of Plates and Shells

20 Theory of Structural Stability

21 Advanced Finite Element Method and Programming

31 Durability and Repair of Concrete Structures

22 Analysis and Design of Machine Foundations

23 Design of Offshore Structures

24 General Continuum Mechanics

25 Structural Health Monitoring

26 Structural Vibration Control

27 Wind Resistant Design of Structures

28 Advanced Concrete Technology

29 Fire Engineering and Design

30 Formwork of Concrete Structures

# **Environmental Engineering**



# Description

Our certified environmental engineering course imparts knowledge on environmental issues and emphasizes finding scientific solutions to resolve these issues, such as reducing automobile pollution and discovering new renewable energy sources. It primarily teaches aspirants how to design policies and regulate technological development to manage contaminated lands and save people along with environmental elements.

An environmental engineer mainly works towards improving the recycling and waste disposal processes and ensures strong public health by keeping a check on water and air pollution. In all, once you become an environmental engineer, you will be required to apply the principles of engineering, biology, soil science, and chemistry to develop innovative solutions to resolve environmental problems.



# Job Titles of an Environmental Engineer



- 01** Chemical Engineer
- 02** Ecologist
- 03** Waste Management Officer
- 04** Public Health Specialist
- 05** Geologist
- 06** Agricultural Engineer
- 07** Biologist

# Career



Environmental engineering offers a lot more to its professionals. For example, aspirants have the option to work in numerous environmental fields, generating decent pay. Also, the demand for environmental engineers always stays at an all-time high as both governmental and non-governmental organizations constantly need them for risk evaluations, public safety, and many other projects.

Additionally, in today's era, businesses often need environmental engineers to discover ways to avoid or reduce produced pollutants or to separate them for safer disposal in the environment.

# Curriculum



Environmental Engineering is a wider field having multiple sub-branches, including biological engineering, chemical engineering, radioactive engineering, and even mechanical engineering. Professionals having knowledge of any of these above-mentioned fields possess higher chances of employability both in India and abroad. After completing our meticulous curriculum of environmental engineering course, one can actively seek jobs in the private or public sectors.

01 Air Pollution and Control

02 Solid Waste Engineering

03 Water Engineering

04 Wastewater Engineering

05 Environmental Systems Analysis

06 Environmental Chemistry and Microbiology

07 Environmental risk assessment

08 Environmental Quality Modeling

09 Environmental Statistics and Experimental Design

10 Environmental Impact Assessment

11 Industrial Waste Management and Audit

12 Emerging Technologies for Environmental Management

13 Thermal Techniques for Waste Management

14 Life Cycle Analysis and Design for Environment

15 Fundamental of Aerosol: Health and Climate Change

16 Quantitative Microbial Risk Assessment

17 Environmental Implications of Engineered Nanomaterials

18 Water Distribution and Sewerage Network Design

19 Advanced Air Pollution Laboratory

20 Advanced Water and Wastewater Laboratory

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# Construction Engineering



## Description

Construction engineering is all about planning and constructing a certain structure by optimally utilising all the space and resources. This professional discipline demands a clear understanding of industrial designing, planning, and infrastructure management. A professional construction engineer can effectively construct roads, buildings, tunnels, dams, bridges, airports, and other utilities for individual and public purposes. Indeed, one of the most dynamic and competitive branches of engineering is construction engineering, as it keeps evolving with technological advancement. Hence, construction engineering is an all-time favourite course of engineering aspirants. Additionally, this profession requires construction engineers to be present at the site, rendering them a plethora of opportunities to travel across the world.

# Requirements

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01

Attention to the minutest of details

02

Problem-solving and leadership skills

03

Strong grasp on related mathematical concepts

04

Innovative/creative approach towards uncertain problems

05

Will to constantly learn new techniques and trends



## Career

Construction engineers can work in different areas of the construction industry, such as planning, designing, constructing, surveying, and managing. While pursuing our certified course construction engineering course, you will gain from problem-based learning formats, developing required practical skills. The course will act as paramount in your professional career development. Moreover, after gaining the required experience in the field, one can opt to become a consultant in the industry. If you want to improve your employability chances, then an internship while pursuing the course will give you an added advantage.

# Curriculum

The demand for construction, planning, and designing infrastructure will always be evergreen in India and abroad. As technological advancement and innovations are making way for more construction projects, the demand for construction engineers will stay in all-time-boom. To become an expert professional in the field, one needs to complete the following curriculum.



1. Advanced Concrete Technology
2. Construction Project Management
3. Quantitative Methods in Construction Management
4. Construction Contract Management
5. Construction Economics and Finance
6. Construction Practices and Equipment
7. Construction Technology Laboratory
8. Computational Laboratory for Construction Management
9. Concrete Mechanics
10. Building Science
11. Building Services and Maintenance Management
12. Formwork for Concrete Structures
13. Durability and Repair of Concrete Structures
14. Infrastructure Development and Management
15. Fire Engineering and Design
16. Quality and Safety in Construction
17. Sustainable Materials and Green Buildings
18. Digital Design and Construction

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# Water Resource Management





## Description

Water resource management requires allocation, organisation and distribution of water resources for optimum utilisation. For effective water resource management, all the water regulations and policies need to be followed. Evidently, in the current era, water management is faced with many challenges, such as climate change or the negative impacts of human activity. Hence, the requisite knowledge of water resource management is a need of the hour. After completing this certified course, the aspirant will be able to identify and resolve the problems for effective water resource management. This course will teach you how to conduct a thorough analysis of different techniques of water resource management for completing a related project or job responsibility.

# Requirements

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01

Effective communication skills

02

Problem-solving approach

03

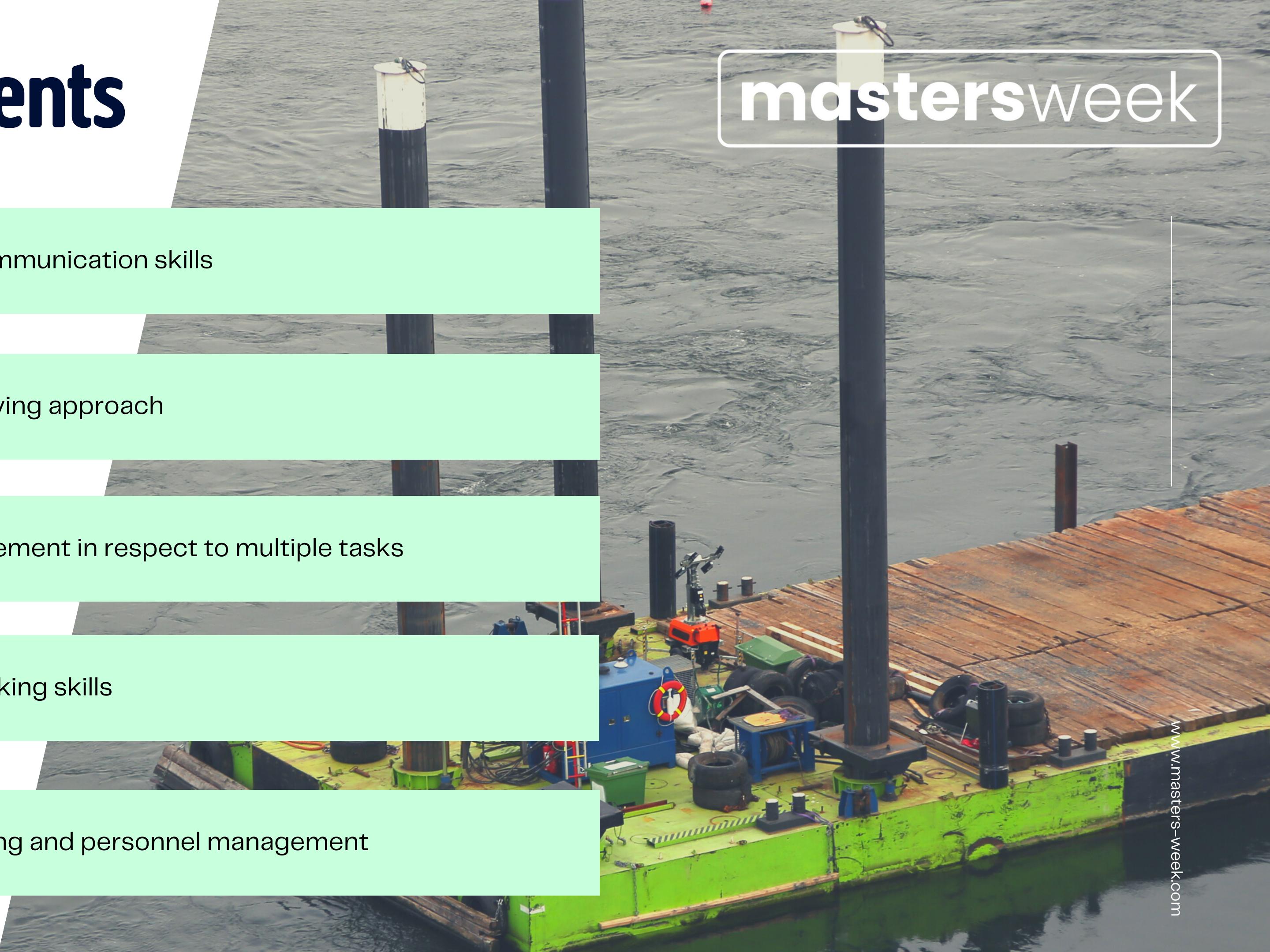
Time management in respect to multiple tasks

04

Decision-making skills

05

Active learning and personnel management



## Career

A career in water resource management offers a great interest, astounding opportunities for peer recognition, large challenges, and huge personal satisfaction to young professionals. The demand for a water resource manager will exponentially increase because the negative impacts of population growth and global climatic change create a concern for global leaders. Also, this professional discipline will witness a further demand due to the global requirement of fresh-water supply. Depending on the requirement, jobs related to water resource management require assessment, development, utilization, and protection of water resources.

# Curriculum

The importance of finding ways to optimize water resources is increasing day by day, be it in domestic or international territory. Indeed, the job to improve and manage the availability and quality of water resources is highly rewarding. Water resources planning and management professionals contribute heavily to making a better world. Hence, becoming one such professional demands complete knowledge of the following curriculum.



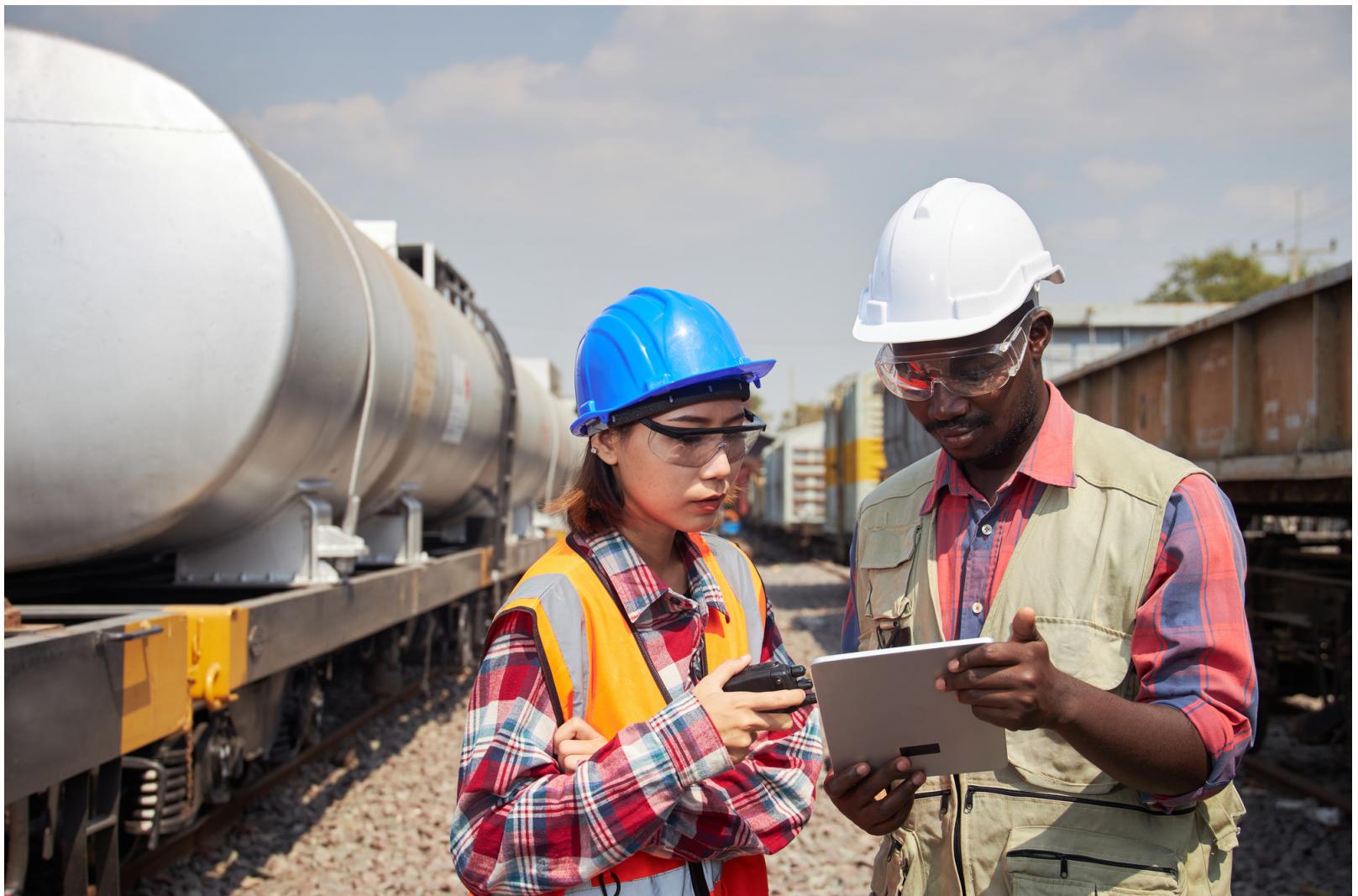
1. Hydrologic Processes and Modeling
2. Optimization Techniques in Water Resources
3. Groundwater and Stochastic Hydrology
4. Advanced Hydraulics
5. Finite Element in Water Resources
6. Simulation Laboratory-I & II
7. Soft Computing Techniques in Water Resources
8. Environmental Dynamics and Management
9. Economic Aspects of Water Resources Development
10. Groundwater Flow and Pollution Modeling
11. Surface Water Quality Modeling and Control
12. Hydroelectric Engineering
13. Water Resources Systems
14. Urban Water Infrastructure
15. Eco-hydraulics and Hydrology
16. Advanced Hydrologic Land Surface Processes
17. Mechanics of Sediment Transport
18. Geographic Information Systems
19. Hydrologic Applications of Remote Sensing

# Transportation Engineering



# Description

Transportation Engineering – a branch of civil engineering – deals with designing, planning, operation, maintenance, and safety of transportation systems, including railways, roadways, airways, and waterways. Hence, a transportation engineer is responsible for applying technological and scientific principles for the management of transportation infrastructure. For instance, a transportation engineer can be responsible for sizing of transportation facilities (such as how many streets or what is the capacity of the transport facility) or determining the thickness and materials used in designing (such as horizontal and vertical alignment of the roadway or track). With our certified course in transportation engineering, students will learn to plan and execute various transportation systems.



# Job Titles of an Environmental Engineer



- 01** Transportation Executive
- 02** Transport Manager
- 03** Civil Engineer
- 04** Transportation Technician
- 05** Transportation Engineering Professor
- 06** Highway engineers
- 07** Bridge engineers

# Career



A transportation engineer has a plethora of career opportunities as they have the option to work with construction companies, transportation companies, and much more. In terms of career advancement prospects, a transportation engineer can work in top managerial positions after gaining significant experience. The diversity of transport engineering profiles gives professionals an advantage to achieve their dream roles. A perfect combination of knowledge and analytical thinking plays a key role in driving success in this field.

# Curriculum



Transportation engineers are required to focus on building perennial and strong transportation systems. They are the foundation of every country's secure transportation system and hence, the requirement of professionals in this field rises every coming year, be it in domestic or international territory. One can experience constant technological advancements in this field. These advancements have reached ultra-realistic 3D models of projects. These 3D models inculcate factors, such as stressors, electricity, and plumbing systems. To cope with these advancements, aspirants need to have a strong understanding of the field and upcoming trends. Therefore, completing our curriculum of certified transportation engineering courses will help you gain all the requisite knowledge.

# Industrial Engineering



# Description

Industrial engineering includes a study of industrial processes to avoid the wastage of money, time, and resources, thereby increasing efficiency. Industrial engineers are required to use knowledge of Maths, Physics, and Social Sciences to analyze, predict, design, and evaluate the upcoming threats and opportunities. By following the best practices, industrial engineers ensure to streamline operations, reduce roller-coaster lines, create more safe assembly lines, and speed up the delivery processes. All in all, industrial engineers are required in every stage of processing and production. Depending on the job responsibilities, they may be responsible for designing new facilities from the ground up, or upgrading, expanding and reconfiguring the existing facilities.



# Job Titles of an Environmental Engineer



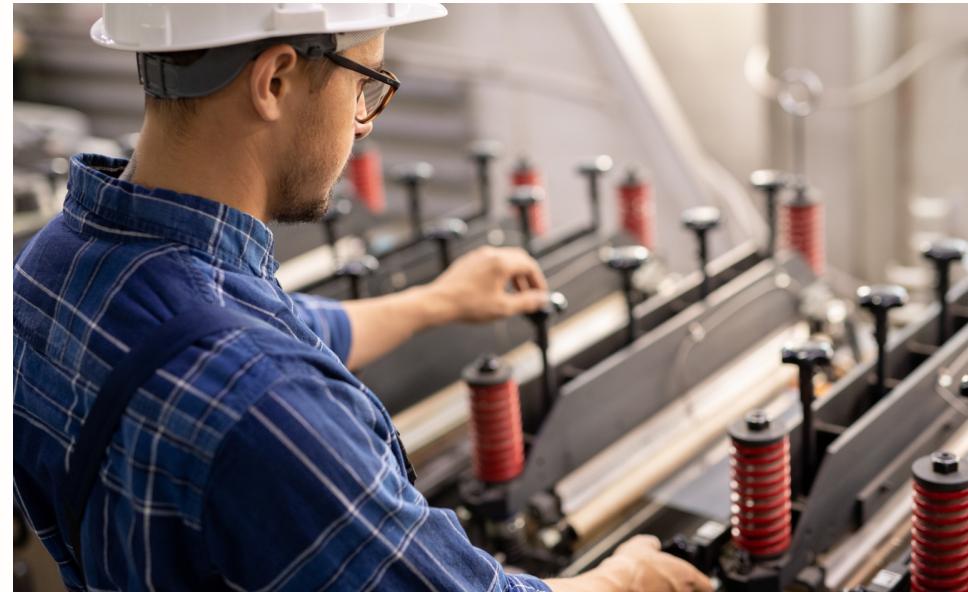
- 01** Quality Control Manager
- 02** Project Manager
- 03** Management Consultant
- 04** Manufacturing Engineer
- 05** Logistics Manager
- 06** Operations Manager
- 07** Business Process Engineer

# Career



Industrial engineers are among the most-in-demand professionals across the globe. With such a diversified knowledge in the field, industrial engineers can apply to work in both managerial and technical positions. Moreover, as more and more companies are seeking talent, who can lower their energy consumption levels, industrial engineers are sure to find a high-paying jobs. With the upcoming trends of technological innovation and the introduction of AI in the field, the requirements of industrial engineers will experience a boom in the coming years. Also, industrial engineers, having multiple skills, possess the option to find either on-site or off-site jobs.

# Curriculum



Industrial engineers are required to design new equipment and repurpose facilities and in order to perform these duties with utmost effectiveness, one needs a keen conceptual knowledge. To ensure every task is meeting its standards, industrial engineers must possess complete working knowledge of the domain and all of the required knowledge can be gained from our certified course of industrial engineering.

01 Industrial Engineering Systems

02 Operations Planning and Control

03 Probability and Statistics

04 Operations Research

05 Manufacturing Informatics

06 Optimization

07 Stochastic Modeling and Simulation

08 Advanced Operations Research

09 Advanced Data Structures

10 Advanced Artificial Intelligence

11 Natural Language Processing - I

12 Natural Language Processing - II

13 Machine Learning - I

14 Machine Learning - II

15 Neural Systems and Learning Machines

16 Information Systems Management

17 Business Systems Analysis & Design

18 Introduction to Game Theory

19 Value Engineering and Life Cycle Costing

20 Reliability Engineering

21 Quality Systems

22 Maintenance Planning and Control

23 Reliability, Availability and Maintainability (RAM)  
Engineering

24 Diagnostic Maintenance and Condition Monitoring

25 Service System Design

26 Supply Chain Management

27 Logistics

28 Entrepreneurship

29 Project Management

30 Maintenance management

31 Public Transportation Systems

32 Intelligent Transportation Systems

33 Services Operations Management

34 Science & Technology Policy Systems

35 Electronic Government

# Control and Automation engineering

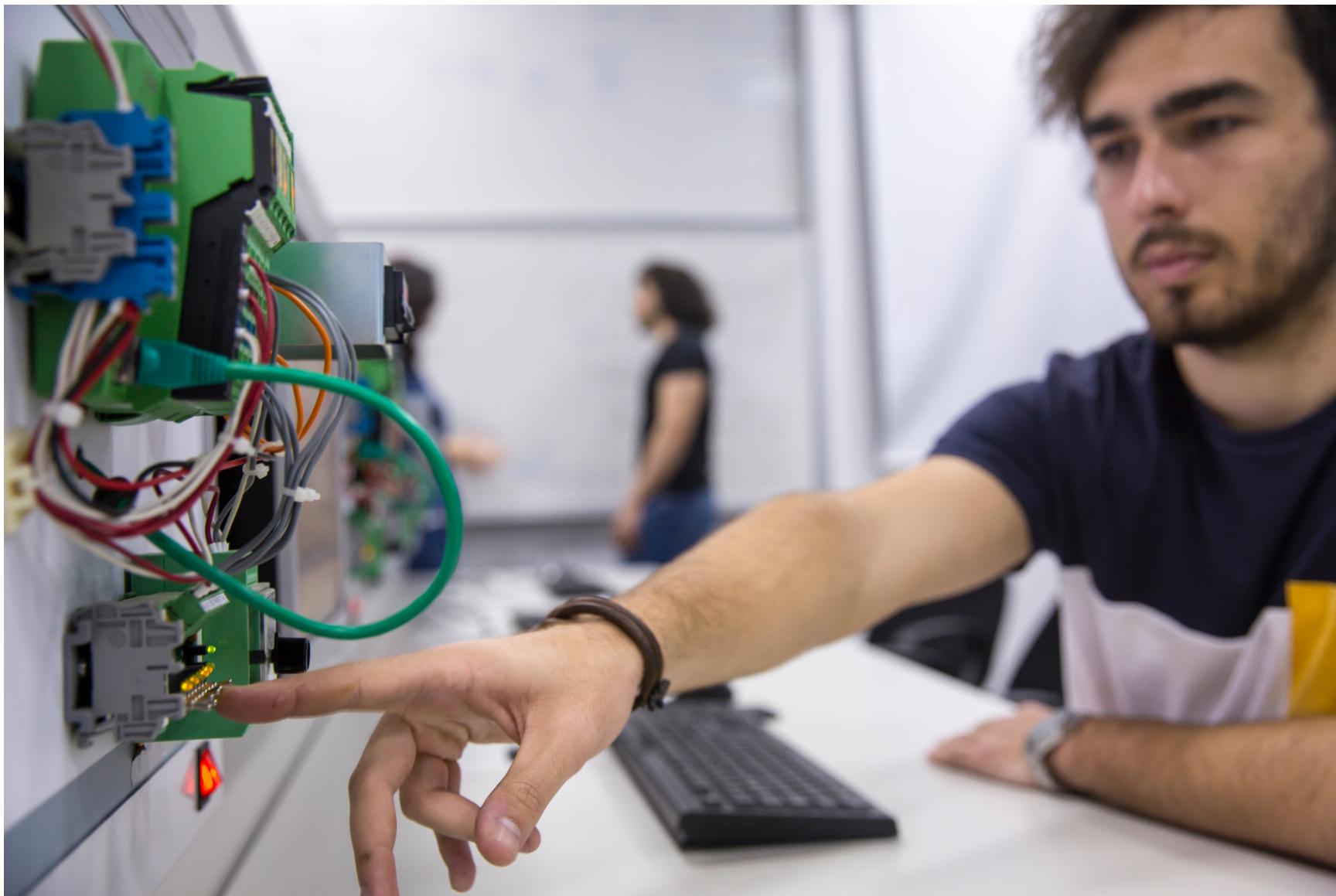


# Description

Control and Automation engineering refers to a branch of engineering that develops and implements information and technology. It involves controlling electronic, electrical, mechanical, and computer-based industrial systems so all the work can be executed in a planned manner. Control and automation engineers are responsible for finding innovative ways to deal with uncertain issues via appropriate software and hardware. Briefly, control and automation engineering or Mechatronics is a balanced mix of Electrical Engineering, Computer Engineering, and Mechanical Engineering. Our certified control and automation engineering course help you to build a solid ground across multiple technical and scientific areas so you can easily use the newly acquired knowledge to face day-to-day industry challenges.



# Job Titles of an Environmental Engineer



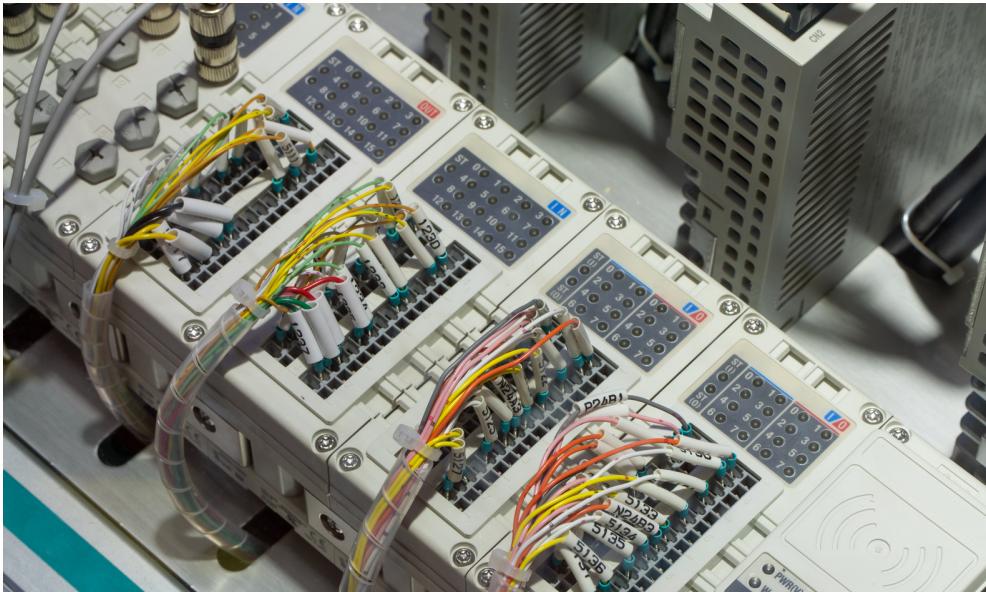
- O1** Instructional Designer
- O2** Process Engineer
- O3** Automation Engineer
- O4** Project Engineer
- O5** Consultant
- O6** Design Engineer
- O7** Research and Development Engineer

# Career



If the aspirant possesses an adequate mix of technical, scientific, and technological knowledge then they surely will be able to keep abreast of the rapid technological advancements and will secure a good-paying job. Currently, in the control and automation engineering domain, demand outstrips supply. Hence, the professionals in this field are definitely going to reap huge benefits over a long period. Additionally, all types of industries, be it automobiles, pulp, and paper, food, and beverages, cement, mining, or any other company require the services of control and automation engineers for performing small, medium, and high-level duties. Therefore, individuals having strong conceptual knowledge in basic or advanced levels of control and automation engineering can easily grab their dream jobs in the field.

# Curriculum



Automation and control is a rapidly expanding field and both Indian and international companies in this field provide immense career growth opportunities to the professionals. Typically, one can start their career in this industry by working on the validation of automation and control systems designs. But to be able to grab even the entry-level jobs in this field, one needs to have a strong grasp on certain concepts that can easily be acquired by pursuing our certified control and automation engineering course.

01 Industrial Engineering Systems

02 Operations Planning and Control

03 Probability and Statistics

04 Operations Research

05 Manufacturing Informatics

06 Optimization

07 Stochastic Modeling and Simulation

08 Advanced Operations Research

09 Advanced Data Structures

10 Advanced Artificial Intelligence

11 Natural Language Processing - I

12 Natural Language Processing - II

13 Machine Learning - I

14 Machine Learning - II

15 Neural Systems and Learning Machines

16 Information Systems Management

17 Business Systems Analysis & Design

18 Introduction to Game Theory

19 Value Engineering and Life Cycle Costing

20 Reliability Engineering

21 Quality Systems

22 Maintenance Planning and Control

23 Reliability, Availability and Maintainability (RAM)  
Engineering

24 Diagnostic Maintenance and Condition Monitoring

25 Service System Design

26 Supply Chain Management

27 Logistics

28 Entrepreneurship

29 Project Management

30 Maintenance management

31 Public Transportation Systems

32 Intelligent Transportation Systems

33 Services Operations Management

34 Science & Technology Policy Systems

35 Electronic Government

# Power System Engineering



# Description

Power system engineering – a subfield of electrical engineering – involves generating, distributing, transmitting, and utilizing power. Generally, power engineers are required to deal with electrical instruments, such as transformers, electric generators, motors, and AC & DC power. Mainly, power engineers work on systems that may or may not connect to a grid. One of the main skills recruiters demand in a power engineer is the problem-solving approach because their job responsibility requires tackling multiple challenges during the performance of duties. Also, as one can evidently experience technological evolution in every field, power engineers are indeed expected to have an adaptable attitude.





# Requirements

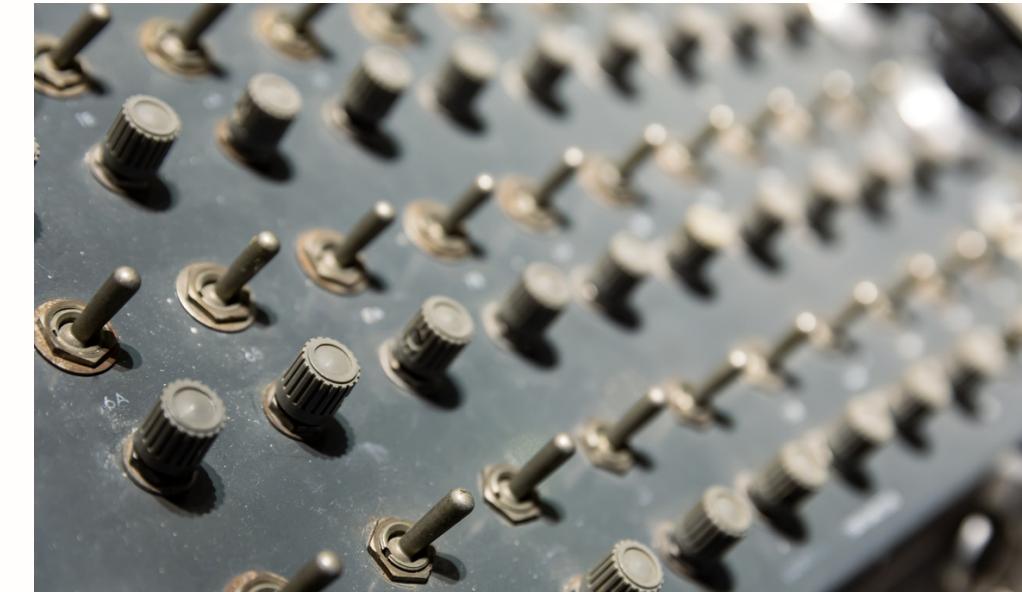
- 01** Creative problem-solving skills
- 02** Effective communication skills
- 03** Leadership and critical thinking skills
- 04** Learning and flexible approach/attitude
- 05** Strong numerical or mathematical skills

# Career



The requirement of power engineers is currently in high demand because almost every business or industry needs someone to effectively manage power engineering-related concerns. A power engineer is responsible for maintaining, operating, and managing industrial plants using several types of equipment, such as refrigeration units and boilers. A power engineer can work in various industries like metallurgical industries, electric power generation, gas processing industries, and paper manufacturing industries.

# Curriculum



Power engineers typically lay the foundation of our lives with new innovations and technological advancements. Observingly, many new projects will generate over the next few years in this industry. However, the opportunities in this field will not stay centered to only the private sector but also extends to the government sector, raising a plethora of job opportunities for the aspirants. Our certified course in power engineering will give you an added advantage because its curriculum covers every aspect of the power engineering field.

01 Power System Analysis

02 Advanced Power System Protection

03 Power System Dynamics

04 Advanced Power System Optimization

05 Power System Lab-1

06 Linear Systems Theory

07 Digital Communications

08 Power Quality

09 Power Electronic Converters for Renewable

10 Planning and Operation of a Smart Grid

11 High Voltage DC Transmission

12 Flexible AC Transmission System

13 Power System operation and control

14 Dynamic Modelling And Control of Sustainable System

15 Forecasting Techniques

16 Distribution System Operation and Planning

17 Selected Topics in Power System

18 Power System Transient

19 Power System Reliability

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# Production Engineering



## Description

Production engineering involves manufacturing, developing, implementing, improving, and evaluating the various integrated systems. These integrated systems include money, people, information, energy, equipment, and the industrial process. A production engineer is responsible for analyzing the designing and manufacturing processes of a product. They also need to focus on planning, measuring, and controlling the organizational economic and productive activities. Production engineering is a subfield of mechanical engineering and requires production engineers to choose machinery and equipment for the required manufacturing process.

# Requirements

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01

Interpersonal and communicational skills

02

Problem-solving attitude

03

Leadership and decision making skills

04

Resource planning and equipment management

05

Output maximisation and production planning skills





## Career

Our certified production engineering course imparts conceptual knowledge of manufacturing technology, optimization of complex processes, management science, and engineering sciences. All of the mentioned knowledge is required to design production processes effectively. Hence, the need for production engineers arises in every sector, rendering tremendous career opportunities to them. Production engineers are indeed considered as a driving force of the production industry.

# Curriculum

Production engineers can easily find innumerable career opportunities in product and service-oriented industries as these industries are growing at an exponential rate. However, this profession requires a great knowledge of different types of equipment to effectively perform complex system tasks. To gain all possible knowledge of this field, one can opt for our certified production engineering course, whose curriculum is as follow:

1. Experimental Methods
2. Metal Forming Analysis
3. Machining Processes and Analysis
4. Computational Methods
5. Computer-Aided Metrology Manufacturing
6. Metrology
7. Welding Science and Technology
8. Nanomechanics
9. Mechatronics Product Design
10. Product Design and Manufacturing
11. Industrial Engineering Systems
12. Manufacturing Informatics
13. Operations Planning and Control
14. Quality Systems
15. Advances in Metal Forming
16. Machine Tool Design
17. Design and Metallurgy of Welded Joints
18. Casting Technology