Frequently Asked Questions

BTech Computer Science & Engineering, GSFC University

1. **What is the difference between Computer Science & Engineering (CSE) and Computer Engineering (CE)?**

    At GSFC University, both CSE and CE share a common foundation in computing, but they differ in focus and career orientation.

    - **Computer Science & Engineering (CSE):** CSE emphasizes software development, algorithms, artificial intelligence, machine learning, data science, and cybersecurity. It prepares students to design and optimize software solutions, work on emerging technologies, and handle large-scale data-driven systems.
    - **Computer Engineering (CE):** CE combines computer science with electronics and hardware engineering. Students learn about microprocessors, embedded systems, VLSI design, and hardware-software integration. It prepares students for roles that require knowledge of both computing and physical systems, such as chip design and embedded programming.
    - **At GSFC University:** CSE students gain additional exposure to **AI/ML, IoT & Automation, and Cyber Security**, making the program more industry-aligned with current technology needs.

2. **What is the difference between Computer Science & Engineering (CSE) and Information Technology (IT)?**

    CSE and IT are closely related, but they serve different purposes in the industry.

    - **Computer Science & Engineering (CSE):** Focuses on building and innovating technology itself. Students learn software engineering, AI/ML, IoT, cybersecurity, and theoretical foundations like algorithms and operating systems. CSE graduates often work in **software development, AI research, data science, and security engineering**.
    - **Information Technology (IT):** Primarily deals with the application of existing technologies to solve business problems. IT professionals focus on networking, databases, system administration, and managing IT infrastructure. IT graduates often work as **network administrators, system analysts, or IT managers**.
    - **At GSFC University:** CSE curriculum is designed with strong industry linkages and specialization tracks (AI/ML & Data Science, IoT & Automation, Cyber Security), giving students wider career opportunities compared to traditional IT programs.

3. **How does GSFC University prepare students for real-world applications in AI, ML, and Data Science?**

    GSFC University ensures that students specializing in AI, ML, and Data Science get hands-on experience with real-world applications.

    - **Advanced Labs:** Students have access to specialized Data Science & AI labs equipped with supercomputing resources (PARAM Shavak DL-GPU).
    - **Practical Exposure:** Regular projects on Natural Language Processing, Computer Vision, and Deep Learning help students apply theories to practical challenges.
    - **Industry Mentorship:** Students work on live projects with companies in analytics, healthcare, finance, and automation, bridging the gap between academia and industry.
    - **Competitions & Hackathons:** Participation in Kaggle challenges, AI hackathons, and data-driven innovation contests to sharpen skills.
    - **Research Opportunities:** Encouragement to publish research papers in AI/ML journals and conferences with faculty guidance.

4. **What tools and programming platforms are taught in the Data Science, AI & ML specialization?**

    Students get extensive training in both foundational and advanced tools required by industry:

    - **Programming Languages:** Python, R, and Java for AI/ML implementations.
    - **Libraries & Frameworks:** TensorFlow, PyTorch, Scikit-Learn, Keras, Pandas, NumPy.
    - **Big Data Tools:** Hadoop, Spark, and cloud-based AI platforms.
    - **Visualization Tools:** Tableau, Power BI, and Matplotlib for data storytelling.
    - **Databases:** SQL, NoSQL, and cloud databases for managing large datasets.

    This ensures graduates are industry-ready with in-demand technical expertise.

5. **How does GSFC University's IoT & Automation specialization stand out?**

    The IoT & Automation specialization at GSFC University is designed to build expertise in connected devices and intelligent automation.

    - **Dedicated IoT Lab:** A Design IoT Lab, supported by GUJCOST & DST, enables students to prototype real IoT devices and automation systems.
    - **Core Exposure:** Training on IoT architecture, sensors, protocols, and robotics ensures practical knowledge.

- **Industry 4.0 Integration:** Focus on smart manufacturing, industrial automation, and cyber-physical systems.
- **Collaborations:** Industry tie-ups for automation projects, allowing students to design solutions for agriculture, healthcare, and smart cities.
- **Project Development:** Students design smart devices such as home automation systems, intelligent robots, and industrial monitoring tools.

6. **What kind of hands-on training is provided in IoT & Automation?**

Students receive practical training through:

- **Live Device Programming:** Programming of IoT boards such as Arduino, Raspberry Pi, and ESP8266.
- **Wireless Sensor Networks:** Practical exercises on Zigbee, Bluetooth, and Wi-Fi-based IoT systems.
- **Robotics Training:** Exposure to Robotics and Robotic Process Automation (RPA).
- **Prototype Building:** Projects in smart homes, automated vehicles, and environmental monitoring devices.
- **Industry Projects:** Collaboration with industries for implementing IoT-enabled automation solutions in manufacturing and logistics.

7. **How does GSFC University train Cyber Security students to handle real-world threats?**

The Cyber Security specialization focuses on both preventive and defensive approaches:

- **Cyber Labs:** Access to dedicated cybersecurity labs for penetration testing, vulnerability assessment, and ethical hacking.
- **Practical Simulations:** Training students through simulated cyber-attacks, malware analysis, and forensic case studies.
- **Updated Curriculum:** Courses aligned with global trends in cyber defense, SCADA protection, and digital forensics.
- **Industry Certifications:** Support to pursue certifications like CEH, CompTIA Security+, and CISSP.
- **Government & Industry Projects:** Opportunities to contribute to security projects in collaboration with defense and IT organizations.

8. **What advanced career opportunities are available after specializing in Cyber Security?**

Graduates from Cyber Security specialization are highly in demand across sectors such as IT, Banking, Defense, and Consulting. Career options include:

- Cyber Security Analyst and Specialist
- Security Architect and Consultant
- Ethical Hacker and Penetration Tester
- Malware Analyst
- Digital Forensics Expert
- IT Risk & Compliance Officer
- Cloud Security Engineer
- Chief Information Security Officer (CISO) (with experience)

9. **Do students get opportunities to work on interdisciplinary projects across AI/ML, IoT, and Cyber Security?**

Yes, GSFC University strongly promotes interdisciplinary learning.

- AI is integrated with IoT to create **intelligent automation systems**.
- Data Science and ML are used to analyze data generated from IoT devices.
- Cyber Security principles are applied to **secure IoT networks and AI-driven systems**.
- Students often collaborate on research projects that combine all three specializations, such as **Smart City Security Systems, AI-driven Healthcare Devices, and Cyber-Resilient Automation Platforms**.

10. **How is Computer Science Engineering at GSFC University different from other universities?**

BTech Computer Science & Engineering offered at GSFC University is the unique program focusing on developing the industry relevant skills and holistic development of students by offering array of resources and the best environment of learning
- ✓ **Research Labs:** Exposure of working on industrial problems in the State of the art Research labs developed such as Supercomputer Lab (PARAM Shavak DL-GPU) & Design IoT Lab, sponsored and supported by Gujarat Council on Science & Technology (GUJCOST), Department of Science & Technology (DST)
- ✓ **Access to GSFC Ltd laboratories:** Prospects of working at the laboratories of GSFC Limited and access to of 22 process plants for internship opportunities as well as learning from the industry experts
- ✓ **Student Centric Approach:** At GSFC University, we follow student-centric approach where pedagogy and curricular choices are designed to make learning meaningful, relevant, engaging, and responsive to students' needs.
- ✓ **Industrial Internship:** Compulsory industrial internship of 4 weeks in every semester starting from the first year itself and the opportunity to work on the projects offered by industry partners/organizations like Embibe, Gujarat Institute of

Disaster Management(GIDM), Incture, Guby Rogers, Infinilytics, G2HMEDTECH, WePreneurs, Trakky, Open Security Alliance and others

- ✓ **Hands on Sessions:** More focus on Hands on Sessions such as Web development, Gaming, Android, AI and Machine learning etc. for students overall development to be Industry-ready.
- ✓ **Industry Driven Curriculum:** Industry driven and flexible curriculum designed with the support of industry experts appointed on Board of Studies
- ✓ **Strong industry linkages:** Expert talks, Symposiums, Projects and Hands on experience from industry resources because of strong industry connects. MoUs with GIDM, NASSCOM, PTC, AToS and foreign universities
- ✓ **Support for startup and innovation:** Inculcating innovation, funding support for innovative projects and extending support for startups through GUIITAR (GSFC University Incubation Innovation Technology and Applied Research) Council

11. **What are the courses taught in by the Computer Science Engineering ?**

- ✓ **Fundamental courses:** Basics of Electrical & Electronics,Mathematics - I,Engineering Physics
- ✓ **Ability Enhancement Courses**: Communicate Skills ,Business Communication, Entrepreneurship Development, Environmental Studies, Disaster Risk Management, Indian Constitution
- ✓ **Core subjects:** Computer Programming, Object oriented Programming with C++ ,Data Structures & Algorithms, Object Oriented Programming with JAVA,Operating System,Computer Organization Information & Network Security, Mobile Application Development , Design and Analysis of Algorithms,Software Engineering,Advanced Web Technology
- ✓ **Elective courses:** Cloud Computing,Dot Net Technology ,Service Oriented Architecture Computer Graphics, Image Processing ,Data Warehousing & Data Mining,Cyber Security and Blockchain Technology
- ✓ **NPTEL Elective:** NPTEL is a project of MHRD initiated by 7 IITs along with the IISc, Bangalore in 2003, to provide quality education to anyone interested in learning from the IITs, Student need to select a subject of choice from the Subjects offered by NPTEL for the particular academic session.
- ✓ **Specialized track courses**: Data Science, Artificial Intelligence & Machine Learning, IOT & Automation , Cyber Security etc.

12. **What specializations are being offered in Computer Science and Engineering?**

GSFC University is presently offering three specializations in BTech Computer Science and Engineering.

1. Data Science, Artificial Intelligence and Machine Learning
2. IOT and Automation
3. Cyber Security

13. **What are the specialization subjects offered in Data Science, AI and Machine Learning specialization?**

Along with the core subjects of Computer Science & Engineering, specialization courses - Python Programming, Fundamentals of AI & ML , Data Science for Engineers, Deep Learning, Big Data Architecture, Natural Language Processing and machine learning for intelligent systems are offered under Data Science, AI & ML specialization.

14. **What are the potential career paths after completing Data Science , AI & ML specialization with B.Tech. Computer Science & Engineering ?**

Plenty of career options available after completing the program with a wide range of Job Roles as follows. Data Science, AI & ML is considered to offer few of the most lucrative jobs in the industries.
- Software Developer
- Business Intelligence Analyst
- Data Engineer
- Database Manager
- Data Analyst
- Quality Specialist
- Data Scientist
- ML Architect & Specialist
- Mobile Application Developer
- Web Developer
- AI Engineer
- Analytics Manager / Data Science Leader
- Full Stack Developer

15. **What are the subjects offered in IoT & Automation specialization?**

Along with the core subjects of Computer Science & Engineering, specialization courses - Python Programming, Fundamental of Internet-Of-Things , Fundamentals of Robotics & RPA, IOT Architecture and Protocols, Wireless Sensor Networks (WSN) & IOT Standards, Data Analytics for IOT & Industry 4.0 and Application Areas are offered under IoT & Automation specialization.

16. **What are the potential career paths after completing IoT & Automation specialization with B.Tech. Computer Science & Engineering ?**

Plenty of career options available after completing the program with a wide range of Job Roles as follows. IoT & Automation is considered to offer few of the most lucrative jobs in the industries.
- Senior Software Engineer
- Solutions Architect
- Software Team Leader
- Embedded Software Development Engineer
- Software Developer
- Software Engineer
- IOT Network Engineer
- IOT Backend Engineer
- RPA Developer
- RPA Architect
- RPA Analyst
- Production planners
- Data product manager

17. **What are the subjects offered in Cyber Security specialization?**

Along with the core subjects of Computer Science & Engineering, specialization courses - Python Programming, Fundamentals of Fundamentals of Cyber Security, Network Security Principles, Application Security Principles, Vulnerability and Penetration Testing, Cybersecurity for SCADA and Industrial Control Systems & Digital Forensics are offered under Cyber Security specialization.

18. **What are the potential career paths after completing Cyber Security specialization with B.Tech. Computer Science & Engineering ?**

Plenty of career options available after completing the program with a wide range of Job Roles as follows. Cyber security is considered to offer few of the most lucrative jobs in the industries.
- Security Architect
- Malware Analyst
- IT Security Engineer
- Security Consultant
- Security Software Developer
- Security Incident Responder
- Security Systems Administrator
- Data Security Strategist
- Cyber Security Specialist

19. **What is the duration and which degree will be awarded to students after completion of Bachelor in Computer Science and Engineering?**

The duration of the course is 4 Years and after completion, students will be awarded with following degrees:
1. B.Tech. Computer Science and Engineering with specialization in Data Science , AI and ML.
2. B.Tech. Computer Science and Engineering with specialization in IoT and Automation
3. B.Tech. Computer Science and Engineering with specialization Cyber Security

20. **What are the facilities available at the campus?**

GSFC University has indoor and outdoor sports facilities, gym, medical center, etc. A fully developed, safe and secured hostel facility with mess available within the GSFC Fertilizernagar Township for girls and boys. Both the hostel facilities are Wi-Fi enabled and well furnished with entertainment, food and other facilities.

21. **What are the laboratory facilities available in Computer Science and Engineering ?**

- Research labs such as Supercomputer Lab (PARAM Shavak DL-GPU) & Design IoT Lab, sponsored and supported by Gujarat Council on Science & Technology (GUJCOST), Department of Science & Technology (DST)
- High Tech classrooms with Digital Podium and Well-Equipped Laboratories
- Robotics Lab, e-Yantra Lab setup in collaboration with IIT Bombay
- Specialized laboratories for Data Science, Artificial Intelligence & Machine Learning along with the laboratories for core subjects
- Access to GSFC Ltd laboratories: Prospects of working at the laboratories of GSFC Limited and access to 22 process plants for internship opportunities as well as learning from the industry experts.

22. **How does Computer Science & Engineering program provide Industrial exposure to students?**

Compulsory industrial internship of 4 weeks in every semester starting from the first year itself and the opportunity to work on the projects offered by industry partners/organizations like Embibe, Gujarat Institute of Disaster Management(GIDM), Incture, Guby Rogers, Infinilytics, G2HMEDTECH, WePreneurs, Trakky, Open Security Alliance and others. During industrial training/ internships, students mentored by the industry mentors and get hands-on experience after every semester. Many of the students have secured the internships with stipends up to Rs. 25000/-.

Industry driven and flexible curriculum is designed with the support of industry experts. Expert talks / hands-on training workshops , panel discussions and industrial visits are part of regular activities in each semester. Also we receive continuous support from GIDM and GSFC Ltd experts. Club Events organized and coordinated by the students are very helpful to improve their leadership skills. All students deserve the chance to pursue the career of their dreams, with a particular urgency for those who face the additional challenges of poverty.

Innovative research projects are developed by the students using the Supercomputer facility and Design IoT lab like Earthquake identification using Vibration, Anti Collision Device, Smart Trash, Prototype of Anti-cheating software, Virtual Assistant, Bio-waste segregation, Virtual Labs using AR/VR and others

23. **Apart from curricular activities, are there any co-curricular and extracurricular activities or platforms in Computer Science & Engineering at GSFC University ?**

Along with the course curriculum, the students of Computer Science & Engineering also participate in various co-curricular and extracurricular activities through different clubs managed by students themselves like Entrepreneurship - Cell, Photography Club, Robotics Club, Cultural Club, Sports Club, etc. and specially CODE Club. Under the C.O.D.E. Club various hands-on sessions were organized such as Mobile Development , Game Development, Unity 3D, Wordpress and many more. First Year CSE students won the 1st Prize in E-Summit organized by IIT Bombay.

24. **Do you provide sports facility?**

Yes. We have additional facility for all the games such as badminton, cricket, basketball, volleyball, swimming, chess, carom, golf, gym etc. Besides, the students will have the opportunity to be trained by recognized coaches and national and international players of the game through the GSFC Ltd.'s sports department on nominal chargeable basis.

25. **Do you provide Hostel facility?**

Yes. A fully developed, safe and secured hostel facility with a mess is available within the GSFC Fertilizernagar Township for girls and boys. There are 71 rooms in boys hostel and 20 rooms in girls hostel . Both the hostel facilities are Wi-Fi enabled and well furnished with entertainment, food and other facilities.

26. **Do you provide transportation facilities to reach GSFC University?**

The University campus can be reached by public transport from Vadodara city. All the buses going to Dashrath village can be used for this purpose. The University also runs buses on chargeable basis as per University timing. The information regarding the same can be collected from the administration office.

27. **How is GSFC University campus girl friendly?**

The Campus is situated inside the GSFC Ltd township, which has 24 x 7 surveillance. The University also offers comfortable and convenient residence for girls. The residential complex provides accommodation on sharing basis and ensures safety and well-being for all girls. The complex is designed to give the residents a sense of home and living in a big family.

28. **How to apply for admission?**

To know the admission procedure and other details please visit https://www.gsfcuni.edu.in/apply-for-admission and register yourself.