SKY SCRAPER
Magazine

Do not agree to do any work unless you are sure you have the courage to do it. But when you accept a task, do not ever fail to carry it out. Everything should be done on time.
– Mokshagundam Visvesvaraya

Volume 02
March. 2023

Is Civil Engineering a Good Career Choice?

Certainly, it is. With the growing civil engineering scope and demand not only domestically but also internationally, makes it a great career choice for students interested in this field. The civil engineering job comes with various benefits, including:

- **High Salary**: Civil engineers earn competitive salaries around the world. This aspect appeals to a large number of science students, making it a sought-after career.
- **Job Stability**: A civil engineer's career is well-known for its stability. A civil engineer can practice anywhere in the entire world once they have obtained their license. This ensures a high level of job stability, and being competitive in the profession is not a major worry.
- **Continuous Education**: Civil engineering allows for continuous education throughout one's career. There is always the opportunity to learn something new and broaden one's knowledge set.
- **Unique Experience**: Each project undertaken as a civil engineer gives a one-of-a-kind experience. Every project introduces new tactics, approaches, and techniques to the area, contributing to the acquisition of valuable job expertise.

With the extensive civil engineering scope, job opportunities, and demand, it is vital to develop a set of skills required for success in the industry. Technical training, mathematical proficiency, strong written and oral communication skills, effective leadership abilities, organizational capabilities, problem-solving aptitude, decision-making skills, and keen attention to detail are all essential for managing diverse projects and ensuring success in civil engineering endeavors.

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Ref.: https://www.pw.live/exams/gate/civil-engineering-scope/

PROGRAMME OUTCOMES (POs)

PO1. Engineering knowledge: Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization in the field of Civil Engineering.

PO2. Problem analysis: Identify, formulate, analyse and solve complex problems in construction industries using principles of mathematics, natural sciences and engineering sciences.

PO3. Design/development of solutions: Design a solution for complex civil engineering problems and design system processes to meet specific needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO4. Conduct investigations of complex problems: Conduct investigations of complex problems including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusion.

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. 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.

PO7. Environment and sustainability: Understanding the impact of engineering solutions in social environment and demonstrate the knowledge for sustainable expansion.

PO8. Ethics: Apply ethical principles and commit to professional ethics and the norms of engineering practices.

PO9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10. Communication: Communicate with engineers and society to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions related to civil engineering professionals.

PO11. Project management and finance: Demonstrate and apply the knowledge of engineering and management principles to one's own work, as a team leader or a member to manage project in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the ability to engage in independent and life-long learning in the context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1. Problem Analysis: Able to arrive solutions to real time problems related to various domains of civil engineering through problem solving skills.

PSO2. Design and Management: Able to design systems, components and processes considering safety, quality and cost consideration and able to prepare project documents, engineering drawings and construction schedules

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Accredidated by NAAC wirth A++
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The Highest Grade

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About MCET

Dr. Mahalingam College of Engineering and Technology (MCET) was established in the year 1998 by Dr. M. Manickam with a view to commemorate the 75th birthday of his beloved father Arutchelvar Dr. N. Mahalingam with a mission to impart high quality competency based education in Engineering & Technology to the younger generation to acquire the required skills and abilities to face the challenging needs of the industry around the globe. MCET is a selffinancing, co-educational Autonomous Engineering College and it is approved by All India Council for Technical Education (AICTE), New Delhi & affiliated to Anna University, Chennai. The Institution has been accredited by NAAC with A++ grade and all eligible UG Programmes are accredited by NBA. MCET currently offers 10 UG 6 PG and 5 doctoral Programmes in Engineering, Technology and Science.

About the Department

Civil Engineering is the oldest engineering discipline that deals with the planning, design, construction and maintenance of the physical and natural built environment, including works like buildings, bridges, canals, dams and roads. The department of Civil Engineering at MCET was started in the year 2007 with B.E. – Civil Engineering Program and extended in 2012 for Post Graduate program in M.E. – Structural Engineering. The Department of Civil Engineering at MCET has highly qualified and experienced faculty in diversified domains which helps to enlighten the young minds of students in the theoretical and experimental aspects. Department has state-of-art infrastructural facilities which provide expertise and facility to work on emerging technologies. In a nut shell the department is well nurtured to cater the needs of education through industry oriented curriculum, research, consultancy, co-curricular and extra-curricular programs for the career enhancement of the students.

Department Vision

To develop Competent Civil Engineers to meet the infrastructure challenges of India and the world.

Department Mission

·To become one of the reputed departments offering Civil Engineering Program in the country.
·To produce excellent engineers to cope up with the changes through dynamic, innovative, and flexible curriculum.
·To provide a conducive environment for teaching & learning and to develop leaders with effective communication skills.
·To conduct quality research driven by industry & societal needs and provide affordable engineering solutions in an ethical way.

Programme Educational Objectives

PEO1: Graduates who effectively demonstrate engineering knowledge, problem solving skill, design capabilities and entrepreneurial skills by providing practical solutions.
PEO2: Graduates who effectively demonstrate professionalism in multi-disciplinary engineering environment, leadership quality, teamwork and engage in life-long learning.
PEO3: Graduates who demonstrate an ethical commitment to the community and the profession through involvement with professional societies.
PEO4: Graduates who make contributions to knowledge and establish best engineering practice through research and development.

Most Impressive Civil Engineering Projects of All Time

Inaugurated in 2019, Durgam Cheruvu Cable Bridge is a cable-stayed bridge that spans the Durgam Cheruvu lake in Hyderabad. It is suspended by cables from a single pylon that stands 49 metres tall. The bridge's unique design and construction required advanced engineering techniques.

The Dhola-Sadiya Bridge, officially known as Bhupen Hazarika Bridge, is a beam bridge in India, connecting the northeast states of Assam and Arunachal Pradesh. The bridge is the first permanent road connection between the northern Assam and eastern Arunachal Pradesh. At 9.15 kilometres (5.69 mi) in length, it is the second longest bridge in India over water.

Student Corner

BUILDING THE FUTURE: EXPLORING TRENDS IN CIVIL ENGINEERING

Civil engineering, the backbone of our built environment, is constantly evolving to meet the challenges of a changing world. From growing populations to climate change, civil engineers are at the forefront of developing innovative solutions for sustainable and resilient infrastructure. This blog delves into some of the most exciting trends shaping the future of civil engineering:

1. Building Information Modeling (BIM):
BIM transcends traditional Computer-Aided Design (CAD) by creating a digital representation of a construction project. This intelligent 3D model stores data about every element, from structural components to materials and even maintenance schedules. BIM fosters collaboration between architects, engineers, and contractors, streamlining communication, reducing errors, and optimizing project lifecycles.

2. Sustainable Materials and Practices:
Environmental consciousness is a major driver in civil engineering. Green building materials like recycled steel, bamboo, and bioplastics are gaining traction. Additionally, practices like rainwater harvesting, greywater recycling, and energy-efficient designs are becoming standard considerations. Civil engineers are also exploring the use of self-healing concrete that repairs cracks, minimizing maintenance needs and environmental impact

3. Smart Cities and IoT Integration: The concept of smart cities is rapidly evolving, and civil engineers play a crucial role in its development. By integrating Internet of Things (IoT) technology into infrastructure, they create a network of sensors that monitor traffic flow, energy usage, and environmental conditions. This real-time data allows for intelligent management of resources, optimizing services and enhancing the quality of life for citizens.

4. 3D Printing in Construction: 3D printing technology has the potential to revolutionize construction. By using a computer-controlled printer to deposit layers of material, complex structures can be built with minimal waste and labor. This technology offers exciting possibilities for on-site construction, rapid prototyping, and even creating intricate building components with enhanced functionality.

5. Resilience Engineering: With climate change posing a significant threat to infrastructure, resilience engineering is becoming increasingly important. Civil engineers are designing structures to withstand extreme weather events like floods, earthquakes, and hurricanes. This involves incorporating features like seismic base isolation and flood barriers to ensure infrastructure remains operational even in the face of disasters

Student Corner

6. Robotics and Automation in Construction: The construction industry is embracing automation to improve safety, efficiency, and productivity. Advanced robotics are being used for tasks like bricklaying, welding, and demolition, reducing risks for human workers. Autonomous vehicles are also making inroads, transporting materials and performing repetitive tasks on construction sites.

7. Prefabricated and Modular Construction: Prefabricated construction involves building components off-site in a controlled environment. These prefabricated modules are then transported to the construction site and assembled, offering significant advantages like faster completion times, reduced on-site labor, and improved quality control. Modular construction, where prefabricated units are stacked to create buildings, offers similar benefits, while also providing greater flexibility in design and construction.

8. Advanced Materials and Techniques: Civil engineers are constantly exploring new materials and construction techniques to push the boundaries of what's possible. Self-compacting concrete, for instance, improves construction efficiency and eliminates the need for manual vibration. Additionally, advanced composite materials offer superior strength-to-weight ratios, enabling the construction of lighter, yet sturdier structures.

9. Big Data and Analytics: The vast amount of data generated throughout a project's lifecycle is a valuable resource. Civil engineers are leveraging big data analytics to optimize design, construction, and maintenance processes. By analyzing data on material performance, traffic patterns, and energy consumption, engineers can make data-driven decisions that enhance the efficiency and sustainability of infrastructure projects.

10. A Focus on Social Equity: Civil engineers are increasingly recognizing the social impact of their work. Infrastructure projects should not only be functional but also equitable and inclusive. This involves designing accessible transportation systems, creating green spaces in underserved communities, and ensuring infrastructure projects benefit all residents, not just a select few. These trends represent just a glimpse into the exciting future of civil engineering. As technology advances and global challenges evolve, civil engineers will continue to innovate and develop solutions that create a more sustainable, resilient, and equitable world for generations to come.

Conclusion: Civil engineering is a dynamic field that constantly adapts to meet the needs of society. By embracing these trends, civil engineers can ensure the future of infrastructure is not just functional but sustainable, resilient, and reflects the needs of a growing and interconnected world.

Javith Akthar.J-IV year-Civil Engineering