

Explore **Your** Potential

EN G I N E E R N G

Academic Year 2018

4 Year Bachelor of Engineering (B.E)

Computer Science | Civil

Electronics & Computer Engineering

Electronics & Communication | Electrical | Mechanical

BCA | MCA



CHITKARA
UNIVERSITY

**EMBARK ON
RESEARCH
FROM DAY ONE**

2

**SMALL
CLASSES
FOR BETTER
LEARNING**

**GREAT
PLACEMENTS
GIVE YOUR
FUTURE A
BOOST**

8

GREAT TO CHITKARA

**INTENSIVE FOCUS
ON BUILDING STRONG
COMMUNICATION
SKILLS**

7

**BRING
OUT THE
CREATOR AND
STRATEGIST
IN YOU**

**EMPOWER
YOU TO BUILD
A BETTER
WORLD WITH
AN INDUSTRY
BASED
EDUCATION**

REASONS JOIN UNIVERSITY

**VIBRANT
STUDENT
LIFE**

- DEDICATED TIME TO PURSUE YOUR INTERESTS
- START SOMETHING YOU ARE PASSIONATE ABOUT

**COLLABORATION
WITH GLOBAL
UNIVERSITIES
TO BRING YOU A
WORLD-CLASS
EDUCATION**

Hello future.

**SMALLER
CLASSES FOR
BETTER LEARNING**

**OUR WAY OF
LEARNING IS**

**HANDS-ON
COLLABORATIVE
INTERACTIVE**



THEORIES ARE BROUGHT

TO LIFE

**AND YOU LEARN BY
EXPERIENCING THEM.**



CHITKARA ENGINEERING EDUCATION

Creating, inventing, innovating, attacking challenges, solving problems, improving the quality of life—these are the driving forces for Engineers. The Engineer’s ingenuity is a driving force in our society. From space stations to microsystems, the potential for innovative engineering is endless. If you’re wondering what the future might look like, Chitkara Engineering programs can show you the way.

Chitkara Engineering programs were initiated in the year 2002 with the sole focus to prepare students from all backgrounds for careers as Engineering in a rapidly changing, technology-driven society. **Within a decade, our Engineering programs have emerged as among the top 50 of the country which speaks volumes about our strong academic heritage, innovative teaching methodology and proactive industry collaborations.**

Our courses enable you to develop your Engineering knowledge, skills, imagination and experience to the highest levels in readiness for your future career. The Engineering programs at Chitkara University combine classroom and laboratory learning in technical areas with a broad liberal arts curriculum and industry assignments to give you an Education tuned to the 21st century wavelength. We are dedicated to giving you an exceptional Engineering experience with knowledgeable and engaged faculty and the latest equipment and technology.

CHITKARA UNIVERSITY INSTITUTE OF ENGINEERING & TECHNOLOGY (CUIET)

Chitkara University (Punjab)

Chitkara Engineering programs were established in the year 2002 and has become the first choice among the student community in North India and this fact has been reinforced by being consistently ranked in the top 50 private Engineering colleges in the country. With the establishment of Chitkara University, CUIET became one of its constituent institutions and is now on its way to achieve higher benchmarks in Engineering Education.

For the academic year-2018, we are offering the following programs:

4-Year Bachelor of Engineering (B.E.) Programs in

- **Computer Science & Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

Data Analytics | Cyber Security & Forensic in academic collaboration with Quick Heal Academy
Cloud Computing & Virtualisation Technology | DevOps (Development & Operations)
Full Stack Development | Mobile Computing | Game Design and Augmented Reality

- **Electronics & Computer Engineering**

- **Electronics & Communication Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

Embedded Systems and IOT | VLSI Design | Mechatronics

- **Electrical Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

Hybrid & Electric Vehicle Technology | Industrial Automation

- **Civil Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

Public Health Engineering | Construction Engineering Management | Structural Engineering

- **Mechanical Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

Mechatronics | Automotive Engineering with a introduction to Hybrid and Electric Vehicles

2-Year Master of Computer Applications (MCA) Lateral

5-Year Integrated BCA-MCA

3-Year Bachelor of Computer Applications (BCA)

Master of Engineering (M.E.) Fellowship Programs in CSE | ECE | ME



**BE PART OF A
TECHNOLOGICAL
FUTURE**

CHITKARA SCHOOL OF ENGINEERING & TECHNOLOGY (CSET)

Chitkara University (Himachal Pradesh)

Chitkara School of Engineering & Technology (CSET) was established in the year 2008 at Chitkara University (Himachal Pradesh) and is well on its path to become one of the leading Engineering schools of the country. Since inception, CSET has been at the forefront of forging strong collaborations with companies like ARM, Cadence, Microsoft, etc. In a short time it has become one of the premier Engineering institutes of North India.

For the academic year-2018, we are offering the following programs:

4-Year Bachelor of Engineering (B.E.) Programs in

- **Computer Science & Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

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Cloud Computing & Virtualisation Technology | DevOps (Development & Operations)
Full Stack Development | Mobile Computing | Game Design and Augmented Reality

- **Electronics & Computer Engineering**

- **Electronics & Communication Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

Embedded Systems and IOT | VLSI Design | Mechatronics

- **Civil Engineering**

After completion of 4th semester, student will have the opportunity to pursue specialisation in any one of the following fields -

Public Health Engineering | Construction Engineering Management | Structural Engineering

Master of Engineering (M.E.) Fellowship Program in Civil Engineering

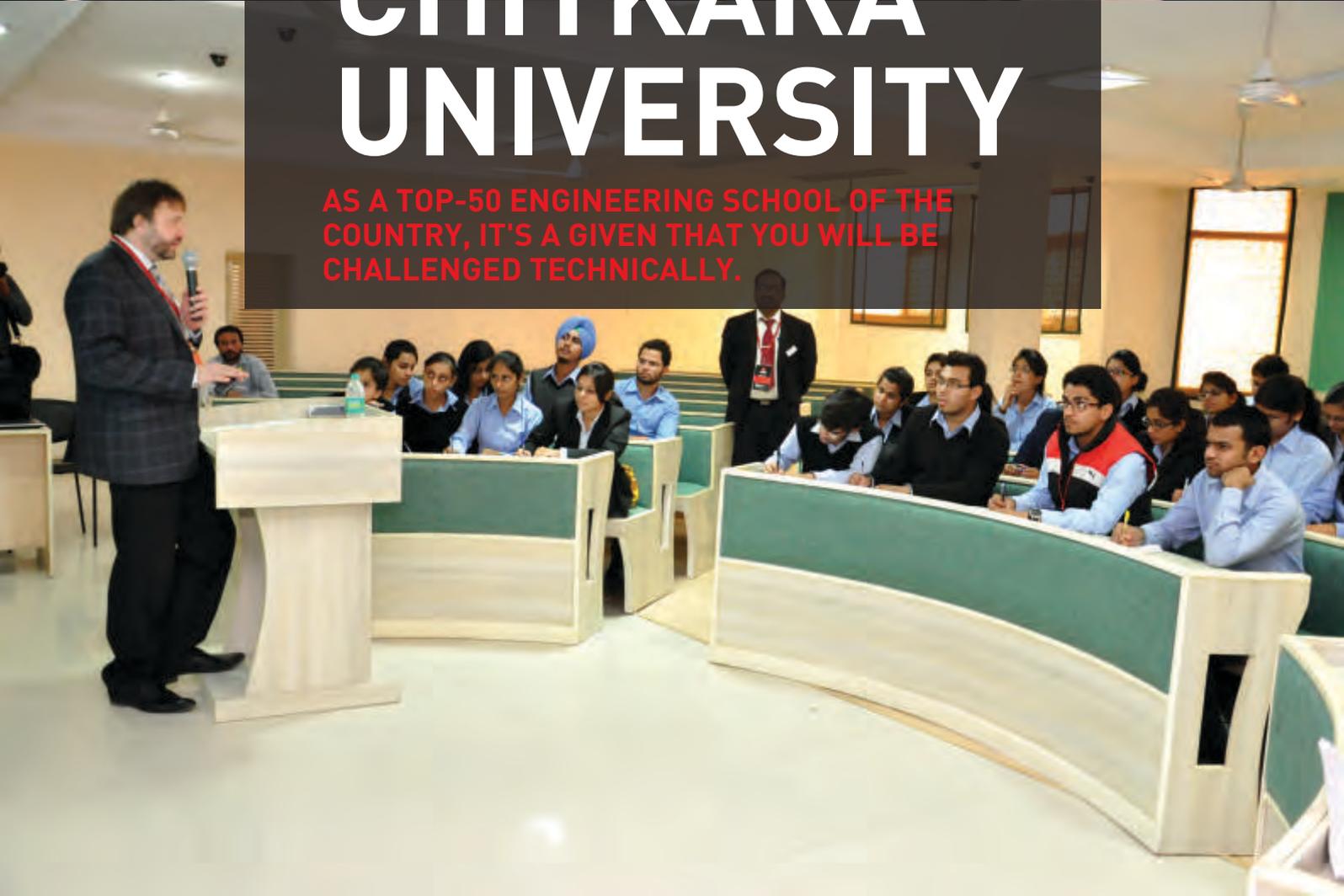
5-Year Integrated BCA-MCA

3-Year Bachelor of Computer Applications (BCA)



THE MATCH BETWEEN YOU AND CHITKARA UNIVERSITY

AS A TOP-50 ENGINEERING SCHOOL OF THE
COUNTRY, IT'S A GIVEN THAT YOU WILL BE
CHALLENGED TECHNICALLY.





EXPLORATION AND INNOVATION

Our students must have the ability to think for themselves. Chitkara students are passionate and focused. All Our students have that drive—the need to investigate and ferret out solutions, to build, to invent, to design, to develop. Not only do we recognize it, we welcome you to bring it on! We prioritize teaching students - how to bring their ideas to fruition, not just by enhancing technical skills, but by teaching them how to foster innovation and to manage the process, to take ideas to the highest possible level.



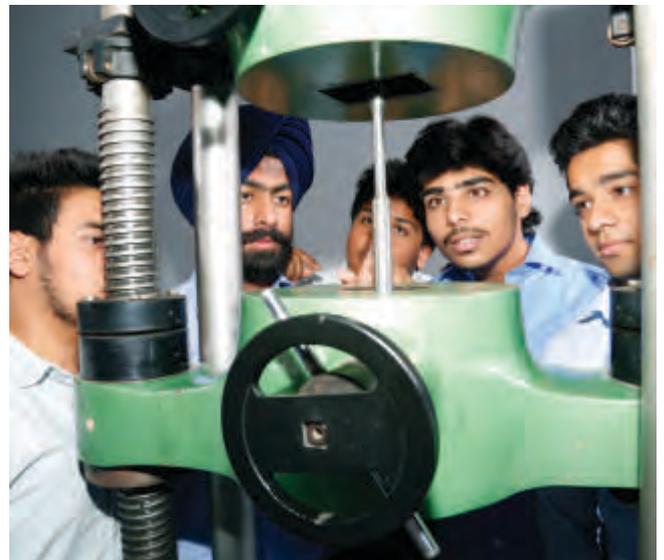
COMMUNICATION SKILLS

The stereotypes of engineers are a thing of the past. Students who graduate from Chitkara must be capable of articulating their ideas, contributing successfully in teams, and working collaboratively with non-engineers, such as product designers or business managers. Verbal and written communication is also essential to being a world class engineer. You can have the best idea in the world, but if you can't articulate it, it probably isn't going very far.



INTELLECTUAL CURIOSITY

At Chitkara, you should expect more than a course schedule and books. We want you to get your hands dirty. Majority of our students participate in research during their undergraduate years. You will be given opportunities to work with faculty and can even apply for financial support for your own research projects.



HANDS-ON CREATIVITY

Chitkara University is an active, hands-on place. Getting your hands dirty and trying something new is often the best way to achieve success and to make learning come to life. At Chitkara University, through the art and design, we apply theoretical knowledge to real-world problems. In other words, you should enjoy both thinking and doing.



AN EDUCATION AHEAD OF ITS TIME

At Chitkara University, our Engineering students receive a quality education that prepares them to advance the frontiers of technology. Through our “Hands-on” curriculum, students design and construct all-terrain vehicles; design, build and load steel bridges; produce computer animations and video games; and harness the power of the sun to race cars that they design, build and test. Our engineers don’t just learn theory – they expand upon it and apply it.



ENGAGING STUDENT CENTRIC EDUCATION

Dedicated laboratories allow students to combine their practical and theoretical studies right from the first year and continuing throughout their four year program.

Compulsory projects are a part of the course curriculum. Students are engaged in Engineering design right from the first year.

Our students have competed in many national and international design projects like solar car, mini-Baja, steel bridge and video game design.

Small Classes allow faculty to provide for individual attention. Students learn in small groups, receive hands on experience every semester and participate in faculty research projects.

STRONG INDUSTRY COLLABORATIONS

Chitkara University has very strong industry collaborations with global industry leaders. These companies such as ARM, Cadence, Wipro, Infosys, Oracle, Microsoft, SAP, Rasco Automotives and Dassault Systemes provide a platform for our budding Engineers to experience the latest technologies hand-on.

We are the preferred University for fresher intake for many leading blue chip companies around the country including Microsoft, Google, Amazon and Google.

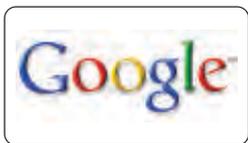
Our Engineering facilities include a number of instructional and research laboratories including the Microsoft Innovation Centre, nVidia CUDA Teaching Centre, NXP Semiconductors Signal Lab and Dassault Design Centre.

A UNIQUE, HANDS-ON LEARNING EXPERIENCE

Hands-on and interactive learning means classes are never dull. Theories are brought to life, and you learn by experiencing them.

Classes incorporate activities, such as simulations and problem sets conducted in the format of mini lectures, video lecturettes, small group recitations, hands-on demos, designettes and concept quizzes to cement the understanding of different concepts in a subject. The interactive sessions foster collaborative learning and you will enjoy and better understand concepts that are traditionally viewed as difficult. Real-life examples are demonstrated regularly.

Students can participate in research projects of national character and work with blue chip companies such as Google, Texas Instruments & Hewlett Packard (HP) as well as the state governments.



STRONG INDUSTRY COLLABORATIONS

Chitkara Engineering has established an unassailable reputation for very strong campus recruitment on the sheer virtue of our intensive focus on making all our graduates "Industry Ready".

For our Engineering programs, we realize that our technical graduates are the foundation of the new knowledge based Indian economy. We also know that an active industry-academic interface is required to achieve the goal of producing "industry ready" students who are well rounded and quick learners.

Marquee companies such as nVidia, ARM, cadence, nxP semi conductors and Texas Instruments have recently supported us in terms of supplying state of the art latest equipments for best hands-on training for our students.

- Chitkara University is privileged to be part of the SAP University Alliance.
- The Google Student Ambassador Program is an opportunity for students to act as liaison between Google and the University.
- We have dedicated Apple funded labs for making our students proficient in IOS mobile applications.
- Microsoft Innovation Centre at Chitkara University provides incubation and expert hands-on support on Microsoft technology innovation, research, and software solutions.
- Chitkara University in collaboration with Quick Heal Academy has introduced 4-Year B.E. specialisation in Cyber Security & Forensics
- nVIDIA which is one of the leading companies in the parallel computing space has granted the status of "CUDA teaching Centre" to Chitkara University.
- Marquee companies such as ARM, Cadence and NXP Semiconductors are supporting us in terms of supplying state of the art equipments for best hands-on classroom training.
- Infosys Campus Connect and Wipro 10X Mission has provided us an important framework for our Engineering curriculum
- Strong linkages with Industry leaders such as CISCO, Ericsson & National Instruments to develop and deploy industry-relevant curricula on various technologies for our Engineering curriculum.
- Joint B.E. Mechanical Engineering degree programme by Rasco Automotive for 3D scanning and reverse engineering technologies.
- Tata Technologies and Dassault Systemes lend their technical plus software knowhow to set up a brilliant lab for design, manufacturing and documentation to cater to the rising demands of designers, analysts in the Automotive industry.
- Autosync has collaborated with Steinbeis Centre for Technology Transfer India, which aims to bridge the world of science, academia, and business articulately.
- Mahindra Rise Igniters have collaborated with the centre forming "Igniters Innovation Lab".





STUDENT LIFE WITH A UNIVERSAL APPEAL

With student clubs, research projects, design competitions and more, you will have no trouble finding a stage to pursue your passions.

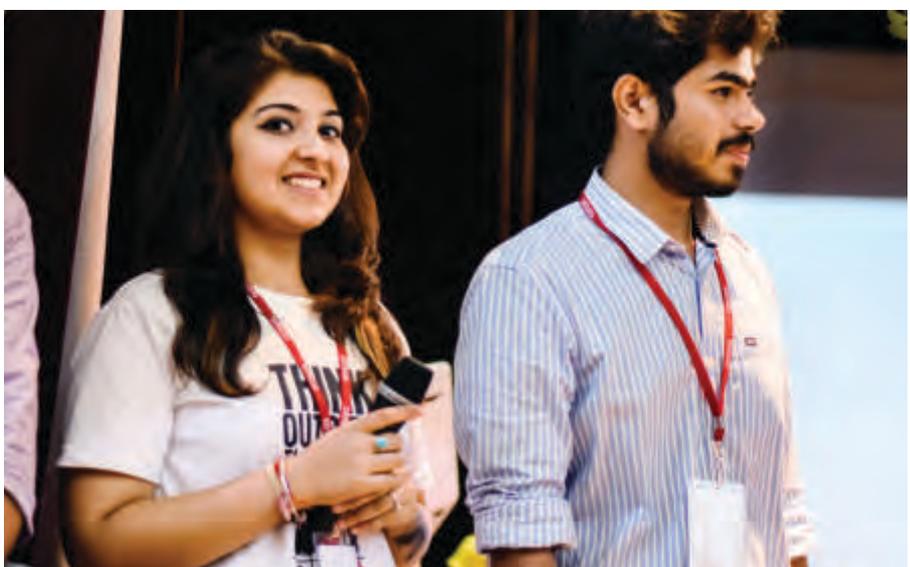
Students can participate in research projects of national character and work with blue chip companies such as Google, Texas Instruments & Hewlett Packard (HP) as well as the state governments.





We complement the academic programs by providing a variety of activities, educational opportunities, programs, facilities, and services that enhance student development and enrich the quality of campus life at Chitkara University.

With more than 20 active clubs and leadership positions in various student events, there are many other ways to refine your leadership and organisational management experience, explore interests, and make friendships that will last a lifetime.





STUDENT CHAPTERS ON CAMPUS

Institute of Electrical Electronics Engineers IEEE

IEEE is the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. Through its worldwide network of geographical units, publications, web services, and conferences, it remains the world's largest technical professional association. Chitkara University has a very strong IEEE chapter since 2009 and has completed initiatives such as Ethical Hacking Competition (participation of more than 60 teams), Youth Parliament and numerous Technical Symposiums.

Association for Computer Machinery

ACM is widely recognized as the premier membership organisation for computing professionals, delivering resources that advance computing as a science and a profession; enable professional development; and promote policies and research that benefit society. ACM students' Chapter has been active on our campus since 2010 and is serving as a gateway to forums, panel discussions and symposia that further enhances student's professional development.

Institute of Electronics and Telecommunication Engineers

IETE is a leading professional society devoted to the advancement of science and technology related to "Electronics, Telecommunications and IT". IETE has a strong campus presence since 2009 and initiating various events which is updating students with latest technological advancements.

The Indian Society for Technical Education

The major objective of ISTE is to assist and contribute in the production and development of top quality professional engineers and technicians needed by the industries and organizations. We became an Institutional member in 2005 and since then over 55 Chitkara faculty have become life members of ISTE.



The Institution of Engineers



The mandate of IE is to “to promote and advance the science, practice and business of engineering in all its branches in India” and has been active on our campus since the year 2009. Students from all branches of Engineering are active members of the Chitkara chapter.

Society of Automotive Engineers



The SAE Collegiate Club, Northern India Section at Chitkara campus was inaugurated in the year 2006 and the Department of Mechanical Engineering is immensely benefited by bringing its student members and faculty on the network of the latest advancements in technology in the field of automobiles.

American Society of Mechanical Engineers



ASME serves its technical community through high-quality programs in continuing education, the development and maintenance of codes and standards, research, conferences and publications, government relations, and various forms of outreach. ASME-Chitkara Students Section is the only one in Northern INDIA. After its beginning in January 2010, the students section has organized three events at National Level.

Computer Society of India



Formed in 1965, the CSI has been instrumental in guiding the Indian IT industry down the right path since its formative years. The mission of the CSI is to facilitate research, knowledge sharing, learning and career enhancement for all categories of IT professionals, while simultaneously inspiring and nurturing new entrants into the industry and helping them to integrate into the IT community. CSI established its chapter at Chitkara University in 2013.

Formula Student



Student Chapter of Institute of Mechanical Engineers (IMechE) was established in Sept 2017 which promotes engineering and innovation in different fields like Automotives, Aerospace, Bio-medical engineering, Power and energy and Construction and building services. Students under IMechE's Student chapter have been participating in IMechE's Formula Student UK. This chapter plans a number of activities in each semester to promote engineering.

WE LET YOU EMBARK ON RESEARCH FROM DAY ONE.

RESEARCH OPPORTUNITIES ARE OPEN TO 100% OF CHITKARA ENGINEERING STUDENTS.

We believe every student benefits from being taught by experts active in research and practice. You will discuss the very latest ideas, research discoveries and new technologies in seminars and in the field and you will become actively involved in a research project yourself. All our academic staff are active in internationally-recognised scientific research across a wide range of topics. You will also be taught by leading industry practitioners.

There are always numerous engineering research projects in progress, funded by industry, charities, government departments and research councils. Our undergraduate students benefit through access to up-to-date equipment, industrially linked projects and staff expertise.

CHITKARA UNIVERSITY RESEARCH & INNOVATION NETWORK (CURIN)

Through **Chitkara University Research and Innovation Network (CURIN)**, our researchers, staff and students work across disciplines to extend the boundaries of knowledge. 11 Centres of advanced research under CURIN build and sustain Chitkara University's competitive advantage through leadership. These centers and institutes are the locus of research for collaborative groups of investigators pushing the frontiers of knowledge forward. They are involved in cutting edge research, exploring new technologies to improve the country's infrastructure and safety — and contributing to society through many other discoveries and innovations.

E-CRITICAL CARE UNIT

Our research team is working to develop a cost effective cloud based E-Critical Care Unit, which can be used to care of patients in transit/remote/restricted places. The system is capable of transmission and monitoring of vital signs exceptions and periodic patient images and videos to remote doctors. It thus enables the doctor to diagnose and optionally deliver live saving drugs using Multi syringe Infusion pump in presence of allied health care technicians. E Critical unit thus aims to provide timely medical attention to patients and increases survival rate.

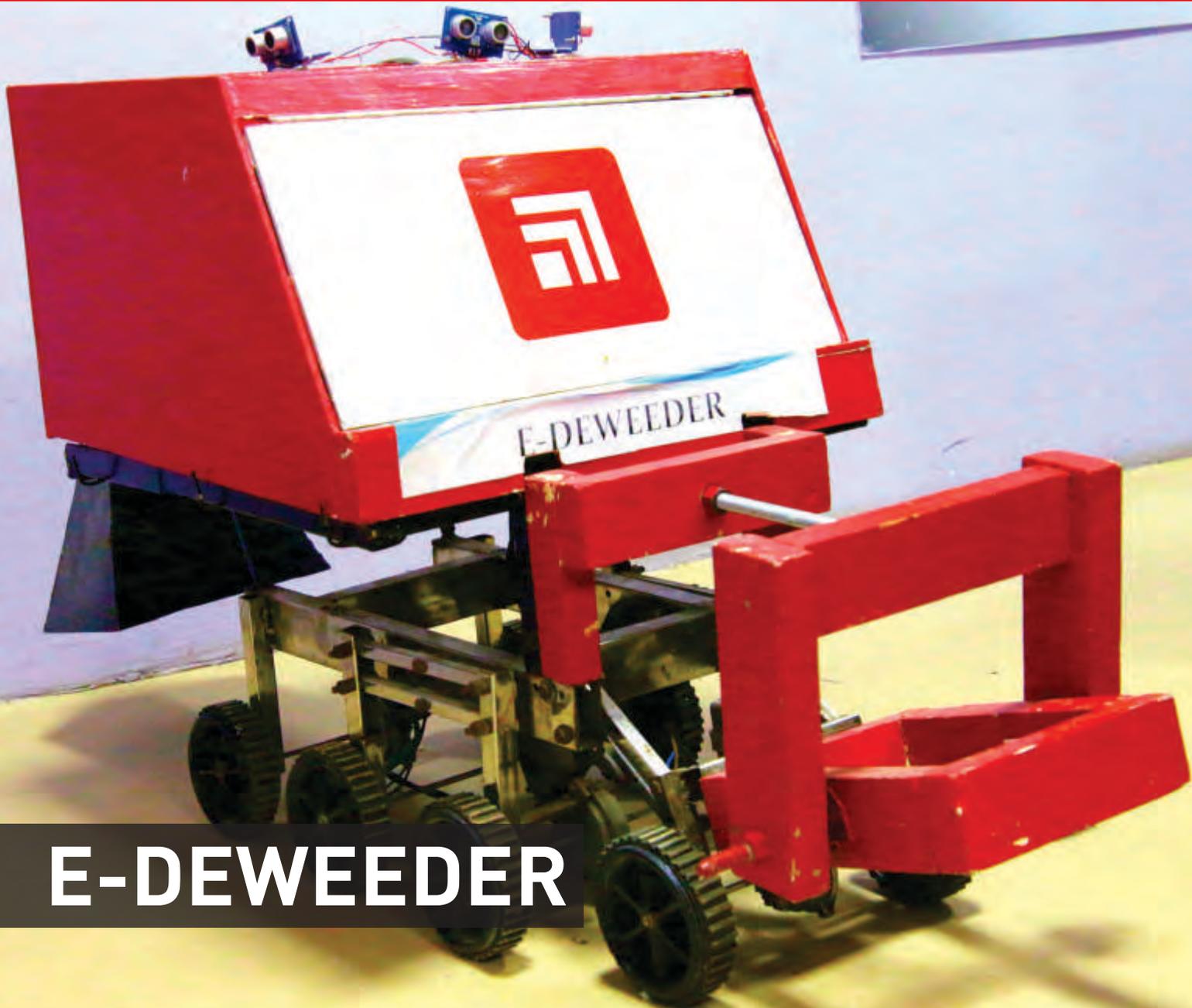
This project has been approved by DST for funding and also won the prestigious Millenium Alliance awards in the field of affordable Healthcare.



INTELLECTUAL
PROPERTY INDIA

**CHITKARA UNIVERSITY RANKED 4TH
AMONG TOP INDIAN UNIVERSITIES
FOR FILING PATENTS**

According to ANNUAL REPORT published by the Indian Patent Office, Chitkara University has been ranked 4th among top Indian universities like Indian Institute of Technology, Indian Institute of Science for filing 46 patents.



E-DEWEEDER

Dr Nitin Saluja and his team worked on making de-weeding a hassle free operation by designing Smart sensor based E-Deweeder. The E-Deweeder is developed like an all terrain machine, which traverses the farms and kills the weeds (by cell necrosis) automatically after detecting them. The crop remains unaffected by deweeding operation. There are no chemical sprays to be used and no mechanical plucking or cutting of weeds. E-Deweeder is thus a cost and health effective alternate to chemical weedicides

Won DST-Lockheed Martin - India Innovation Growth Program 2016

- Won CII - India Innovation Initiative 2015
- Won IEEE Young Humanitarian Challenge 2014
- Endorsed by ICAR - Directorate of Weed Research, Jabalpur

A RESEARCH & PRACTICE LED CULTURE

ELECTRONICALLY CONTROLLED NURSING BED



BE Students Piyush and Pranay along with the mentor from CURIN have designed an electronically controlled nursing bed for bedridden patients to change their positions automatically or periodically as suggested by doctors. The whole device is self-controlled in specific angles/positions/tilt. To prevent patient from bedsores the electronically controlled nursing bed helps the patient to change their position to left, right or at a particular angle by hand gesture control. Apart from bed positioning patient can control room environment like light, fan, window curtain, blanket wrapping by its own, without any attendant/ caretaker help.

Caretaker/attendant can help patient in his/her bowl movement without lifting the patient form bed with help of switch controlled sanitary trolley attached under the bed.

REAL TIME COMMUNICATION DEVICE FOR SPEECH IMPAIRED PERSON

The inventors of the present invention have developed a real time communication device for speech impaired person that allows them to communicate normally. The inventors have used dry electrode EEG sensors, electric wave generator using Comparator to generate signals. The required signals are extracted from the comparator and fed after amplification to voice synthesizer that decode the brain signals into normal voice that is broadcasted using speakers. The process of conversion of brain signals and then processing that signals into audible voice is real time. Thus device is very light in weight and easy to carry.



WIRELESS COMMUNICATION DEVICE FOR IMPROVED WIFI (WIRELESS FIDELITY) SIGNAL

The inventors of the present invention have developed a wireless communication device for improved Wi-Fi (Wireless Fidelity) signal having large frequency, high data transfer rate and low rate of error. The device has the capacity to eliminate the need of two – three Wi-Fi routers. The increased signal strength is due to the presence of inbuilt amplifiers, repeaters, multipliers, dividers, omnidirectional antennas. The data rate is considerably boosted from 800Mbps to around 3000Mbps.



SOLAR LOUNGE

Shrey Dhiman student of final year Electrical Engineering won bronze medal for project 'Solar Lounge' in All India Design Competition for Engineering Students-2014 (EE) conducted by National Design and Research Forum, The Institution of Engineers (India).



FOLDING BICYCLE

Lavan Jain, Divyanshu Sood and Akshdeep Chahl developed a novel bicycle folding mechanism, which is not only low cost but also very simple. The invention provides less time consuming and more efficient mechanism for folding the bicycle making it very very compact and easy to transport. The folding bicycle comprises of door hinge, crank set (bicycle chain) in the same alignment. Both the wheel axes coincide with each other to bring down folded version to half of its original length. Minimum Viable Product of this innovation is ready and is set to see the light of the day. When in the market, it has got huge potential to transform the way urban and rural community would commute.



IMPROVED MECHANISM FOR VALVE ACTUATION IN CAMLESS ENGINE

The present invention discloses an improved mechanism for valve actuation in camless engine. The inventors have replaced the sensors by using a laser light and LDR based circuit system. In this, a disc with a pin hole is attached on the crank shaft and it helps to track the orientation of the crankshaft. It helps to detect the instance at which the hole on the rotating disc comes in front of the laser beam. This signal goes to the Electronic Control Unit (ECU) which counts the Revolutions per minute (RPM) and helps to time the valves as per the crankshaft orientation. As the whole system is fixed outside the engine block. Thus, the laser light and LDR based circuit system used can be of low working temperature range. Therefore, reducing the cost of the system and making it possible for this technology to be used more often



'INTELLIGENT SOLAR TRACKER WITH A COMPRESSORLESS REFRIGERATOR'

Nikita Aggarwal alongwith her team members Bhavika Mittal, Ravneet Kaur, Manmohit Kaleka and Kiran Chauhan got grant-in-aid of Rs. 20,000/- from The Institution of Engineers, Kolkata for their project 'Intelligent Solar Tracker with a Compressorless Refrigerator'.

LIVE BRAILLE

In 2014, our Engineering student Abhinav and his team developed Live Braille which is a breakthrough Innovation for Visually Impaired. It is a hand wearable glove that aids the blind to manouevre themselves and become self-reliant in terms of mobility.

- Recommended by NASA
- Winner of TiEGER award by TiE
- Awarded by IMechE UK
- Honored by Illinois State University
- Appreciated by various IITs





MULTI PURPOSE DUAL OPERATED RICKSHAW/PEDICAB



**EXPLORE.
DREAM.
DISCOVER.**



Coliseum
THEATRE

BIDDING THE...

OPPORTUNITIES AREN'T GIVEN

THEY'RE MADE.



CHITKARA MADE

OVERVIEW OF CAMPUS RECRUITMENT FOR OUR ENGINEERING PROGRAMS

Our Engineering graduates go on to great careers, we're hands on and responsive in our teaching, we provide a great environment to study and our research is world class. We have established an unassailable reputation for very strong on-campus recruitments on the sheer virtue of our intensive focus on making all our graduates "industry ready", but brilliant campus recruitment is a end result of our teaching approach which is learning-centric enhancing knowledge, skills, and understanding through practical experience.

17th batch of Engineering graduates from Chitkara University, Punjab & 11th batch of Engineering graduates from Chitkara University, Himachal Pradesh appeared for the campus recruitment process this year.

Some of the major highlights of the campus recruitment for the batch graduating in the year 2017 were

- **139 companies** came on-campus for hiring Chitkara Engineering students (Most of the companies are listed on the next page)
- Out of batch of 998 around **232 students got "Dream Job Offers"** from marquee companies such as **Amazon, HP Labs, Verizon, FICO, Evalueserve, MakeMyTrip, Reliance Industries, HP, Quick Heal, OYO Rooms.**
- Some of the top on-campus recruiters were as follows - **Infosys / Capgemini / Cybage / ITC Infotech / iNautix / Wipro / Hitachi / Newgen / Unisys / Amphisoft Technologies / Byjus / Credforce Asia / Qicker.**
- For Mechanical Engineering students, some of the major companies that visit our campus are - **Reliance / Mahindra & Mahindra / Honda / Eaton/ SML ISUZU/ Yamaha/ L& T / Escorts / Jindal Saw / Mondelez / Godrej & Boyce / Coca Cola / Panasonic / Piaggio / Hyundai Infrastructures / JCB India / Renault Nissan**
- For Civil Engineering students, some of the major companies which visit our campus are - **L&T Construction / Sobha Developers / 3 C / Shapoorji Pallonji / Sterling & Wilson / Cinda Construction / Lafarge / Afcons / DLF / Raheja Construction / JSW Steel / Mahindra EPC**

SOME OF THE MAJOR COMPANIES THAT VISITED OUR CAMPUS THIS YEAR AND HIRED OUR ENGINEERING GRADUATES.

IT INDUSTRY

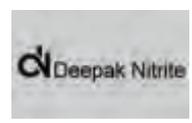
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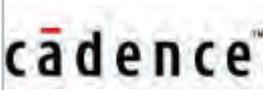
SOME OF THE MAJOR COMPANIES THAT VISITED OUR CAMPUS THIS YEAR AND HIRED OUR ENGINEERING GRADUATES.

HEAVY ENGINEERING /AUTOMOBILE / CONSTRUCTION

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SEMI CONDUCTORS / KPO / CONSULTING





CHITKARA UNIVERSITY CONFERS
HONOURARY DOCTORATE ON
Mr. KAILASH KATKAR

MANAGING DIRECTOR & CEO | QUICK HEAL TECHNOLOGIES

In a scintillating ceremony on July 29th, Chitkara University conferred the Honorary Degree of Doctor of Literature (D.Litt) on the Managing Director & CEO of Quick Heal Technologies Ltd., Mr. Kailash Katkar in recognition of his outstanding contribution to India's IT Security space and his inspirational journey from humble beginnings to a role model Business leader and Information Technology Security Visionary.



“Mr. Kailash Katkar accepted the degree in the presence of his family members and business associates.”

In his inspirational convocation speech, he motivated the passing out students by sharing his experiences and said, “Your job as future leaders and innovators is to create a world that lasts forever. Take the values and skills you have learnt over these years and built them into everything you do next. Values, peace in personal life and commitment are the core.”

The entire faculty, students and staff of Chitkara University broke out in rapturous applause to honour and recognise Mr. Kailash Katkar's tremendous contributions to India and the society at large, through his vision, drive for innovation and passion to bring about transformation and change.

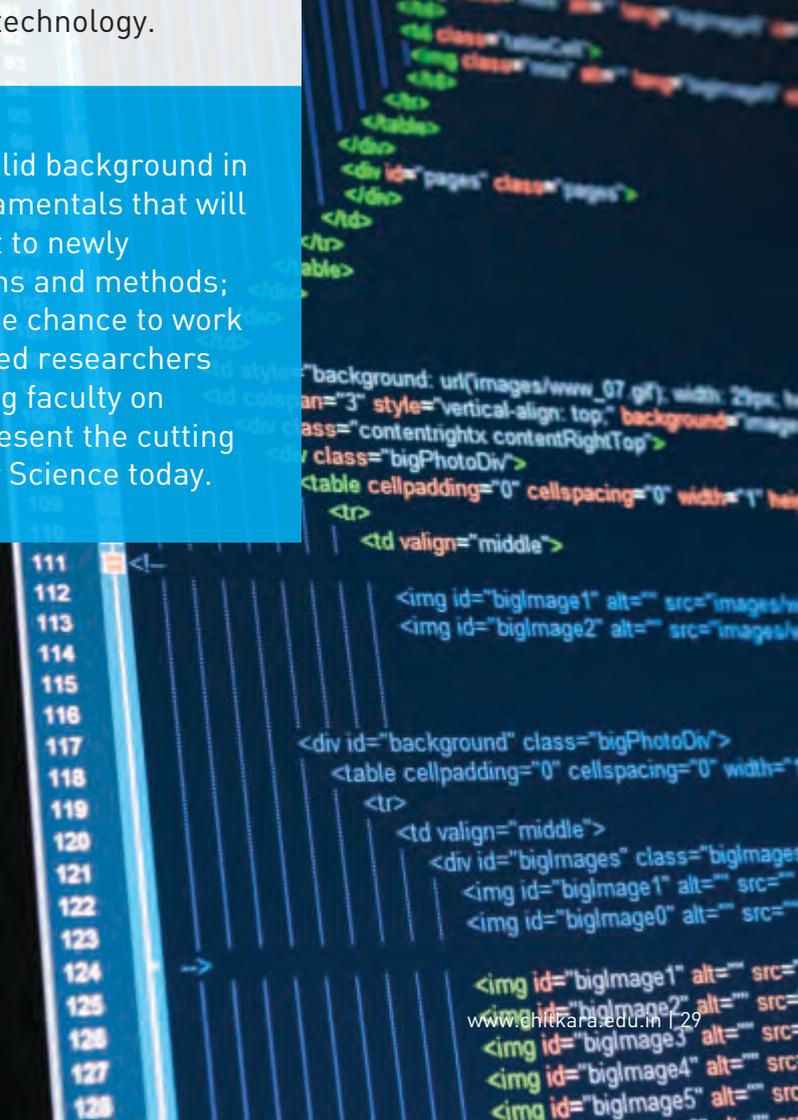
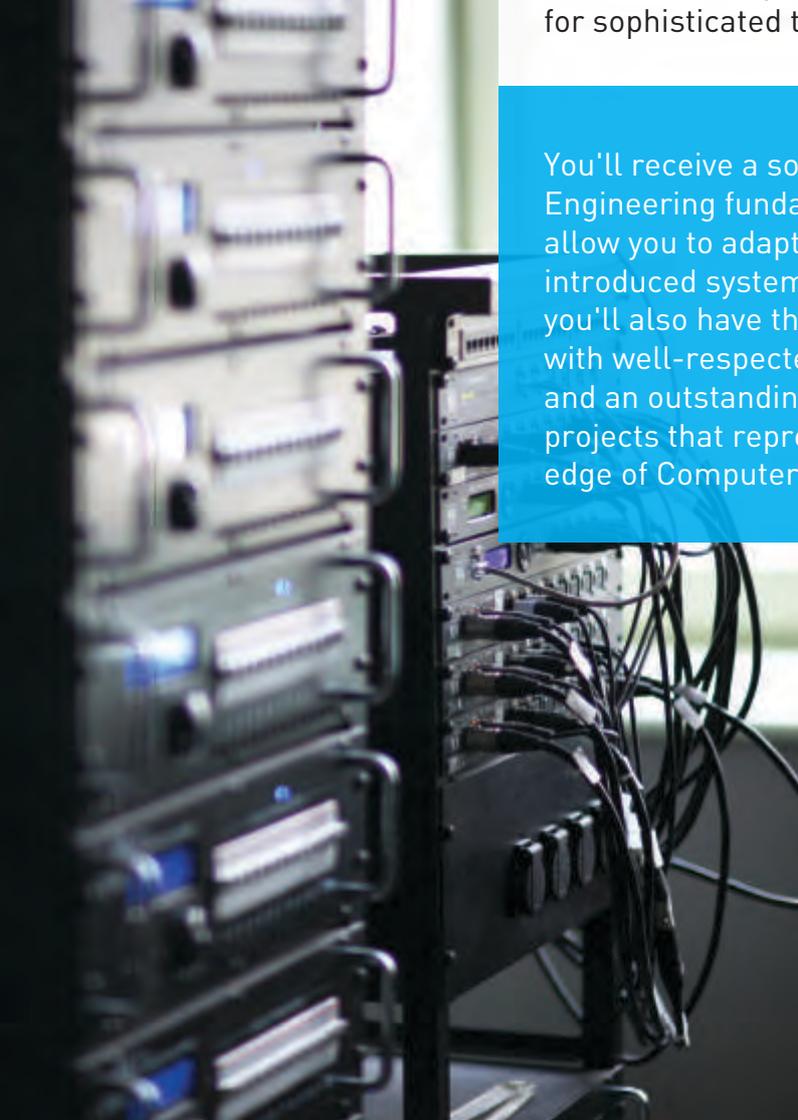


COMPUTER SCIENCE & ENGINEERING

4-Year Bachelor of Engineering

From home video game systems to hospital monitoring equipment, computer systems are part of every aspect of contemporary culture. Computer scientists and engineers design, build and improve these systems, finding new applications for sophisticated technology.

You'll receive a solid background in Engineering fundamentals that will allow you to adapt to newly introduced systems and methods; you'll also have the chance to work with well-respected researchers and an outstanding faculty on projects that represent the cutting edge of Computer Science today.



COMPUTER SCIENCE & ENGINEERING

4-Year Bachelor of Engineering

Program Objectives

The fundamental objective of our Computer Science program is to provide the opportunity for our students to develop a firm foundation in Mathematics, Science, and design methodology of computing systems. Our course covers all fundamentals, working and expert subjects that provide a holistic learning environment where students understand and are able to apply the most contemporary and essential tools needed in the breadth and depth of Computer Science & Engineering.

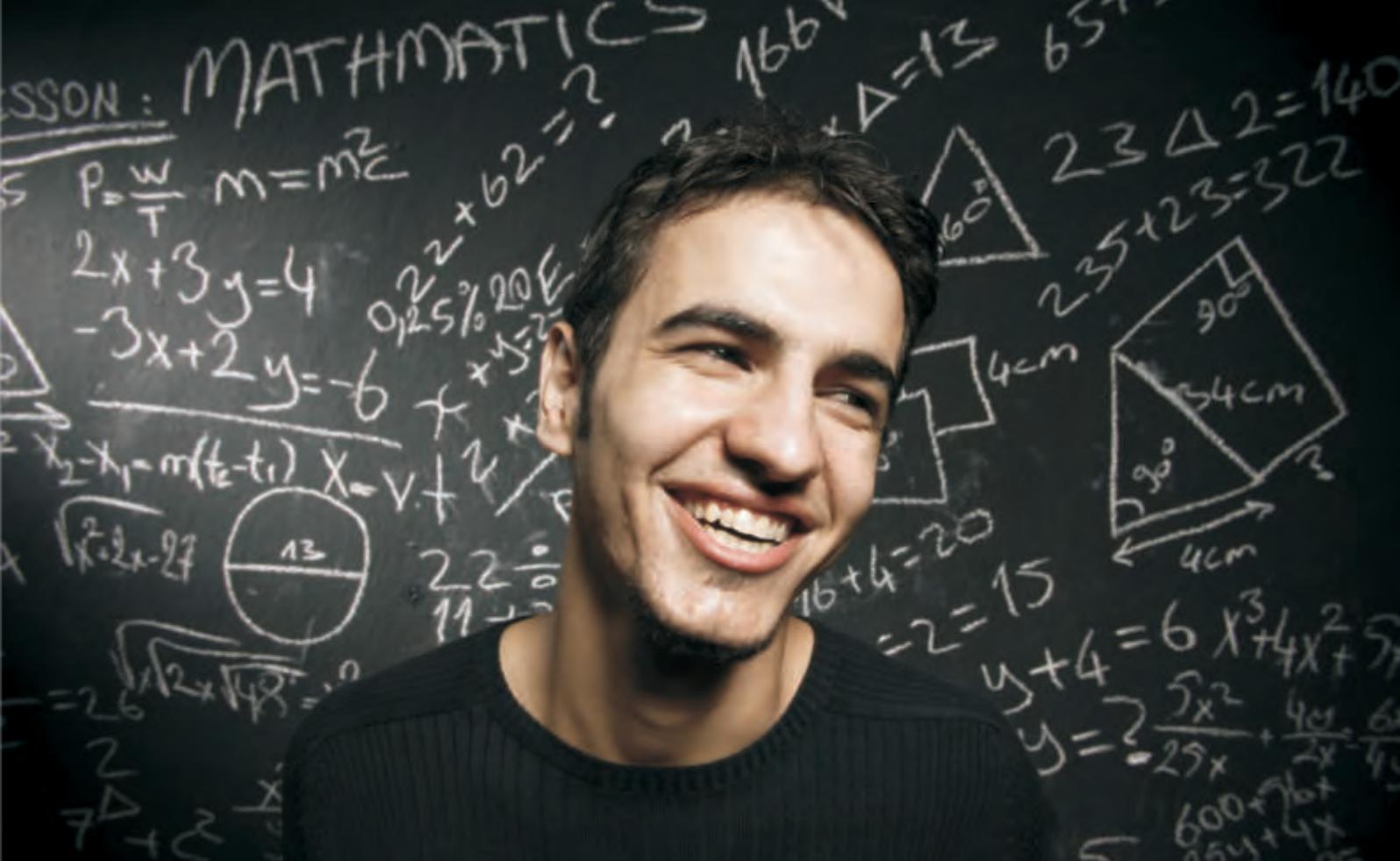
Student Outcomes for our Computer Science Programs

- An ability to design a software or digital hardware system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- Knowledge of probability and statistics, including applications to Computer Science and Engineering.
- Knowledge of Mathematics through differential and integral calculus, basic science, Computer Science, and engineering sciences, necessary to analyze and design complex systems containing hardware and software components, as appropriate to Computer Engineering.
- Knowledge of advanced Mathematics, including linear algebra, numerical computing methods for Engineering, and discrete Mathematics.
- Knowledge of algorithms and data structures
- An ability to apply design and development principles in the construction of software systems of varying complexity.
- Knowledge of concepts of programming languages.
- Knowledge of computer organisation and architecture.
- Knowledge of theoretical foundations.
- Knowledge of problem analysis and solution design.
- An ability to apply Mathematical foundations, algorithmic principles, and Computer Science theory in modeling and design of Computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

Program Contents and Academic Framework

Our curriculum lays intensive focus on:

- Computer Programming & Problem Solving
- Digital Logic
- Computer Architecture & Organisation
- Microprocessor & Interfacing
- Computer Networks
- Graphics & Multimedia
- Software Engineering
- Image & Vision Computing
- Mobile Computing
- Information Security
- Wireless Networks
- Data Warehousing & Data Mining
- Object Oriented Paradigm & Programming
- Data Structures & Algorithms
- Algorithm Design & Analysis
- Operating Systems
- Programming Language Translators
- Database Systems
- Internet & Web Programming
- Software Project Management
- Operations Research
- Cloud Computing
- Concurrent & Distributed Systems



Cutting Edge Labs

Chitkara University has excellent infrastructure, including domain specific laboratories associated with the technical divisions. Industry leaders like IBM, Cisco, Google, Microsoft & nVidia have established their laboratories in collaboration with the School.

Major laboratories include:

- Theoretical Computer Science and Language Processing
- Data technology
- Software Systems
- High Performance Computing
- Intel Multi-core laboratories
- Open Source technologies
- Grid-Cloud Computing
- Computational Intelligence
- Mobile Computing
- Image Processing

All labs are equipped with the latest Hardware & Software for the upgradation of education and upliftment of research for students to meet the challenging needs of the IT sector.

Scope of Employment

- As Developers and Specialists in high-end services and IT-product companies
- As Development Engineers, Technical Leaders and Managers.
- As Consultants, Solution Developers and Entrepreneurs.
- As Computing Specialists in Research Labs and Technology Providers
- As System/ Network Performance Analysts and Simulation / Evaluation Specials in IT companies.

Careers

We have leading blue chip companies such as; Google, Microsoft, Amazon, Infosys, Wipro & HCL Technologies coming to campus year after year for recruitment events.



SPECIALISATION IN DATA ANALYTICS

Program Overview

The advent of the internet has expanded the digital technology landscape. Our every action online leave a footprint in the digital form. This has completely transformed the business world at a rapid speed. There is a massive explosion of data on daily basis, which is helping organizations to monitor the behavior of their customers. As a result, organizations are giving more prominence for extracting valuable insights from the information available and the responsibility is mainly handled by data science professionals. It has generated an enormous scale of job opportunities for data science professionals in the market.

In order to meet this demand, Chitkara University is offering specialization in Data Analytics for Computer Science Engineers, which will help students find better jobs in this sector.

Program Learning Outcomes

- Learn a set of data science principles, tools, and techniques to solve real-world business problems and also suggest a suitable solution with relevant findings.
- Recognize various issues in everyday business; apply data science for better understanding of data-driven management decisions to help organizations get an edge over competition
- Provide insight into leading analytic practices, design and lead iterative learning and development cycles. Knowledge on producing new and creative analytic solutions that will become part of any business core deliverables
- Knowledge on how to improve business results by building data fuelled products that help their customers

Career Opportunities

According to NASSCOM, the big data analytics market will reach \$16 billion by the year 2025 growing eightfold from its market worth in 2016. And India will require over 200,000 data scientists by 2018 as per various industry insights. There are mainly four types of companies/organizations looking for data scientist such as:

Large IT Companies who have an Analytics Practice - Infosys, TCS, Cognizant, Wipro, Oracle.

Analytics KPOs - Genpact, WNS.

In-House Analytics Units of Large Corporates - Citibank, Dell, HP, Spencers, Target.

Core Analytics firms - Brainmatics, Fractal Analytics, Mu Sigma.

Some of the profiles, which students can look forward to in such organizations are:

- Data Engineer
- Machine Learning Engineer
- Data Manager
- Cyber Security Specialist
- Citizen Data Scientist
- Business analyst
- Intelligence Analyst
- Risk Analyst
- Enterprise Data Analyst
- Data Analyst
- Information Security Analyst



SPECIALISATION IN CYBER SECURITY & FORENSICS

in academic collaboration with Quick Heal Academy

Chitkara University has collaborated with Quick Heal Academy with an objective of increasing Cyber Security professionals in the industry and has introduced specialization in Cyber Security & Forensics for CSE students after 4th semester.

Program Overview

Cyber security is the body of technologies, processes and practices designed to protect networks, computers, programs and data from attack, damage or unauthorized access. In a computing context, security includes both cyber security and physical security. Computer forensics is the application of investigation and analysis techniques to gather and preserve evidence from a particular computing device in a way that is suitable for presentation in a court of law. The goal of computer forensics is to perform a structured investigation while maintaining a documented chain of evidence to find out exactly what happened on a computing device and who was responsible for it.

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Quick Heal Academy is a division of Quick Heal Technologies Limited, headquartered in Pune, Maharashtra, India. Quick Heal Technologies Limited is one of the leading providers of security software products and solutions in India. The company's portfolio includes solutions under the widely recognized brand names 'Quick Heal' and 'SEQRITE' across various operating systems and devices. Since its incorporation, more than 24.5 million licenses of its products have been installed and Quick Heal has over 8 million active licenses spread across more than 80 countries (as on 30th June 2017).

Career Opportunities

It is estimated that India will require five lakh cyber security professionals by 2015 to support its fast growing internet economy as per an estimate by the union ministry of information technology. The financial sector alone is expected to hire over 2 lakh people while telcos, utility sectors, power, oil & gas, airlines, government (law & order and e-governance) will hire the rest. The country's information security market is expected to grow by 18% to reach Rs 1,415 crore in 2013. Despite a continuing economic slowdown cyber security would continue on an upward trajectory, reaching \$86 billion in 2016, up from \$60 billion in 2012.

All graduating engineers with specialization in Cyber Security & Forensics may find excellent placements in research-oriented industries and top ranking global companies and may start their career as:

- Cyber Security Specialist
- Security Architect
- Risk Analyst
- Cyber Operations Analyst
- Cyber Threats Analyst
- System Administrator
- Security Software Developer
- Security Network Engineer
- Security Analyst
- Security Consultant
- Cyber Forensics Solutions Architect/Tech Consultant
- Cyber Forensics planning and expansion specialist
- Cyber forensics malware analyst /examiner/engineer
- Cyber Security Architect
- Cyber security administrator
- Intelligence analyst
- Information Security Analyst
- Expert at Antivirus firms
- Computer and Information system manager
- Network security analyst



SPECIALISATION IN CLOUD COMPUTING & VIRTUALISATION TECHNOLOGY

Program Overview

The next wave of computing is in the Cloud. Many businesses want to get out of the complexity of managing data centers and instead focus on their core competencies. This means that more and more businesses will adopt Cloud Computing as a means to handle their IT requirements which gives them the freedom from day to day management of IT infrastructure.

Specialization in Cloud Computing for CSE students will help students understand Cloud Computing and Virtualization technologies. Cloud Computing is very much a work in great demand at this point of time and so while the course comprehensively covers the basic technologies involved, the history of the cloud and its roots in Service Oriented Architecture and Utility Computing. Students of this program will also benefit from the several practical credits that provide hands on capabilities on the various aspects of cloud. This program demystifies Cloud Computing, and attempts to define the cloud phenomenon and all the technologies that go with it.

Career Opportunities

- Cloud Solution Architects
- Cloud System Administrator
- Cloud Security Specialist
- Cloud Application Development/Maintenance/ Testing
- Migration and Modernization Specialists
- Cloud Project Management

SPECIALISATION IN FULL STACK DEVELOPMENT

As a Full Stack Web Developer, you are the go-to expert that companies rely on to build, support and maintain their web applications. With our industry partners, we've carefully crafted the ideal curriculum to set you up for success in this critical role. You will hone your understanding of how the web works, develop complex relational databases used to store applications data, secure and configure your own Linux-based servers, and build complete web applications using Python, HTML, CSS, JavaScript and SQL. Your final portfolio will clearly demonstrate key skills mastery to your future employers. This specialisation is to prepare you for a career in Full Stack Web Development and students will learn to build complex server-side web applications that make use of powerful relational databases to persistently store data.

With the fast paced nature of technology, developers can no longer become experts in aspects of development, but now must learn the entire process of development from design to actual deployment. This has introduced a new role for developers – Full Stack Developers.

What are Full Stack Developers?

Full Stack Developers are developers that design complete apps and websites. These developers work on all facets of development, from frontend, to backend, to database and even debugging and testing. In short, the developer must understand the app through and through. Frontend developers are more sought after because of their expertise of not in one but multiple technologies. They can handle all aspects of development, and it can result in a more seamlessly created product.

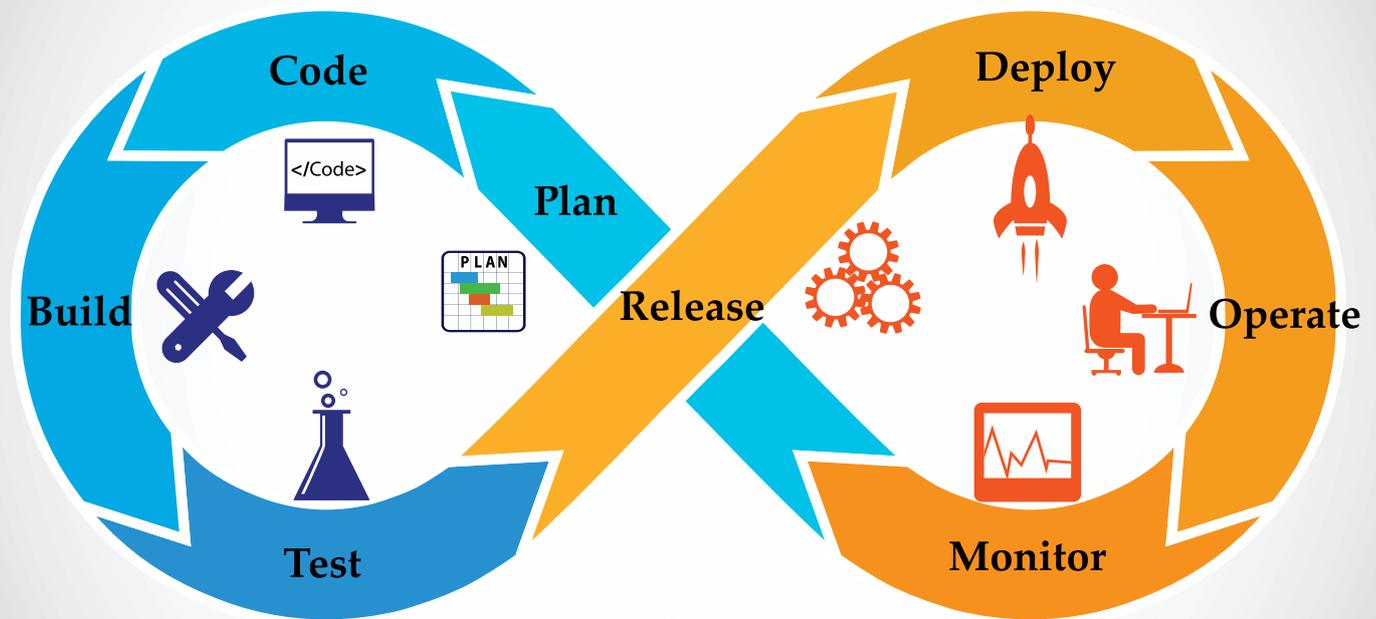
However, resources to become a Full Stack Developer are limited and only offer sections or just random technologies that you must learn and combine on your own. So, we introduced this course that compiles all technologies in perfect sync to help developers transition from a simple developer to become a Full Stack Developer. Starting from frontend development, the learner will slowly progress to become to other aspects of development including backend, database, debugging, version control and other essential technologies that are helpful for a developer.

Our Full Stack Course breaks down the fundamentals of each technology that you would require to become a Full Stack Developer. The entire course is broken down into five separate segments: Frontend, Backend, Database, Other Essential Technologies and Debugging/Version Control. Each section includes multiple technologies to help you gain more experience as a developer.

That's not it! In addition to theory based learning, the course also focuses on practical applications by covering multiple projects in great detail, helping you learn with hands-on experience.

You would have an option to chose from various technologies and frameworks such as-

- **Frontend** – HTML, HMTL5, CSS3, Twitter Bootstrap, JavaScript, jQuery
- **Backend** – Node.js, Meteor.js, Angular 2, PHP, Ruby on Rails
- **Database** – MySQL, PostgreSQL, MongoDB, CouchDB, Apache Cassandra
- **Other Essential Technologies** – Memcached, Redis, Apache Lucene, Apache Solr
- **Debugging/Version Control** – GIT, Subversion, Task Runners (Grunt, Gulp), Debuggers (Xdebug, Firedebug)



SPECIALISATION IN DevOps (DEVELOPMENT & OPERATIONS)

Program Overview

DevOps (development and operations) is an enterprise software development phrase used to mean a type of agile relationship between development and IT operations. The goal of this specialisation is to change and improve the relationship by advocating better communication and collaboration between these two business units. In the enterprise there is a need to break down silos, where business units operate as individual entities within the enterprise where management, processes and information are guarded. On the software development side — and for those working in IT operations — there needs to be better communication and collaboration to best serve the IT business needs of the organization.

DevOps Professional Principles

DevOps is not based on stringent methodologies and processes: it is based on professional principles that help business units collaborate inside the enterprise and break down the traditional silos. The guiding principles of DevOps include culture, measurement, automation and sharing. DevOps is considered to be a new approach to the more traditional application lifecycle management (ALM) process.

Career Opportunities

DevOps is spreading beyond web companies and bleeding-edge enterprises to a more mainstream enterprise audience that includes almost all major verticals. Organizations in the financial services, insurance, telecommunications, retail, manufacturing, transportation, healthcare and the public sector have all begun implementing DevOps processes. “The move by more enterprises to adopt DevOps technology and methodology means continued, growing demand for DevOps practitioners and leader means more competition among employers for the same pool of talent, which drives up salaries. IT professionals in DevOps environments tend to get higher salaries partly because they also tend to have more responsibilities that span development and IT operations

After specialisation in DevOps, students have opportunity to pursue career as:

- DevOps Architect
- Automation Engineer
- Software Tester
- Security Engineer
- Release Manager
- Integration Specialist

SPECIALISATION IN MOBILE COMPUTING

As the world gets smaller, so have the devices by which we procure our information. Mobile applications have enabled us all to have a world of information at our fingertips wherever we go, and although it is a constantly evolving field, mobile development is here to stay.

In this specialization, students will complement their computer science education with an in-depth skill set, including building and programming effective mobile apps, learning the constraints and usability functions of mobile devices, and exploring the current methods to create successful client/server mobile solutions. Mobile devices have become an important part of our daily lives, and the demand for mobile app developers is continuing to increase year after year. From startups to large corporations, all kinds of companies are hiring developers to create engaging mobile apps. Students will learn the process of building a mobile app from idea to product for various operating systems including Google's Android and Apple's iOS. It also helps them gain valuable industry inputs and insights into the process of creating cutting-edge mobile technology and develop skills to independently analyse, design, develop, deploy, and troubleshoot mobile applications and services.

Students in the Mobile Application Development specialization will

- gain a foundational understanding of the current field of mobile computing.
- complete hands-on experience with current mobile platforms, which will provide students a strong insight into what it means to develop mobile application software.
- evaluate the role that mobile systems play in the ever-changing technology field.
- compare and contrast various technologies involved in mobile communication, including encryptions and networking.
- understand mobile concepts to design and develop new and innovative applications for current and future mobile devices.

SPECIALISATION IN GAME DESIGN & AUGMENTED REALITY

We have all played and enjoyed games, but how do people actually design them? How do you describe a game? What are the basic elements? How do designers create an experience for the player? What about prototyping and iterating?

This specialisation will help explore these questions and participants will be introduced to game design and game design concepts, emphasizing the basic tools of game design: paper and digital prototyping, design iteration, and user testing. Also this specialisation will introduce you to the exciting world of augmented reality (AR). This is a challenging, multi-disciplinary subject area in which you'll learn the skills required to create VR/AR simulations, games, visualisations and apps.

You'll study the creation of digital content and the practical application of VR/AR technologies. You'll learn how to research and develop your own VR/AR concepts – creating 2D and 3D digital artwork, as well as computer animation and sound for VR/AR. In addition, you'll study the evolving theories and principals of design-led VR/AR. This includes designing for immersive environments, location-based mobile apps and wearable technologies. You'll also research and explore theories of user-centred design and user experience.



ELECTRONICS & COMPUTER ENGINEERING

4-Year Bachelor of Engineering

This program aims to

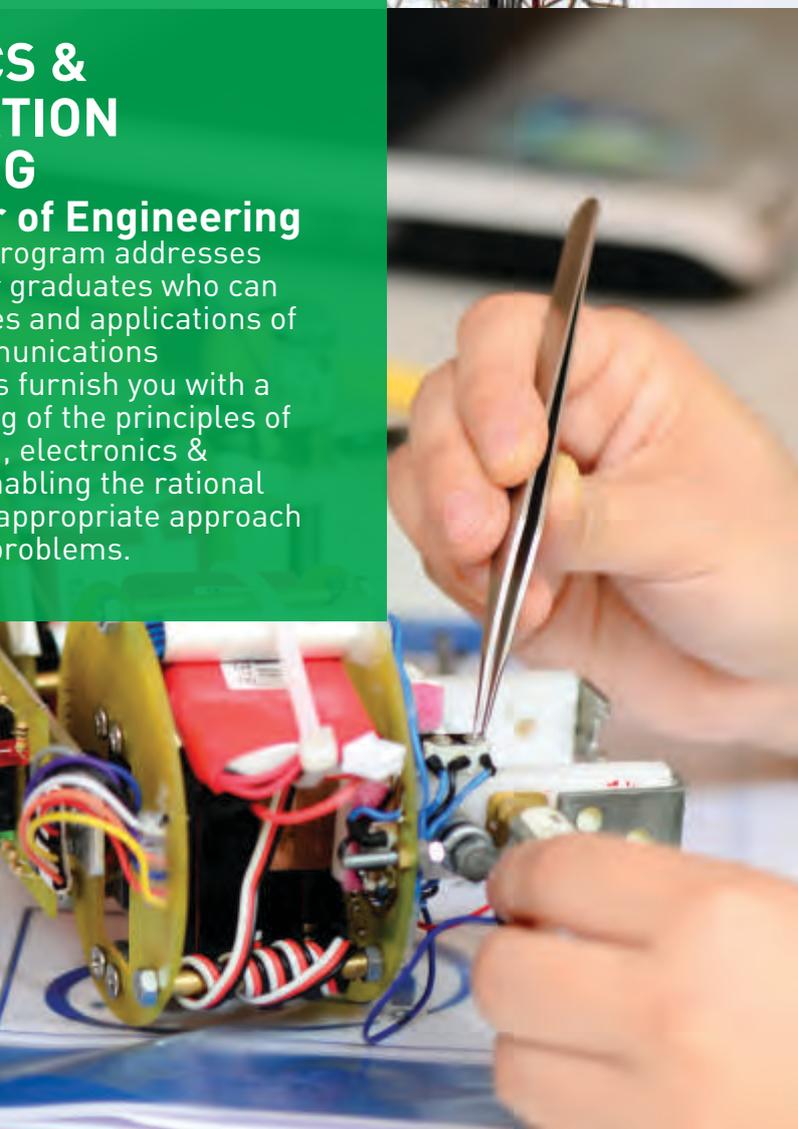
- Engender a top-down systems approach to the analysis, synthesis and realization of computers.
- Provide a broad based education in Electronics, Computer and Design allowing scope for entry into a wide range of disciplines within the engineering field.



ELECTRONICS & COMMUNICATION ENGINEERING

4-Year Bachelor of Engineering

This comprehensive program addresses industry's demand for graduates who can integrate the principles and applications of Electronics and Communications Engineering as well as furnish you with a detailed understanding of the principles of electrical Engineering, electronics & computer systems, enabling the rational selection of the most appropriate approach to solve Engineering problems.



ELECTRONICS AND COMPUTER ENGINEERING

4-Year Bachelor of Engineering

Program Objectives

Electronics and Computer Engineering are both concerned with enhancing our experience of the world and shaping the convenience of our future in terms of solving problems and developing products and systems which will increase the accuracy, speed and quality of information sources and technology. These disciplines are closely linked and specifically interwoven in the manufacture of equipment such as pocket computer products like mobile phones or e-books.

Electronics and Computer Engineering encompasses not just the software aspects of computing but also the hardware. Knowing how the hardware works as well as the software enables the design of systems that incorporate both counterparts and presents an understanding of the whole process from writing software that works on a particular operating system to the communication of this operating system with the hardware.

Combining these two disciplines gives you an excellent grounding in both subject areas and prepares you for a wide range of careers in both or either fields. This cross-discipline study gives you the advantage of becoming a multi-skilled professional engineer with a thorough understanding of the concepts and techniques from other closely related areas that are likely to influence and affect your career, such as object oriented programming or artificial intelligence.

Why choose Electronic and Computer Engineering Chitkara University?

- In combining the two disciplines you will gain an excellent grounding in both subjects plus the chance to explore the exciting interface between the two .
- Interdisciplinary teaching within the University gives you access to cross-discipline modules taught by subject specialists.
- Our staff are conducting world-leading research in machine learning, memory technology and biomedical electronics , enabling you to keep your finger on the pulse of the latest advances throughout your degree.
- You will obtain hands-on practical experience of designing and constructing electronic systems using computer simulation and practical laboratory work.
- This cutting-edge program adapts to discuss the latest developments in electronics technology.



What you'll study

Our Electronic Engineering with Computer Systems programs will provide you with knowledge of electronics and its application, computer systems and the latest software, preparing you for a career in the information technology and computing industries. These degrees are designed to cross the boundaries between hardware electronics, software and computer systems.

Following a common core in electronics and computing, you will take modules in computer programming, operating systems, computer architectures, computer graphics, networking and the structure and operation of the internet, enabling you to develop a thorough understanding of modern computer systems and their operation.

Advanced options are available in the third and fourth year, covering topics such as digital signal processing, data and internet networking, mobile devices, multimedia systems, image processing, speech analysis, graphics, computer vision, and artificial intelligence and AI programming. Individual project work utilises state-of-the-art computing and audiovisual processing facilities, giving you access to the latest mobile computing devices.

Careers

Combining these two disciplines at Chitkara gives you an excellent grounding in both subject areas and prepares you for a wide range of careers in both or either fields. This cross-discipline study gives you the advantage of becoming a multi-skilled professional engineer with a thorough understanding of the concepts and techniques from other closely related areas that are likely to influence and affect your career, such as object oriented programming or artificial intelligence.

ELECTRONICS & COMMUNICATION ENGINEERING

4-Year Bachelor of Engineering

Program Objectives

Electronic Engineering drives our world of new technologies. Devices designed by Electronic Engineers feature in all aspects of modern life, including computers, mobile phones, robotics, the internet, digital television, satellites, aerospace, medical scanners, security systems and sustainable energy. Engineering degrees are a fascinating and challenging choice, with well-qualified graduates being in high demand in global industries.

All courses begin by providing students with an understanding of the basic principles of electronic engineering, whilst developing their skills in maths and computing. Modules then combine these fundamental elements into systems that meet the needs of particular applications.

Running through all courses is a significant portion of project work. In early years, group design/project work is incorporated into many of the modules. In later years, a team software engineering project enables students to simulate operating as a commercial business. Final year students have substantial individual projects, sometimes out in industry. The Department fully recognises the vital nature of this kind of supervised study to prepare students for the world of work. In turn, we have a widely recognised reputation for producing high quality graduates with skills relevant to a range of career paths.

Program Contents and Academic Framework

YEAR - 1 & 2

Provides students with a thorough introduction to Electronics, covering the key areas of circuits and operational amplifiers. Covers basic circuit analysis skills, operational amplifiers from a theoretical and practical basis, and the associated mathematical concepts and tools.

YEAR - 3

Introduces students to the propagation of high-speed signals around circuits and systems and the principles of noise within them. Considers the concepts of Signal Integrity and Electromagnetic Compatibility, the effects of not achieving EMC on system operation and some of the fundamental concepts that lead to these problems and their mitigation.

YEAR - 4

Engineers are often involved in the entire life cycle of a product, from concept through design and computer modelling, to a hardware device. Students experience many of these real-world practices by working in teams – taking a technical problem, capturing the requirements, creating a specification for a solution, simulating it using industry-standard software tools, before final implementation in hardware.



Cutting Edge Labs

The department is well established with state of art technology to impart knowledge for future industrial and educational needs. It is furnished with DSP, microprocessor, communication, optical, VLSI and embedded systems. The labs offer students to work on a wide range of advanced software packages.

We boast of fully equipped laboratories with modern equipment supported by special purpose software packages like ETAP, MATLAB, CAPSA, LABVIEW, ORCAD, MULTISIM, KEIL, PSIM and MAGNET.

Industrial Connections

Marquee companies such as nVidia, ARM, cadence, NXP semiconductors and Texas Instruments have recently supported us in terms of supplying state of the art equipments for best hands-on training for our students.

Careers

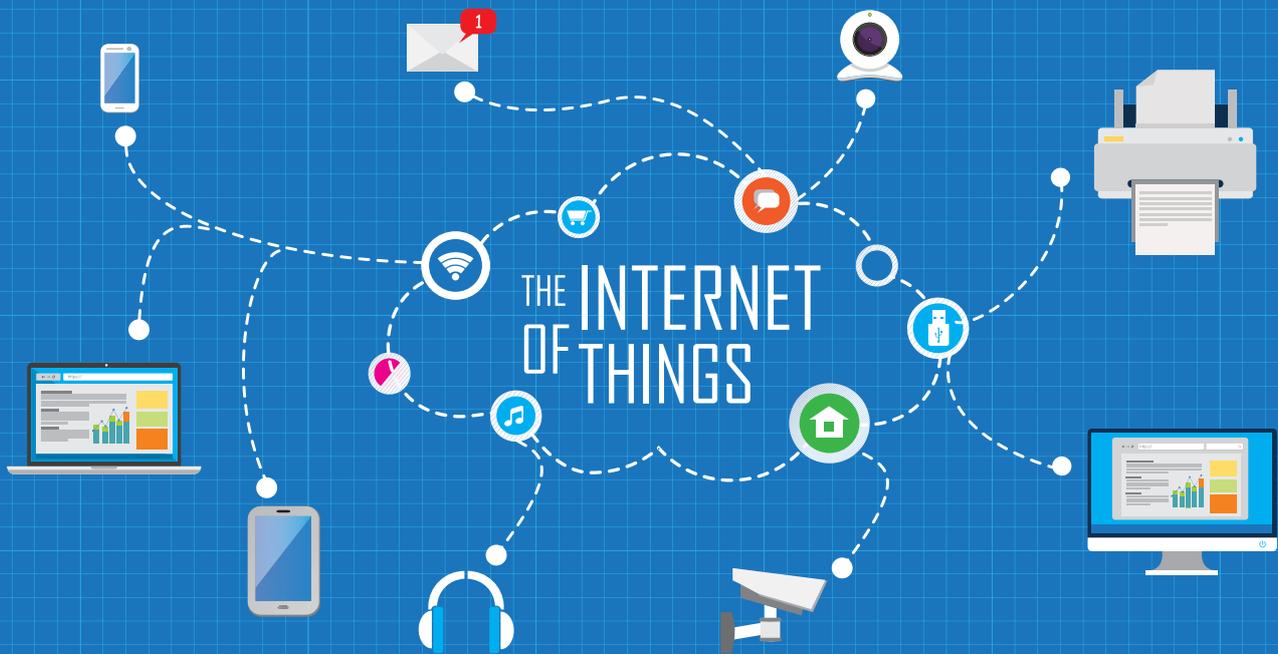
Our students have obtained prestigious placements at leading companies such as Infosys, nVidia, Texas Instruments, Cadence, ARM and many more.

SPECIALISATIONS IN ELECTRONIC & COMMUNICATION ENGINEERING

After completion of 4th semester in B.E. (Electronics & Communication Engineering), the students will have the opportunity to pursue specialisation in any one of the following fields -

- **Embedded Systems and IOT**
- **VLSI Design**
- **Mechatronics**

Please see next pages to get detailed information about specialisations in B.E. (Electronics & Communication Engineering)



SPECIALISATION IN EMBEDDED SYSTEMS & INTERNET OF THINGS (IoT)

The students can pursue specialisation in Internet of Things (IoT) which is among the newest innovations in the field of information technology. It's all set to create a huge wave and change the way we receive information. This technology connects devices to each other, and to the people who use it in their daily life. Leading business organizations have started focussing on the opportunities thrown up by Internet of Things; therefore, companies are in search of professionals who have strong foundational knowledge in the concepts of Internet of Things.

Embedded systems are gaining importance in all aspects of engineering. It is expected that in near future no technical artifact will exist without embedded information technology. There is a tendency to software oriented embedded and/or dependable systems, based on standardized micro-controller cores. This implies that the design of embedded real-time operating systems will play a dominant role in this field. As more and more networks of micro-controllers are applied in real-time communication systems, the design of distributed embedded systems will gain importance. Embedded systems are designed to do some specific task, rather than be a general-purpose computer for multiple tasks.

Program Learning Outcomes

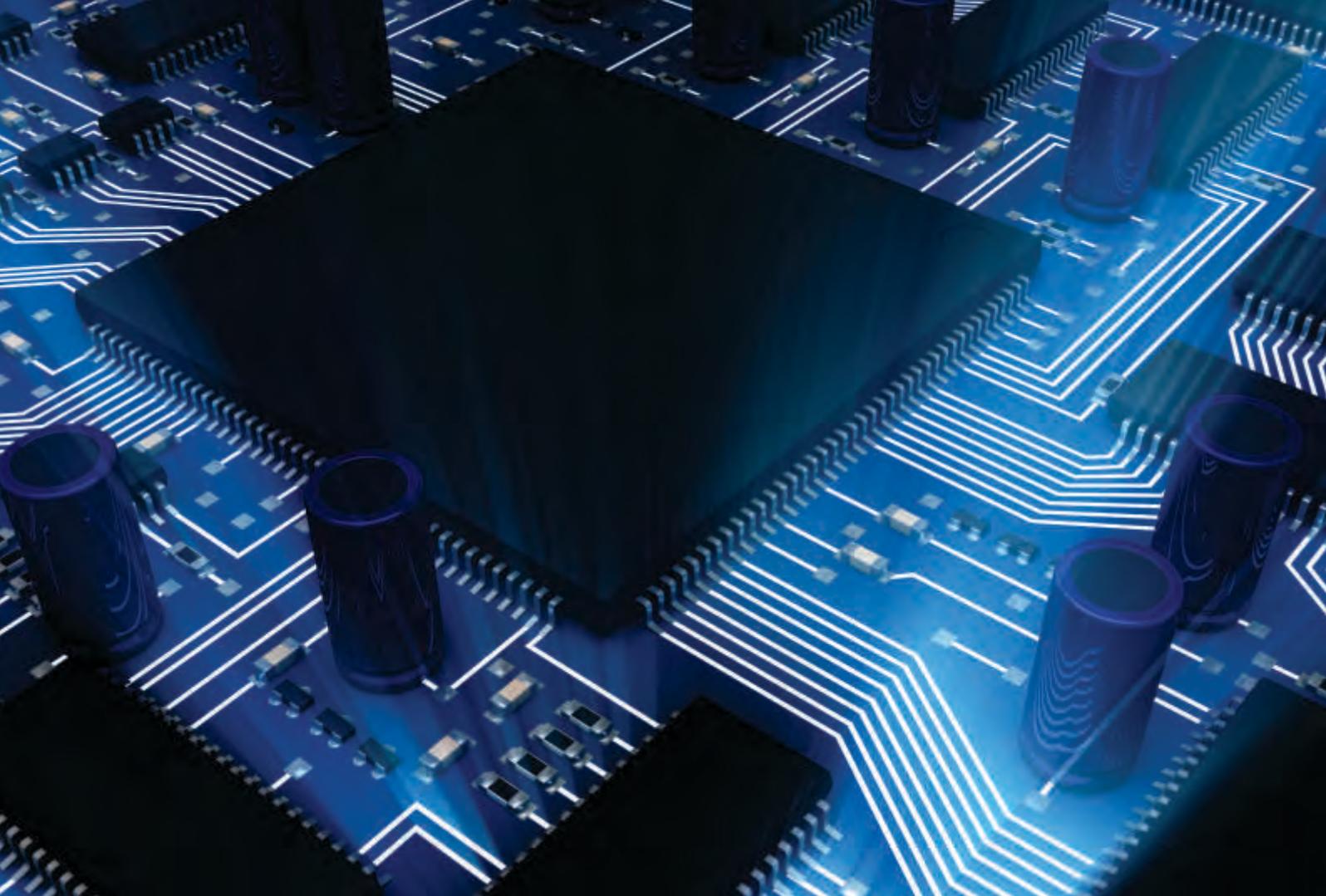
The students will get to know the benefits of a connected world and its necessity for the real world. Here's what one can experience about IoT

- The communication between the human world and physical devices, which is a unique experience.
- The future trends associated with IoT devices and its various components.
- Extract information from the devices and use it for better enhancement for businesses.
- The use of several tools and techniques that tackle real-world problems, as it analyses and suggests suitable solutions.

Career Opportunities

Specialisations in Internet of Things opens the door of opportunities for fresh graduates. As more than 300 tech start-ups in India alone are engaged in IoT-related projects, there exists plenty of job opportunities. Here are some of the roles an IoT professional can look forward to in major organizations.

- IoT Engineer ● Citizen IoT Scientist ● IoT App Developer ● Machine Learning Engineer
- IoT Solution Architect ● IoT System Administrator



SPECIALISATION IN VLSI DESIGN

Program Overview

Very Large Scale Integrated (VLSI) Circuit Design is the process of designing a large computer chip (more specifically, an integrated circuit, or IC), using computer-aided design (CAD) tools on a workstation or a personal computer (PC). The course demands learning the principles of VLSI design, designing and fabricating the state-of-the-art VLSI chips, understanding the complete design flow and expertise to design CMOS chips for industrial requirements. The curriculum focuses on employing hierarchical design methods and understanding the design issues at the various levels of hierarchy. Students are exposed to various design software in this program. Also, they learn to design, simulate, implement and test complex digital systems using FPGAs (Field Programmable Gate Arrays). The main objectives of this course are to analyze the electrical and design characteristics of transistors, gates and to study the issues and methodologies involved in the integration of these devices into complex high-performance systems.

With recent and rapid upsurge in the areas like hardware software co-design, architectures for machine intelligence, network on chip etc. the programme is designed to cater to the needs in producing engineers trained in both hardware and software areas bridging the gap between the academia and industry. Students will be trained in several topics that cut across different domain, starting from lowermost level of physical devices to the top level of application development.

Students can pursue career opportunities in diverse fields such as Process Industry, Manufacturing Industry Consumer Electronics, Communication Networks and Automation Industries.



SPECIALISATION IN MECHATRONICS

Program Overview

Specialisation in Mechatronics is the synergic combination of mechanical, electrical, electronics, computer science and information technology, which includes control systems used to design products with built-in intelligence. Mechatronics engineering course blends the pertinent aspects of mechatronics system modeling, sensors, actuators, controllers and real-time computer interfacing. The program focuses on all the topics needed to develop a good understanding of the basic principles used in mechatronics engineering.

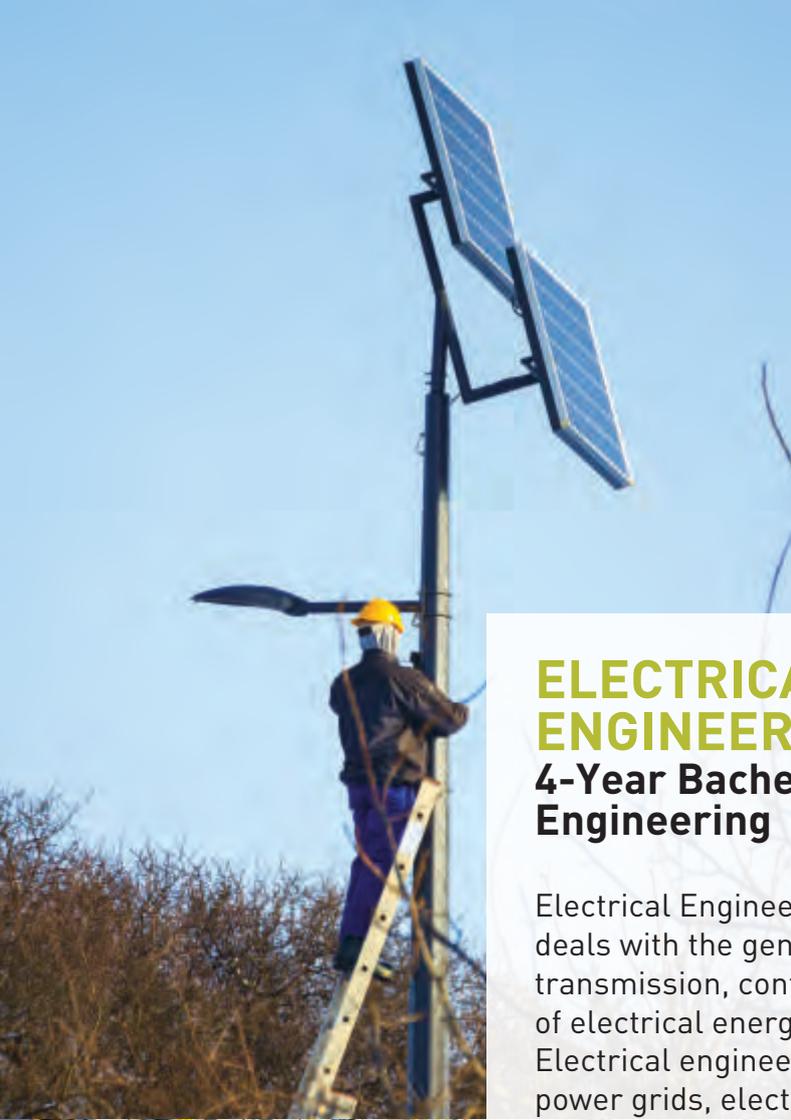
Program Contents and Academic Framework

This specialisation will offer introduction to

- Fundamentals of Mechanical Engineering
- Basics of Computer Science and Engineering
- Robotics and Artificial Intelligence
- Medical Mechatronics
- Basics of Electronics Engineering
- Systems and Control Engineering
- Machine Vision

Career Opportunities

- Automation and robotics
- Machine vision
- Sensing and control systems
- Expert systems and Artificial Intelligence
- Design of Subsystems for Automotive engineering
- Industrial Electronics and Consumer Products
- Medical Mechatronics and Medical Imaging Systems
- Structural Dynamic Systems
- Transportation and Vehicular Systems
- Diagnostic and reliability techniques

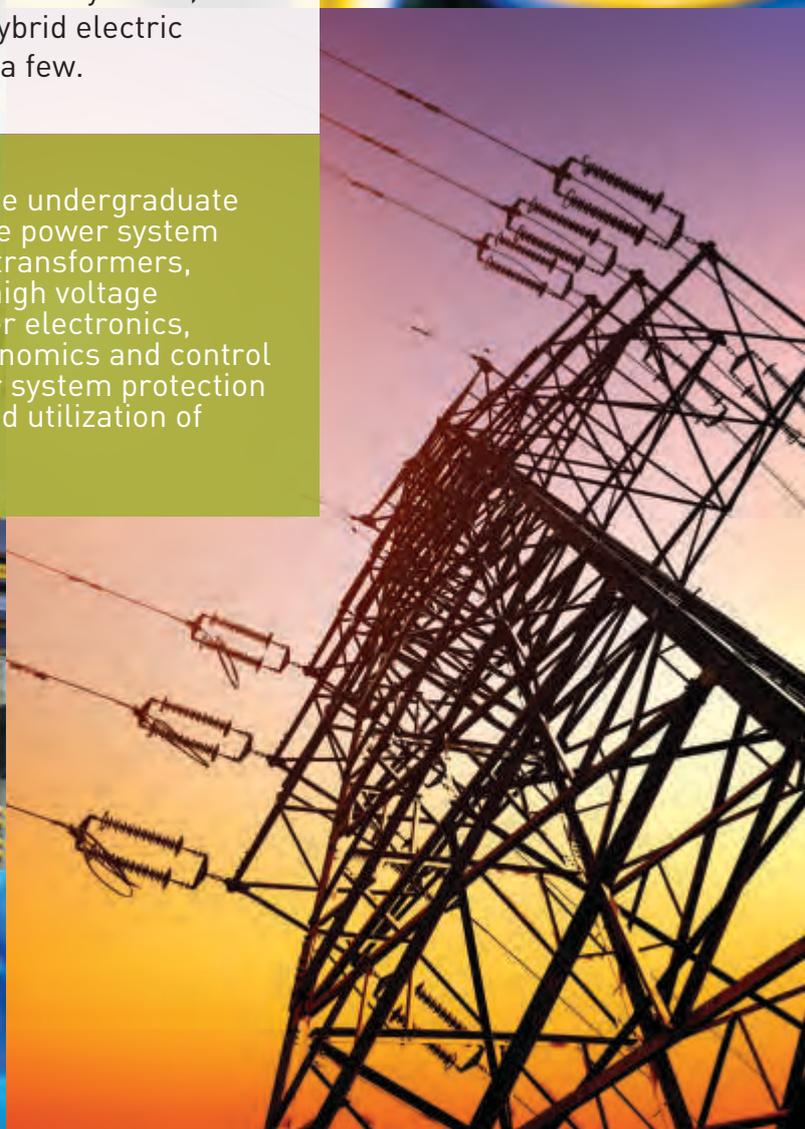


ELECTRICAL ENGINEERING

4-Year Bachelor of Engineering

Electrical Engineering primarily deals with the generation, transmission, control and utilization of electrical energy on a large scale. Electrical engineers work on large power grids, electrical systems, electric motors, hybrid electric vehicles, to name a few.

Core courses in the undergraduate curriculum include power system analysis, motors, transformers, control systems, high voltage engineering, power electronics, power system economics and control techniques, power system protection and switchgear and utilization of electrical energy.



ELECTRICAL ENGINEERING

4-Year Bachelor of Engineering

Program Objectives

Electrical engineering is one of the largest and most diverse technological and engineering disciplines in today's world. Electrical engineering is the study and application of electricity, electronics and electromagnetism for the development and maintenance of electrical and electronics equipments such as electric motors, navigation systems, medical devices, broadcast and communication systems, power generation systems, electrical distribution systems, electric grids etc., while keeping in mind the safety, quality, economic feasibility and sustainability of these products and systems.

Based on the fundamentals of Physics and Mathematics, Electrical Engineering became a field of its own in the 19th century due to innovations such as the generator, motors, telephone, wireless communications and electronics. Since then, electrical engineering has surely come a long way. Not only has it been one of the major driving forces behind cutting edge technology in areas such as power engineering, computer engineering, communications and mobile technologies, it has also significantly impacted several other fields such as nanotechnology, biomedical engineering, neuroscience and biotechnology, to name a few.

Electrical engineering students use science, engineering, technology and analytical reasoning, creative and critical thinking skills to solve problems and design, construct and maintain electrical and electronics products. Some sub disciplines of electrical engineering are: electronics, digital computers, power engineering, telecommunications, control systems, RF engineering, signal processing, instrumentation, and microelectronics. India is home to renowned universities for electrical engineering, both at the undergraduate and graduate level.

Academic Framework

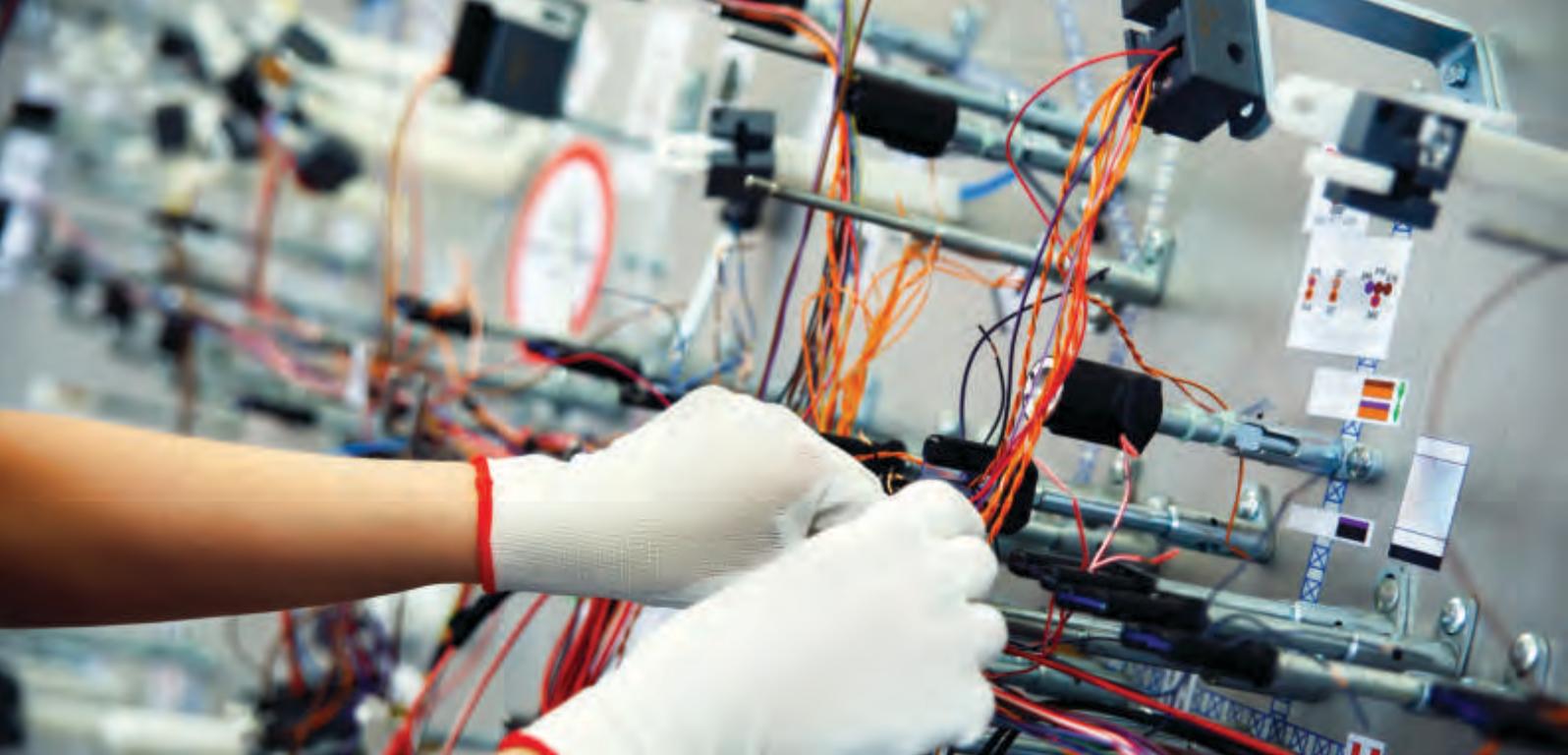
First year of engineering will cover basic science courses such as Mathematics, Physics, Chemistry and an overview to other engineering disciplines such as basic mechanical engineering, basic civil engineering, electronics, introduction to computers etc.

Second and third year will expose students to core subjects in electrical engineering. For Electrical Engineering students, core courses are power system analysis, motors, transformers, control systems, high voltage engineering, power electronics, power system economics and control techniques, power system protection and switchgear and utilization of electrical energy. There will also be elective subjects where students can choose courses that they are interested in specializing further in. **Fourth Year will be an Internship in blue chip & multinational companies.**

Cutting Edge Laboratories & Facilities

We have world class labs including:

- Power Systems Research
- Lab Protection and Switchgear Lab
- Control Systems Lab
- Digital Simulation Lab
- Power Electronics and Drives Lab
- Analog and Digital Circuits Hardware lab
- Virtual Instrumentation Lab
- Process Control Lab
- EDC and Device Research Lab
- Solar Energy Lab
- Measurement & Instrumentation Lab
- NxP Semiconductor Lab
- Electrical Machines Lab
- Q-Max Technology Lab
- Industrial Automation Lab
- Schneider Electric - Centre of Excellence



Careers

Electrical Engineers are much in demand in India. In the recent years, from house to companies every where there is a necessity of electricity to function, offering numerous opportunities to electrical engineers. These engineers can work in atomic power plants, hydel or thermal power plants. Job opportunities are ample in both private and public sector like railways, civil aviation, electricity board and utility companies, electrical design and consultancy firms and all types of manufacturing industries.

Companies like ABB, Bajaj International Private Ltd, Crompton Greaves Limited, Siemens Ltd, Reliance Power Ltd, Oil and Natural Gas Corporation (ONGC), Bharat Heavy Electricals Limited (BHEL), Steel Authority of India Limited (SAIL), Coal India Limited (CIL), Power Grid Corporation of India Limited (PGCIL), Centre for Electronics Design and Technology and Wipro Lighting are the biggest employers hiring Electrical Engineers.

Core companies such as Qualcomm, Intel, Ericsson, NVidia, Analog Devices Ltd, Broadcom, Cisco systems, Cosmic circuits, Ericsson India Global Services, Eaton technologies, IBM, Schneider electric, General Electric, Analog devices, Cosmic circuits Pvt Ltd, KLA Tencor, NTT Communications, Texas Instruments also hire Electrical Engineers. Other sectors (software, internet, manufacturing, oil and gas, power etc): Shell, TATA technologies, DRDO, Dr.Reddy's Laboratories, HCL technologies, Google, Microsoft, Power grid corporation of India Ltd, Samsung, Sony corporation, TATA Motors, Toshiba.

SPECIALISATIONS IN ELECTRICAL ENGINEERING

After completion of 4th semester in B.E. (Electrical Engineering), students will have the opportunity to pursue specialisation in any one of the following fields -

- **Hybrid & Electric Vehicle Technology**
- **Industrial Automation**

Please see next pages to get detailed information about specialisations in B.E. (Electrical Engineering)



SPECIALISATION IN HYBRID & ELECTRIC VEHICLES

For students undergoing Electrical Engineering, they would have an option to pursue specialisation in Hybrid and Electric Vehicles.

In today's world internal combustion engine is a leading prime mover for variety of applications. Also engine designers are striving for its maximum efficiency and minimum pollution. Stringent emission norms also pushing for its design modifications. Recently we shifted from BS III to BS IV and in 2020 BS VI will be implemented. This also increases the scope for engine modifications and after treatment systems. All of us are aware that hybrid and electric are the future vehicles due to their multiple benefits. But its technology is under development and also costly so that it has limited use. This course is a blend of current technology and the future technology as far as the automobile prime movers are concerned. The objectives of the course are knowing the latest Engine technology and looking for future technology to meet the stringent Emission norms (BS IV to BS VI) and making the students familiar with Hybrid and Electric Technology which will be the future prime movers of the Automotive sector.

Program Objectives:

- Knowing the latest Engine technology and looking for future technology to meet the upcoming emission norms
- Making the students familiar with Hybrid and Electric Technology which will be the future prime movers of the Automotive sector,

Program Learning Outcome

After completing the course the students will be able to:

- Architect automobile powered with hybrid/electric and efficient engines
- Compare analyze and design various hybrid and electric vehicles technologies
- Analyze Engine performance and design engine and its related systems
- Select, implement and analyze the performance of the various engine management systems
- Implement and analyze the future technologies for the engine
- Simulate the engines and hybrid vehicles



SPECIALISATION IN INDUSTRIAL AUTOMATION

India is growing—our economy, our population, our industry and our demand for energy are growing in multifold day by day. Electrical engineering technologists are specialists in the generation, transmission, distribution and utilization of energy and further expanding the career horizon into electrical & industrial automation. It's a powerful career choice that demands good problem-solving skills combined with excellent domain knowledge with an eye for detail. As the world prepares for the challenges posed by climate change and ever increasing demand of quality products at faster pace, if you want to make a difference in combating this pressing global problem, as innovators of environment-friendly products and services to improve quality of life, this industry integrated Degree in Electrical Engineering with intensive specialization in "Factory & Industry Automation" will put you on the right track.

Program Overview

Some of the key components of this specialisation will be -

- Apply knowledge and technical expertise in building, analyzing, testing, operating and maintaining electrical, instrumentation, control systems and associated green technologies, including relevant industry standards and code of practices
- To do maintenance, repair and production of electrical automation equipment and its systems
- Procure, inspect and test electrical and electronic engineering materials.
- To select, operate, maintain, test and repair/replace electrical & electro-mechanical automation machinery used in various industrial appliances
- Enable to do industrial installation including automation components, programming cum re-programming of logic controllers cum drives, laying cables, earthing, installing motors, drives with their accessories, wiring & testing of control circuits
- Preparing estimates of different kinds of jobs in domestic, industrial automation in transmission and distribution systems to install, erect and commission the power & automation equipments

Career Opportunities

Career opportunities abound in wide spectrum of industries as executives, specialists, technologists, engineers or managers in:

- Factory automation
- Power Engineering
- Energy Management
- Facility Management
- Operations Management
- Sustainable Design & Solutions
- Entrepreneurship & Own venture



CIVIL ENGINEERING **4-Year Bachelor of Engineering**

Are you a problem solver? Civil Engineering is about problem solving. All over the world problems concerned with housing, fresh water, sustainability, and transport need to be solved.

Changes in population, climate and technical developments in our built and natural environment mean that Civil Engineers are more important than ever.

Our 4-Year Civil Engineering program will teach you about:

- Structural design & Engineering
- Fluid Mechanics & Water Engineering
- Geotechnical Engineering
- Design & Project Management
- Maths & Modelling of Engineering problems



CIVIL ENGINEERING

4-Year Bachelor of Engineering

Introduction to Civil Engineering

Civil engineers design and build things that are part of our daily lives. They build our homes, schools, the places where we work, our roads, bridges, railways, and airports. They also build the things we don't see that we use every day like the water system we use when we wash our hands or take a shower and the electricity system we use to power our computers and charge our mobile phones. They get rid of the things we throw away.

What do Civil Engineers do?

Civil engineers work in many different areas. Most importantly, civil engineers work with many other professionals in teams to make our world a better place.

- Earthquake engineers make sure structures can withstand earthquakes.
- Environmental engineers protect the environment and protect us from extreme weather.
- Geotechnical engineers focus on the ground, which affects everything built on it (buildings), with it (dams and levees) and in it (tunnels and pipelines).
- Project Management engineers make sure entire projects are delivered on time and on budget.

Where do Civil Engineers work?

If you want to be on a construction site, building, testing and monitoring developments then you can be. If you prefer to be in the office designing and problem solving then you can do that too. With engineering, you can follow your interests both in what you do and where you do it. If you are interested in sport you can work as an engineer to create amazing sporting venues.

If you want to make a difference in people's everyday lives you can work in a team to rebuild a community following a natural disaster – or even prevent the disaster from happening in the first place. If design is your thing you can be part of the engineering team that overcomes technical challenges of building truly fabulous places.

Engineers work in lots of different places, like offices and laboratories, but also on sites that can be in exciting and far-flung places, or places others never get to go, such as underground and at sea. These opportunities make civil engineering one of the most exciting careers around!

Program Contents and Academic Framework

Students take a common core of Civil Engineering courses, and they can specialize in the areas of geotechnical, or structural engineering etc. Our curriculum lays intensive focus on:

Strength of Materials/ Construction Technology/ Soil Mechanics/ Concrete Technologies/ Structural Analysis/ Building Drawing/ Reinforced concrete structures/ Transportation Engineering/ Hydraulic Structures and Machinery/ Environmental Engineering / Design of Steel Structures / Water Resource Engineering / Construction Management



Cutting Edge Laboratories & Facilities

Students have access to every facility in the form of 9 well-equipped labs. These are

- Structure and construction engineering lab
- Computer lab
- Soil mechanics lab
- Hydraulics and fluid machinery lab
- Strength of materials lab
- Concrete and highway lab
- Survey lab
- Environmental engineering lab
- Remote sensing and GIS lab

Career Opportunities

Engineering companies all over the world are in need of civil engineers to develop new technologies, build better buildings, create better cities, get people to where they want to go in the best way possible, and counter the devastating effects of climate change. In other words, to improve the future of the planet. This means that the civil engineers of tomorrow (you!) are in demand. With a good education and a positive attitude you will be able to secure an exciting, well-paying job that offers you opportunities to work at the cutting edge of your field, all over the globe.

SPECIALISATIONS IN CIVIL ENGINEERING

After completion of 4th semester in B.E. (Civil Engineering), students will have the opportunity to pursue specialisation in any one of the following fields -

- **Public Health Engineering**
- **Construction Engineering Management**
- **Structural Engineering**

Please see next pages to get detailed information about specialisations in B.E. (Civil Engineering)



SPECIALISATION IN PUBLIC HEALTH ENGINEERING

Public Health engineering is the contemporary term for sanitary engineering, though sanitary engineering traditionally had not included much of the hazardous waste management and environmental remediation work covered by environmental engineering. Public Health Engineering technologists will be there—whether it is to ensure that a water level is monitored and regulated, rivers are engineered to work with our expanding populations, water and wastewater treatment systems are designed to meet growing demands, or to assess and minimize the water usage in domestic & industry applications.

As the world prepares for the challenges posed by faster depletion of precious natural resource (water), if you want to make a difference in combating this pressing global problem, as innovators of water-friendly products and services to improve quality of life, this water resources integrated degree in civil engineering will put you on the right track.

Program Contents

Some of the key components of this specialisation will be -

- Apply knowledge and technical expertise in building, analyzing, testing, operating and maintaining civil, green water (fresh), grey water (waste) and associated green technologies, including relevant industry standards and code of practices
- To do maintenance, repair and production of plumbing, sanitation & water resources equipment and its systems
- Conceptualization, visualization and design of MEP services pertaining to Plumbing & Sanitation that includes water supply, water treatment, waste water disposal and waste water recycling and solid waste disposal.
- Procure, inspect and test civil and plumbing engineering materials
- To do fault diagnosis, repairing domestic/industrial fresh water lines (Cold & Hot), making joints and carrying out pipe laying & plumbing work

Career Prospects

- Building Engineering & Services
- Water Resources Engineering
- Renewable Water Resources Management
- Facility Management
- Operations Management
- Sustainable Design & Solutions
- Clean Energy
- Research & Development
- Entrepreneurship & Own venture

SPECIALISATION IN CONSTRUCTION ENGINEERING MANAGEMENT

The specialization in Construction Engineering and Management provide students the knowledge of civil engineering with focus on modern construction materials, techniques and effective construction management practices. Through this programme, Civil Engineers become capable of constructing special structures and can become powerful project managers who can complete projects within a given schedule and budget.

The course includes Basic Sciences, Mathematics, Engineering Graphics and Computing techniques in the first year. Building drawing and other laboratory classes help students understand Civil Engineering in a practical way. In the second year, the fundamental principles are applied to study the behaviour of solids, fluids and soils. Transportation Engineering and Environmental Engineering are also introduced. In the third year, the focus is on analysis and Design of Steel and Concrete structures and Foundation Engineering. From the 3rd year onwards, electives are offered in the areas of Construction Engineering and Management. Students can opt for special electives such as:

- Modern Structural Materials and Systems Design
- Construction Personnel Management
- Quality Control & Assurance in Construction
- Contract Laws and Regulations
- Shoring, Scaffolding and Form Work
- Project Safety Management
- Quantitative Techniques in Management

In the final year, students have to undertake a design project and a main project in the areas of Construction Engineering and Management.

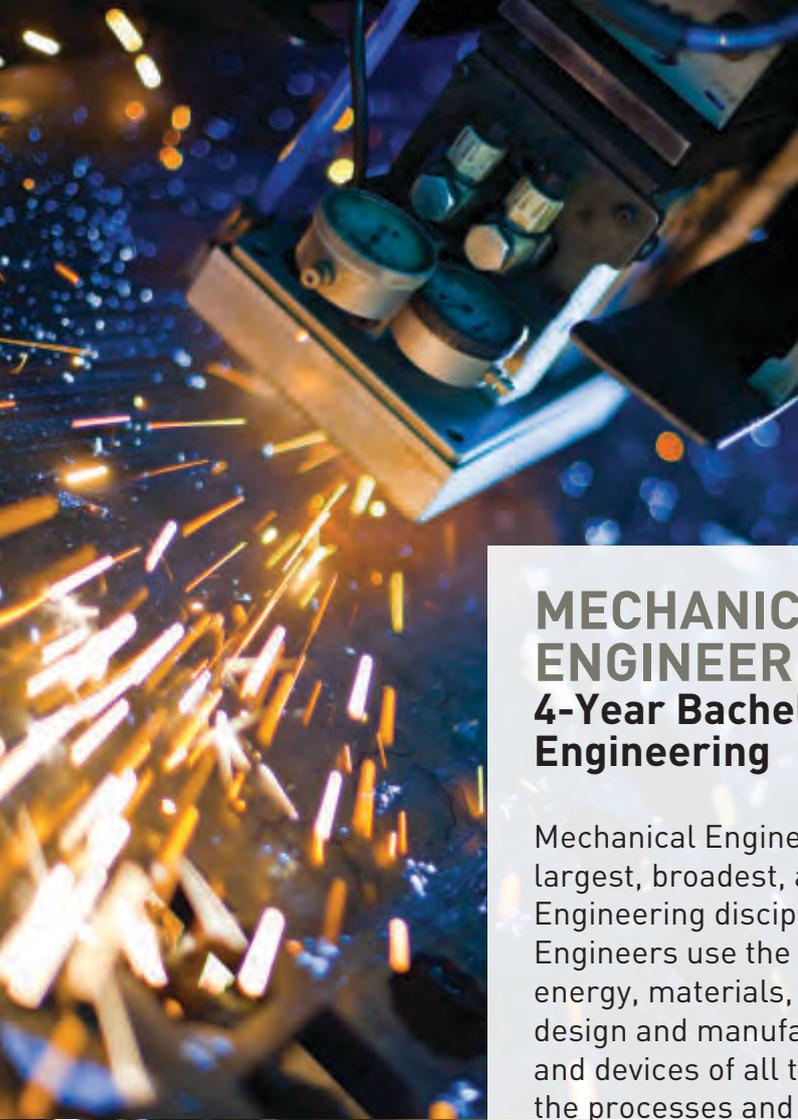
Students are groomed under high standards of program delivery and rigorous curriculum and would naturally become capable of matching the employer's expectations. Civil Engineers specialized in Construction Engineering and management can find jobs in Government departments, private and public sector industries such as Planning Engineer, Site Engineer, Quality Control Engineer and Project Manager. Opportunities are also available in research and teaching institutions. Civil Engineers can manage the construction projects independently and can become entrepreneurs. There is always a high demand for experienced Civil Engineers globally.

SPECIALISATION IN STRUCTURAL ENGINEERING

Structural engineers are concerned with the conception, analysis, design and construction of components or assemblies to resist loads arising from internal and external forces. Solid mechanics is the study of the distribution of stresses that a given load produces when applied to a solid element, and the calculation of the resulting strains, given the characteristics of the materials that make up that element.

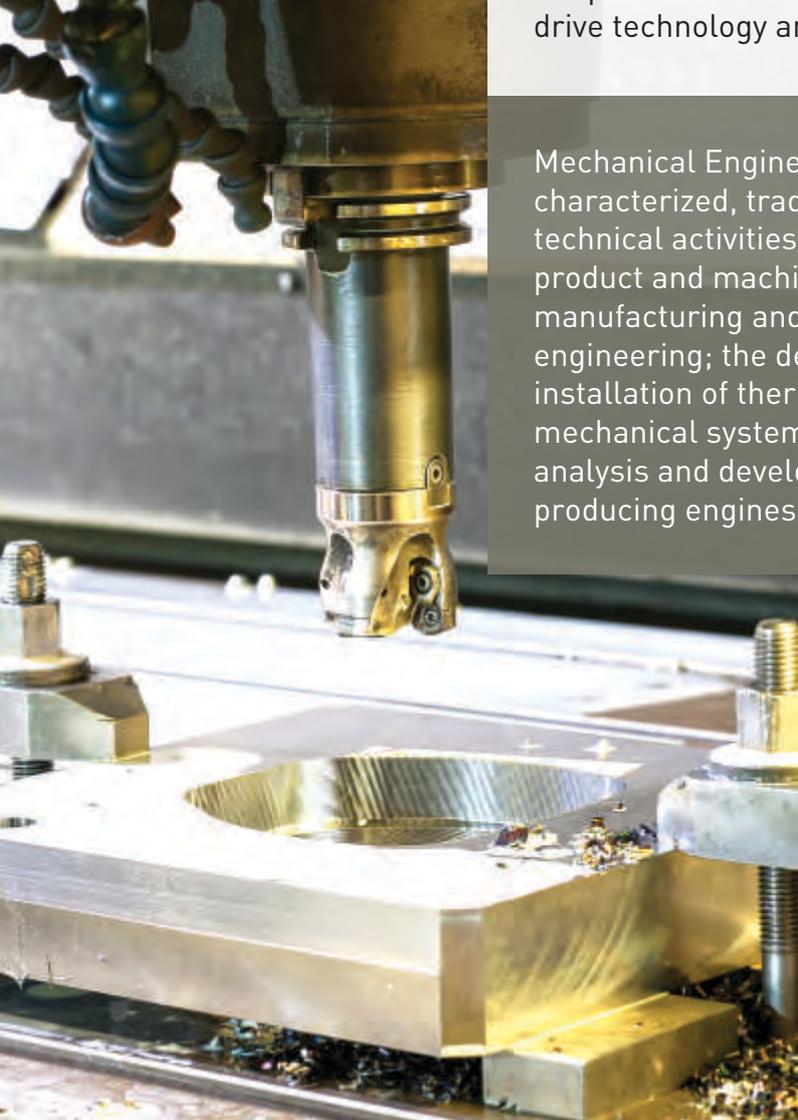
The application of solid mechanics enables the structural engineer to assemble elements, such as beams and columns, into a structure that will resist both static and dynamic loads, such as gravity, wind, snow and earthquakes. In addition to steel and concrete, new materials that are being developed and used in structural engineering include reinforced plastics and polymers. The rehabilitation of existing structures weakened by corrosion continues to be an important task. While typical civil engineering structures include large buildings, bridges and dams, graduates with a specialization in structural engineering may also be concerned with designing the structures of machinery, vehicles, aircraft and spacecraft.

Employment opportunities include work with consulting structural engineers, construction companies, building development companies, engineering departments of private corporations, aircraft and aerospace related companies, public utilities, and government agencies.



MECHANICAL ENGINEERING 4-Year Bachelor of Engineering

Mechanical Engineering is one of the largest, broadest, and oldest Engineering disciplines. Mechanical Engineers use the principles of energy, materials, and mechanics to design and manufacture machines and devices of all types. They create the processes and systems that drive technology and industry.



Mechanical Engineering has been characterized, traditionally, by broad technical activities in the areas of product and machine design; manufacturing and production engineering; the design and installation of thermal-fluid and/or mechanical systems; and the design, analysis and development of energy producing engines or devices.





MECHANICAL ENGINEERING

4-Year Bachelor of Engineering

Program Objectives

Mechanical Engineering includes the science and art of formulation, design, development and control of systems and components involving thermodynamics, mechanics, fluid mechanics, mechanisms and the conversion of energy into useful work.

The undergraduate program of study in Mechanical Engineering at Chitkara University, addresses both the quest to understand how things work and the desire to put this understanding to practical use. The student body is guided by faculty who merit national and international recognition, who are members of prestigious engineering societies and counted among the outstanding scholars in their profession.

The faculty is committed to the advancement of the fundamental Engineering sciences encountered by Undergraduates in a curriculum that is heavy in "basics." This is balanced by their demonstrated interest and active participation in practical developments as well. Thus, our graduates can function at the leading edge of engineering practice, tackling jobs that are far from dull or routine.

Program Contents and Academic Framework

The Undergraduate program provides a broad scientific and technical background in Mechanical engineering. Undergraduate specialisation is provided in the choice of technical electives from the subject areas of applied mechanics, automatic controls, electro-mechanical systems, energy conversion, fluid mechanics, heat and mass transfer, manufacturing systems and materials processing, mechanical design, cryogenics, thermodynamics, robotics and automation.

During the first two years, coursework emphasizes Mathematics, physics, chemistry, computing, materials, statics and graphics: much of this in common with the other engineering curricula. In the last two years, the emphasis is on mechanics of solids and fluids, thermodynamics, heat transfer manufacturing, design and controls; instrumentation, experimentation and system synthesis.

Cutting Edge Laboratories & Facilities

At Chitkara University we have state of the art laboratories including thermal engineering, heat-transfer, dynamics, metallurgy, metrology and fuels. Modern computing facilities are available for students at the CAD & Computer Integrated Manufacturing Laboratories.

Scope of Employment

- In a wide range of exciting industries including Aerospace, Automotive, Bio-medical, Chemical, Computers, Electronics, Fossil and Nuclear Power, Manufacturing, Pharmaceutical, Robotics and Textiles.
- In areas of research & development, design, testing and evaluation, manufacturing, operations and maintainance, marketing, sales and administration.
- In public sector units like Railways, ONGC, Indian Oil, ISRO, SAIL, NTPC, DDRO and IAF.

Careers Opportunities

We have leading mechanical and automotive companies visiting our campus regularly for placement activities. Our students have also obtained placements at leading companies such as Infosys, Godrej, Escort, L&T, Wipro, ISMT, Mahindra & Mahindra, JCB, Eicher and many more.

SPECIALISATIONS IN MECHANICAL ENGINEERING

After completion of 4th semester in B.E. (Mechanical Engineering), students will have the opportunity to pursue specialisation in any one of the following fields -

- **Mechatronics**
- **Automotive Engineering with an introduction to Hybrid and Electric Vehicles**

Please see next pages to get detailed information about specialisations in B.E. (Mechanical Engineering)



SPECIALISATION IN MECHATRONICS

Program Overview

Specialisation in Mechatronics is the synergic combination of mechanical, electrical, electronics, computer science and information technology, which includes control systems used to design products with built-in intelligence. Mechatronics engineering course blends the pertinent aspects of mechatronics system modeling, sensors, actuators, controllers and real-time computer interfacing. The program focuses on all the topics needed to develop a good understanding of the basic principles used in mechatronics engineering.

Program Contents and Academic Framework

This specialisation will offer introduction to

- Fundamentals of Mechanical Engineering
- Basics of Computer Science and Engineering
- Robotics and Artificial Intelligence
- Medical Mechatronics
- Basics of Electronics Engineering
- Systems and Control Engineering
- Machine Vision

Career Opportunities

- Automation and robotics
- Machine vision
- Sensing and control systems
- Expert systems and Artificial Intelligence
- Design of Subsystems for Automotive engineering
- Industrial Electronics and Consumer Products
- Medical Mechatronics and Medical Imaging Systems
- Structural Dynamic Systems
- Transportation and Vehicular Systems
- Diagnostic and reliability techniques



SPECIALISATION IN AUTOMOTIVE ENGINEERING

Program Objectives

Automotive Engineering is concerned with the life-cycle support (including design, manufacture, performance and durability testing) of vehicles; from road and off-road vehicles to race cars, vans and trucks. A key challenge for Automotive Engineers today is to design sustainable vehicles that meet ever-increasing safety and performance standards in a cost-effective way. In order to do this, you need to be able to embrace a wide range of fundamental and more specialist engineering skills, as well as being aware of the commercial implications that impinge on the design and production processes.

There is also the opportunity to go for Industry trained courses, or work on the Formula student race car, Supermileage Vehicle, Baja Vehicle and which are a big attraction for this course as well as providing you with an excellent chance to put theory into practice. Our Industry connections help you to integrate the knowledge with the relevant automobile OEM's, IT and Design, or component manufacturing companies like Tata Motors, Maruti, Escorts, Tata Technologies, Mahindra & Mahindra, Infosys, Wipro, Dassault Systemes and many more.

Program Contents and Academic Framework

Students interested in the field of Automotives complete the first two years of Mechanical Engineering and then focus exclusively on automotive engineering. The program lays special emphasis on:

Basics of Automotives / Automotive Material and Component Testing / Automotive Chassis Engineering / Automotive Driveline / Vehicle Dynamics and Analysis / Automotive Electronics / Fuels and Combustion / Emissions and Safety Standards

Cutting Edge Laboratories & Facilities

We have world class labs including:

- Automotive Chasis & Components Lab
- Fuel Testing Lab
- Automotive Electronics Lab
- LADDER: Design & Manufacturing Lab
- Vehicle Testing Lab
- 3D Scanning and Reverse Engineering Lab

Careers Opportunities

We have leading mechanical and automotive companies visiting our campus regularly for placement activities. Our students have also obtained placements at leading companies such as Tata Motors, Maruti, Mahindra & Mahindra and many more.

INTRODUCTION TO HYBRID & ELECTRIC VEHICLES

For students who have opted for specialisation in Automotive Engineering, we would have special module on introduction to Hybrid and Electric Vehicles.

In today's world internal combustion engine is a leading prime mover for variety of applications. Also engine designers are striving for its maximum efficiency and minimum pollution. Stringent emission norms also pushing for its design modifications. Recently we shifted from BS III to BS IV and in 2020 BS VI will be implemented. This also increases the scope for engine modifications and after treatment systems. All of us are aware that hybrid and electric are the future vehicles due to their multiple benefits. But its technology is under development and also costly so that it has limited use. This course is a blend of current technology and the future technology as far as the automobile prime movers are concerned. The objectives of the course are knowing the latest Engine technology and looking for future technology to meet the stringent Emission norms (BS IV to BS VI) and making the students familiar with Hybrid and Electric Technology which will be the future prime movers of the Automotive sector.

Program Objectives:

- Knowing the latest Engine technology and looking for future technology to meet the stringent Emission norms (BS IV and BS VI)
- Making the students familiar with Hybrid and Electric Technology which will be the future prime movers of the Automobile

Program Learning Outcome

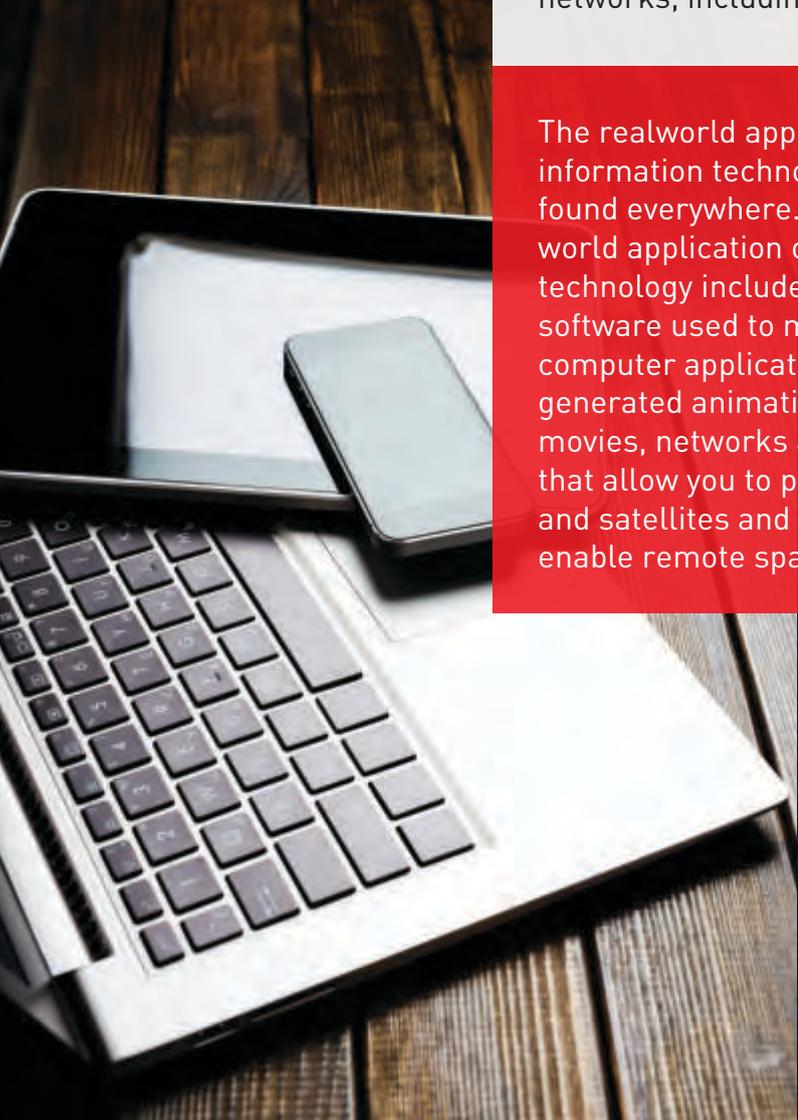
After completing the course the students will be able to:

- Architect automobile powered with hybrid/electric and efficient engines
- Compare analyze and design various hybrid and electric vehicles technologies
- Analyze Engine performance and design engine and its related systems
- Select, implement and analyze the performance of the various engine management systems
- Implement and analyze the future technologies for the engine
- Simulate the engines and hybrid vehicles



INFORMATION TECHNOLOGY PROGRAMS

Information Technology is a broad term that includes all aspects of managing and processing information and related technologies. IT professionals are responsible for designing, developing, supporting and managing computer hardware, computer software, and information networks, including the Internet.



The realworld applications of information technologies can be found everywhere. Examples of real world application of information technology includes computer software used to manage basic computer applications, computer generated animation in popular movies, networks and programs that allow you to purchase online, and satellites and systems that enable remote space exploration.





BACHELOR OF COMPUTER APPLICATIONS

3-Year BCA

Program Objectives

Fast growing information technology and communication systems have become critical components of almost every company's strategic plan. Companies which want to take advantage of the new information technologies and communication systems require expert professionals, who can apply computer science principles to solve problems produced by the interface between business and technology. Our BCA program is an undergraduate program where students are exposed to various areas of computer applications including the latest developments in the industry.

BCA Course Overview

Computer Fundamentals / C programming / System Analysis & Design / Web Design & Internet Programming / Organizational Behaviour / Visual Basic / Computer Laboratory & Practical work

Specialisations

Computer Graphics / Programming Languages / Database Management / Systems Analysis / Word Processing / Internet Technologies / Accounting Applications / Animation / Music and Video Processing / Personal Information Management

Who can and Who should pursue BCA Degree

Candidates who are obsessed with computers, what they do and how they do, so called 'Computer Freaks' are very worthy of acquiring B.C.A. Those candidates who want to have sound knowledge in key areas of computer science or industrial computing should go for this Computer Science degree. There are candidates who love computers but are limited by their knowledge of the computers can also benefit from the course not to mention the lucrative job offers that will come up.

5-YEAR INTEGRATED BCA-MCA

Students enrolling in this program can pursue Bachelor's as well as Master of Computer Application without taking a break. Through this program students not only get a world class, "industry-ready" curriculum but also end up saving a year. After the completion of 3 year BCA coupled with intensive classes in the summer term, students get to spend the last 2 years as an internship in IT companies.

Benefits of BCA Program

- The program provides a sound academic base from which an advanced career in Computer Application can be developed.
- Bachelor in Computer Application Students have a bright future in the IT field as they can take up ample jobs as programmers and grow to become project managers.
- B.C.A. also paves way for a post graduation in the relevant field which is always preferred.
- B.C.A. provides substantial understanding of concepts in key areas of Computer Science.

Job Scenario for BCA & MCA Graduates

Fast growing information technology and communication systems have become critical components of almost every company's strategic plan. Companies which want to take advantage of the new information technologies and communication systems require expert professionals, who can apply computer science principles to solve problems produced by the interface between business and technology.

Employment Areas

- Software Development Companies ● Technical Support ● System Maintenance ● Consultancies
- Computers and Related Electronic Equipment Manufacturers ● Schools and Colleges
- Security and Surveillance Companies ● Traffic Light Management ● Desktop Publishing
- Financial Institutions ● Government Agencies ● Insurance Providers ● Banks

Job Types

- Software Developers ● Systems Administrators ● Project Manager ● Chief Information Officer
- Computer Programmers ● Computer Training ● Computer Systems Analysts ● Computer Scientists
- Computer Support Service Specialist ● Database Administrators ● Computer Presentation Specialist
- Commercial & Industrial Designers ● Independent Consultants ● Information Systems Manager
- Software Publishers

Campus Recruiters for BCA & MCA Graduates

Some of the major companies that visited Chitkara University and hired our graduates.





MASTER OF COMPUTER APPLICATIONS

2-Year MCA (Lateral Entry)

Program Objectives

This program caters to the foundation of computing principles and business practices and to train the students to analyse problems in a wide range of applications. This program provides exposure to the students to enterprise software management methodologies.

Program Contents and Academic Framework

- Introduction to Computer Organisation
- Data Structures
- Programming in Java
- Computer Architecture
- Software Engineering
- Operating Systems
- Principles of Programming Languages
- Digital Image Processing
- Embedded Systems
- Mainframe Computing
- Programming in C & Algorithm Design
- Object Oriented Programming in C++
- Microprocessors
- Database Management Systems
- Computer Networks
- Computer Graphics
- Theory of Computation
- Compiler Design
- Open Source Programming

Scope for Employment

- As programmers and software consultants.
- Positions in application software development, testing and maintenance.
- As system analysts and database administrators.
- As independent software developers and entrepreneurs



WE'RE *geekyweirdwonderful* LIKE YOU

As a top ranked University of the country, our students are passionate and have that drive to investigate and ferret out solutions, to build, to invent, to design, to develop. Not only do we recognize it, we welcome you to bring it on! We know you have the passion, we will teach you how to harness and apply it.

 chitkara.edu.in



CHITKARA
COLLEGE OF
**APPLIED
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