Electronics, Communication & Information Engineering

What is electronics communication and information engineering?

The Bachelors in Electronics **COMMUNICATION** and **INFORMATION** Engineering program at KEC is designed to provide students with a strong theoretical and practical foundation in electronics technologies such as telecommunications, radio and TV broadcasting; and in communications engineering, industrial electronics and instrumentation and systems analysis computer science.
The program is a combination of electronics communication and information engineering, management and computer science. It focuses on the systems of communication, electromagnetic fields, microprocessors, electronic circuits and systems, computers, automatic controls, systems integration, signal processing and information system.

The availability of affordable means of communication is one of electronics' greatest contributions to human society. The telephone, radio, satellite communications, the internet, mobile phones—each new development has revolutionized the way we live and the way we think about our world. New technologies continuously emerge, with 4G mobile phones offering the possibility of real-time high quality video. DSL and broadband wireless systems provide many times the capacity of modems bringing increased amounts of information into our homes. Other examples include advanced wavelength-division multiplexing schemes, promising vast reductions in the cost of long-distance data transmission. Soon fourth generation systems will unify all these technologies and users will be able to receive and transmit anything, at anytime, from anywhere. All these developments have been fuelled by advances in electronics and communications technology. New protocols and coding schemes, new ways to present video, images and speech as data, new means of delivering this information to users via cable, fiber, and increasingly via radio are constantly emerging. These developments are, in turn, based on sound engineering principles.

Resources

KEC's Department of Electronics communication and information Engineering is one of the largest department as per the number of faculty members, lab facilities and student enrollment. Electronic communication and information engineers are constantly innovating new technology to make gadgets better, cheaper

and sustainable.It is the discipline that impacts communication, commerce, entertainment, manufacturing, healthcare, transport, energy, environment and the future in general.

Our department is proud to be a center that is dedicated to teaching through research in Nepal and worldwide. We have a strong local and global presence built through our relationship with different industries. On campus, the department is able to offer outstanding results through our team of researchers, dedicated support staff and talented student community.

Our specialization modules are constantly evolving to take advantage of new technologies and our research discoveries. Fourth-year students can choose from topics like Biomedical Instrumentation, Remote Sensing, Human-centered robotics, speech processing, sustainable energy, VLSI etc. We are excited about the future, people and technology. The department is committed to developing engineers with the necessary skills, knowledge and imagination.

Student's participation

Engineering education is technical education so only theoretical knowledge is not sufficient for students. To provide technical and practical knowledge, the department conducts field visits for the students to different industries. To enhance practical knowledge on the subject matter the students themselves have established the "Electronics Project Club" and the "Robotics Club". Our students also participate in different national- and international-level hardware and software competitions.

Career Opportunities

Electronics and communication engineers design, develop test, and supervise the manufacture of electronic equipment such as broadcast and communications systems. Many electronics engineers also work in areas closely related to computers. However, engineers whose work is related exclusively to computer hardware are considered computer hardware engineers. Electronics and Communication engineers specialize in areas such as communications, signal processing, and control systems or have a specialty within any one of these areas. The course at KEC aims to help prepare students to play a leading role in the continuing adventure of modern communications—the research, design, building and marketing of the next generation of products.

Electronics and Communication Engineering is one of the largest- and fastest- growing fields of engineering in the world. It covers a wide range of applications which make our lives easier and enjoyable. These include applications such as Television, Radio, Computers, Telecommunications and so on. They help us see, hear and communicate over vast distances and do things faster. Electronics have a major role to play in improving productivity in industries like oil, energy, agriculture and many other sectors that are important to the economy. In manufacturing industries, it is the electronic devices that direct, control and test production processes. The health care industry depends on electronic instruments to perform chemical tests and check body functions. Safety in transportation, factories, mines, and in homes also rely heavily on electronics.

This field covers a vast area that includes communication technology, business and industry, knowledge management, banking and financial institutions, defense, scientific research, travel and tourism, among others.

Occupations related to the same are projected to grow the faster, adding up to create the most new jobs over the coming decade and resulting in excellent job prospects. Electronics and Communication Engineers apply theories and principles of science and mathematics to solve practical and technical problems including, but not limited to, the design, development, testing, and supervision of the manufacture of electronic equipment such as broadcast and communications systems.

Is **Electronics Communication & Information engineering** for You?

Students who wish to pursue a career in **Electronics Communication & Information engineering** need an analytical mind, strong problem-solving abilities, sound mathematical and scientific foundation (in both math and science), and a strong desire to be in constant pursuit of knowledge. These qualities are required for success in any field of engineering, and especially in the Electronics and Communication field.

If you have this foundation, and are willing to work in the following sectors,
Electronics Communication & Information engineering is definitely for you:

- Networking
- VLSI and design automation
- Machine intelligences
- Analyze, design, develop, test, and supervise the manufacture of electronic equipment
- Biomedical Instrumentation
- Computational Science and Technology and so on.
- Communication Technology such as telephone, radio, satellite communications, the internet, mobile phones
- Real-time high quality data transmission
- DSL and broadband wireless
- Advanced wavelength-division multiplexing schemes enabling us to receive and transmit anything, at anytime, from anywhere.

Working Environment

Department of Electronics communication & information Engineering, of Kathmandu Engineering College (KEC) has a dynamic and versatile team of highly qualified, talented and experienced teachers with international exposure dedicated to impart quality education. Besides running the syllabus prescribed by IOE, TU, the department is committed to help students overcome challenges and to facilitate an encouraging environment.

We offer extensive programs like field visits, projects, guest lectures, seminars and technical exhibitions, for students. We also give relevant trainings in Field Programmable Gate Array (FPG) and Latex to support projects and encourage to take part in competitions. KEC has partnered with various international linkages to enhance the skills and personality of students.

Our department's alumni have been working successfully in various national and international organization like Nepal Telecom, NCell, Nepal Television, Kantipur Television, Radio Nepal, Huawei, Samsung, Yomari etc. We are eager to take this legacy one step further with you.

The following are the characteristics of an Electronics engineers' work and his/her working environment:

- Involved in the science that studies elementary particles, smaller than the atom, called electrons
- This field of study is very broad along with involvement in low-power and high-frequency applications including radio and television, computers and telephones
- Apply theories and principles of science and mathematics to solve practical technical problems

- Work environment depends on the industry in which they work. Electronics Engineers are basically involved in the design, planning, operation and inspection of electronic gadgets, communication networks, IC design & fabrication and so on
- Some engineers might be involved in sales and marketing jobs that involve traveling and dealing with market research personnel, gents and users
- Others will be involved in Research and Academics
- Basically, Electronics engineers work in offices, workshops and factories
- The tasks performed evolve quickly, reflecting changes in technology and new areas of specialization, as well as the changing practices of employers. Begin by analyzing users' needs, and then design, test, and develop electronic devices and equipments to meet those needs. Electronics Engineers may be responsible for converting these instructions into a computer language, a process called programming or coding, but this usually is the responsibility of computer programmers, which in turn can be used to automate the things that we do manually. Why Choose Electronics and Communication

Engineering at KEC?

Assuming you haven't been living in a cave or under a rock for the last few decades, you are probably aware that an amazing computer revolution has rapidly changed the way much of the world works. Developments in radio, television, radar, transistors, computers, and robotics have fundamentally altered human life. The field of Electronics and Communication Engineering is at the epicenter of this development. It encompasses a wide range of topics including communication technology, broadcast technology, operating systems, computer architecture, computer networks, robotics, artificial intelligence, and computer-aided design.

If you major in Electronics and Communication Engineering, you'll learn all about the hardware and software aspects of telephone, radio, satellite communications, the internet, mobile phones. You'll gain a solid understanding of circuit theory and electronic circuits, too. Catering to this rapid growth, we are capable of meeting the global demand of Electronics and Communication engineers with more than 30 fulltime faculty members along with about 20 visiting and parttime faculty members.

Course and Work

A Bachelor's degree is commonly required for engineering jobs, although a master's degree is preferred for some positions. Employers favor applicants who already have relevant skills and experience. Workers who keep themselves up-to-date with the latest technology usually have good opportunities for advancement. The Bachelors Degree Program at KEC involves 54 courses including subjects like Basic Electronics, Electromagnetic Waves and Fields, Communication System, Mobile Communication, Power Systems, project works, field visits and so on.

The work area of an Electronics and Communication Engineer basically includes, but is not limited to the following sectors:

- Space & Defense
- Industrial Products
- Commercial Products
- Electronic Components
- Education

Electronics and Communication Engineers work on R&D, Production, Servicing, Sales & Marketing, Teaching, and so on. Major national industries which recruit Electronics and Communication Engineers include Nepal Telecom, NCell, and government services, among others.

Final Year Projects of Electronics & Communication Final year students get involved in a 'project work' in their field of interest. These projects are carried out under the supervision and guidance of professors and experts in the relative fields. Below is a list of the various projects completed by our students.

- 8-Bit Microprocessor Using VDHL
- Appliance Controller and Home Security via PSTN
- Automation of Greenhouse
- Building Automation Using Smart Card
- Electronic House
- Electronic Voting Machine
- Embedded Ethernet Based Data Monitoring
- Floor Assistant Robot
- GSM Based Control System
- Handy Wireless Communicator
- LED Module Character Display
- Telephone Controlled Remote Switch
- Ultrasonic Range Meter
- Weather Station
- Garage Parking
- End to End Communication
- Home Automation with Security System
- RFID Automated Checkout System
- RFID Based Proximity Security System
- Vending Machine
- SMS through Telephone
- Home Atomization System Using GSM with SMS
- RF Based Sensing and Ranging Device
- Luxurious Home System
- The Transporter
- RC Car with Collision Detection
- Smart Card Based Security and Billing System
- Vehicle Pollution Check and Tracking
- Digital Communication Using Optical Laser
- Ultrasonic Radar
- Microcontroller Based Solar Tracking System
- DTMF based Appliances Control System
- Vehicle Monitoring Security System using GSM/GPRS and GPS
- RF Remote Controller
- GPS Logger with Wireless Triggers
- Embedded Web Server for Access Control System
- Data Logger
- RFID based Hotel Security System
- Portable Security System
- Intercom System
- Door Luck Security System/ Access Control System
- Microcontroller Home Security System
- Ethernet Controlled Temperature Regulator

List of Electives

Elective I

- Advanced Java Programming
- Data mining
- Radar Technology
- Embeded system design using ARM technology
- Satellite Communication Systems

- Image processing and pattern recognition
- Biomedical instrumentation
- Aeronautical telecommunications
- Web technologies and applications
- Operating system

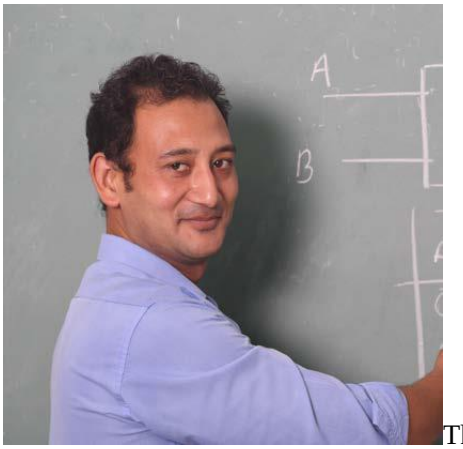
Elective II

- Optical fiber communication system
- Agile software development
- Big data technologies
- Networking with IPV6
- Advanced computer architecture Networking with IPV6
- Advanced computer architecture
- Broadcast engineering
- Database management system
- Information system

Elective III

- Remote sensing
- Multimedia systems
- Enterprise application design and development
- XML
- Artificial intelligence
- Power electronics
- Geographical information system (GIS)
- Speech processing

HOD Note



The 21st century is a perfect blend of Electronics and Computer Engineering, to enhance technology in the digital world. Electronics Engineering helps to enhance the hardware knowledge. On the other hand Computer Engineering enhances the software knowledge.

The Department of Electronics and Communication Engineering has been committed to provide the most pragmatic and highest quality education to fulfill the demand of modern engineering to the nation and the world from its date of instituting. Our ex-students have been working in many reputed companies like Nepal Telecom, Ncell, Radio Nepal, Kantipur Television, Samsung etc. Similarly, our students have also been working in many private organizations. Many students have got opportunity to pursue their higher education in foreign countries. This has been possible because of the teaching methodology adopted by our department. We have a strong conviction that the pragmatism should be basic philosophy behind the modern teaching and learning procedure. Our department is always committed to provide high quality education with highly qualified, well experienced, adequately trained & updated enough to adopt an innovation and latest modern technology faculty members to

guide and motivate the students to make their future bright.

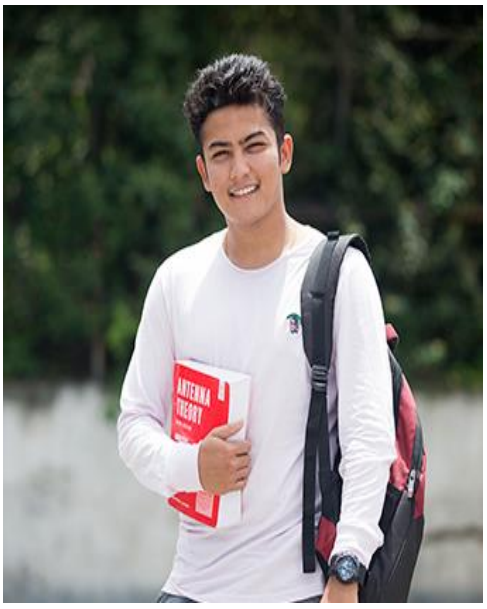
Our department is committed in fabricating excellent research programs that veer on the cutting edge technology. We focus our resources onto selected research areas to ensure an output of world-class research.

Since the establishment, our department has been adopting latest teaching methodology, which follows interactive lectures, students' presentations, case studies, power point presentation on individual & group projects, seminars, participatory group discussion & practicums. Our department also encourages the students to participate in many events to expose their talents & innovation to the public & concern authorities. The students of our department are very versatile and dynamic. They have active participation in numerous extracurricular activities like hardware/software competitions, paper presentations, talk programs etc. organized in various colleges and universities nationwide. Our students also are actively involved in various clubs like: Robotics Club, Electronics Project Club etc. Our students are also affiliated with the Microsoft Students' Partner (MSP) program.

It would not had been possible to reach this position today without the guidance and help from several individuals who in one way or another contributed and extended their valuable assistance in the functioning of our department. On behalf of the Department of Electronics and Communication Engineering, we would like to express a sincere thanks to all the experienced faculty members, college management, dedicated staff & support crew and the research team for providing their effort to achieve the department's goal and objective.

Er. Sagun Manandhar
HOD
Department of Electronics and Communication
e-Mail: sagun@keckist.edu.np

Semester Topper's Quote



"Learn through perception" is what I have realized from the 4 year of my Engineering life. Though it might not change the world that you've completed a major paper or project', it's important to you and your education. Indeed, you're laying the groundwork to effectively apply what you've learned in your program to a future position – and that can make a difference. Continuing to make your education a priority as you head into a busy season isn't easy, but action you take toward your degree is important and integral to earning it.

In engineering one should always have deep interest toward the things one is learning , cause that's the way. And I would like to thank KEC, my friends for providing me with all the help, guidance and support that has always helped and inspired me to get myself in the path of accomplishments and success.

Adarsh Ghimire
071/BEX/33
III/II

Every student has a dream of achieving quality education. In my quest ofattaining it I found KEC as a bright platform which helped me to nurture myhidden potentialities with productive teaching and learning styles. Strongdedication of teachers concerning about the upliftment of the students hasreally outcome extraordinary results. ECAs on top of that, provided as inthe form of seminars, orientation and practice sessions by differentassociated clubs like EPC, Robotics, IT and so on has helped the studentsgrow potentially out of course content and has made them competitive in theglobal market of quality engineers. Good environment within the college hasprovided better accomodation facilities to the students.Yoga classes hashelped the students to relieve their physical and mental pressure. With abetter library, students are able to access knowledge from different booksand other sources like web facilities that the college has been providing. I would really feel as a cheerful person being a part of this educationalinstitution.

Jeevan Sapkota
BEX
072/26