



JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY
COLLEGE OF ENGINEERING AND TECHNOLOGY (COETEC)

**ADVERTISEMENT FOR SELF-SPONSORED DEGREE PROGRAMMES IN
ENGINEERING**

SEPTEMBER 2020 INTAKE

Jomo Kenyatta University of Agriculture and Technology (JKUAT) invite applications for admission into the **following programs** in the College of Engineering and Technology (COETEC).

School of Electrical, Electronic and Information Engineering (SEEIE)

1. Bachelor of Science in Electrical and Electronic Engineering (*5-Years*)
2. Bachelor of Science in Electronic and Computer Engineering(*5-Years*)
3. Bachelor of Science in Telecommunication and Information Engineering(*5-Years*)

School of Civil, Environmental and Geospatial Engineering (SCEGE)

1. Bachelor of Science in Civil Engineering(*5-Years*)
2. Bachelor of Science in Geospatial Information Science (*4 Years*)
3. Bachelor of Science in Geomatic Engineering and Geospatial Information Systems(*5-Years*)

School of Mechanical, Manufacturing and Materials Engineering (SoMMME)

1. Bachelor of Science in Mechatronic Engineering(*5-Years*)
2. Bachelor of Science in Mechanical Engineering(*5-Years*)
3. Bachelor of Science in Marine Engineering (*5-Years*)
4. Bachelor of Science in Mining and Mineral Processing Engineering(*5-Years*)

School of Biosystems and Environmental Engineering (SoBEE)

1. Bachelor of Science in Agricultural and Biosystems Engineering (*5-Years*)
2. Bachelor of Science in Water & Environmental Management (*4 years*)
3. Bachelor of Science in Energy and Environmental Technology (*4 years*)

School of Architecture and Building Sciences (SABS)

1. Bachelor of Construction Management (*4 years*)
2. Bachelor of Quantity Surveying (*4 years*)
3. Bachelor of Real Estate (*4 years*)
4. Bachelor of Architectural Technology; (*4 Years*)
5. Bachelor of Landscape Architecture; (*4 Years*)

NB: All Schools also offer Masters and PhDs in the various areas of specialization.

APPLICANTS ELIGIBILITY

1. The following shall be eligible for consideration for admission into the degree programme in **Engineering (SEEIE, SCEGE, SOMMME, SOBEE) :-**
 - (i) **Kenya Certificate of Secondary Education (KCSE)** with at least a **mean grade of C+ (plus)**; and the following **minimum grades** in the individual cluster subjects:
 - **Alternative A** : Mathematics C+(plus), Physics C+(plus), Chemistry C+(plus), English/Kiswahili C+ (plus), and C+ (plus) in any of the subjects in Group II, III, IV, V; **NB: for BSc. in GEGIS, Geography C+ (plus) is also required**
 - **Alternative B** : Mathematics C+(plus), Physical Sciences B(plain), Biological Sciences C+(plus), English/Kiswahili C+ (plus) and C+ (plus) in any of the subjects in Group II, III, IV or V, or equivalent qualification obtained in other examination systems; **NB: for BSc in GEGIS, Geography C+ is also required; OR**
 - (ii) **Kenya Advanced Certificate of Education (KACE)** or the A-level with at least **two principal passes** in Mathematics and Physics; with a total score of at **least nine (9) points**, and at least a credit pass in Chemistry at the KCE or its equivalent; OR
 - (iii) **Ordinary Diploma** from institution recognized by the JKUAT Senate, having been **awarded by JKUAT** or, by the **Kenya National Examinations Council (KNEC)**, or any other external examinations body recognized by the University Senate as being of equivalent status. **In addition**, the diploma holder must have had satisfactory mean/subject grades at O-level or equivalent; OR
 - (iv) A holder of any other qualifications recognized by the University Senate as equivalent to (i), (ii) or (iii) above.

2. The following shall be eligible for consideration for admission into the degree programme in the **SCHOOL OF ARCHITECTURE AND BUILDING SCIENCES (SABS):-**
 - (i) Kenya Certificate of Secondary Education (KCSE) minimum **aggregate of B- (minus) and C+ (plus)** as the minimum grade in cluster Groups of 4 subjects which include: **Mathematics, Physics**, any subject from Group III; OR 2nd Group II (Biology or Chemistry); OR 2nd Group III OR Group IV; OR Group V.
 - (ii) **Bachelor of Architecture: 2 Years** - Minimum **Bachelor of Architectural Studies**, OR any other relevant qualifications recognized by JKUAT Senate as being equivalent or higher than those specified above.

NOTE: These are the minimum qualification requirements. Space availability and cluster subjects requirements are factors for consideration as well.



DURATION OF PROGRAMMES:

Engineering programmes take a minimum of **5 Academic Years** plus a total of 24 weeks of **practical industrial attachment**;

NOTE: However, the following programmes taught in COETEC take a minimum of **4 academic years** including:-

- ✓ Bachelor of Science in Geospatial Information Science (GIS),
- ✓ Bachelor of Science in Water and Environment Management (WEM),
- ✓ Bachelor of Science in Energy and Environmental Technology (EET);
- ✓ Bachelor of Construction Management
- ✓ Bachelor of Quantity Surveying
- ✓ Bachelor of Real Estate
- ✓ Bachelor of Architectural Technology & Bachelor of Architecture (2-tier program);
- ✓ Bachelor of Landscape Architecture;

Note: Students of Architectural Technology pursue Bachelor of Architecture for a further 2 years upon graduation.

MODE OF APPLICATION:

Application forms can be obtained upon payment of a non-refundable application fee of KShs. 1,500/- and returned by Friday, 27th March, 2020 duly completed with official results slip/certificate to:-

The Principal,

College of Engineering and Technology (COETEC), JKUAT

P.O. Box 62000-00200, Nairobi

Tel. 067-5870001-4 Ext. 2110/2111/2113/2114 or 020-2626338

Email: principal@eng.jkuat.ac.ke

Website: <http://www.jkuat.ac.ke>



COURSE BRIEF:

a) Electrical and Electronic Engineering

The degree program is designed to produce a graduate engineer who has knowledge in the core areas of electrical and electronic engineering. These include electronics, telecommunication, control, electrical machines and power systems. In the final two years, the students specialize in either light current or heavy current option. The students are expected to learn a systematic and analytical approach to electrical and electronic engineering to enable them to carry out design, implementation, maintenance and research work. The career paths are wide and varied and the graduates can find work in industries such as aviation, manufacturing, telecommunication, media (electronic and print), building/construction, power and energy management.

b) Electronic and Computer Engineering

This is a discipline that embodies the science and technology of design, construction, implementation and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. It combines both electronic engineering and computer science. This field of engineering not only focuses on how computer systems themselves work, but also how they integrate with other systems. A graduate engineer will have extensive understanding of electronic devices such as microprocessors, local and wide area networks and even supercomputers that form the basis for worldwide communications. The graduates will be equipped with the skills necessary to design, implement and maintain electronic and computer systems and develop software for a wide variety of engineering applications. The graduates can find work in fields such as telecommunications, transportation, manufacturing, and computer hardware and software development.

c) Telecommunication and Information Engineering

The degree program is designed to provide qualified manpower in the rapidly growing telecommunication and Information Engineering field and to facilitate research, design, development and production of new ideas, processes and products in this field. The graduates will have an in-depth knowledge in various new communication and information technologies such as mobile phones and facilities for data transfer including facsimile, e-mail, internet and video/data.

d) Civil Engineering

Civil Engineering involves the research, design and construction of Buildings, Bridges, Roads, Dams, Airports, Water Supply and Wastewater Systems, Transportation Systems, Underground and Coastal Structures, Environmental systems, Tunnels, etc. The BSc Civil Engineering degree program aims at producing Engineers with competence in the fields of structural, geotechnical, highway, transportation, environmental and water engineering.

The course produces Engineers who can design, construct and supervise projects in the various broad areas listed above and engage in research work.

e) Geomatic Engineering and Geospatial Information systems (GEGIS)

This degree programme aims at providing graduate engineers with expertise in application of modern engineering mapping, computing and space technology tools. These include Geospatial Information Systems (GIS), satellite Remote Sensing, satellite based Global Positioning Systems



(GPS), digital mapping and imaging, Navigation and other computer based data management and visualization technologies. Such tools are applied in acquisition, assessment, processing, management, analysis, modeling and dissemination of land/location/position based or associated (geo-referenced) information including satellite derived information. Graduates of this program can find work in the physical, built, industrial and business environments.

f) Geospatial Information Science

This is a 4 year course that brings together the disciplines of computing, surveying, mapping, cartography and visualization, environmental science and statistics for the collection, analysis and modeling of spatially based or associated information. GIS is a rapidly developing discipline, and is applied in order to address problems and offer optimal solutions in an increasing range of applications where spatial, location / position based information is important. This includes but is not limited to sustainable environmental and natural resources management, exploration and mining, land ownership, urban and regional planning, facilities and utilities management, asset management, health planning, demographic marketing etc.

The programme places emphasis on modern techniques of geodesy, digital mapping, Remote Sensing, cartography, Geo-information, Satellite Positioning such as Global Positioning System (GPS) but also offers adequate foundation on traditional geo-information data acquisition and processing techniques.

g) Mechatronic Engineering

The degree program aims at producing graduate engineers with an in-depth understanding of modern manufacturing technologies combined with expertise in automation, robotics, electronic and computer-based technologies. The study of Mechatronic Engineering involves integrated aspects of Mechanical and Electrical/Electronic Engineering and controls. It has a strong emphasis on design of efficient systems for manufacturing, including automation. The course aims at providing engineers to lead in multi-disciplinary design teams on products and processes that have both mechanical and electronic dimensions. Graduates of this programme work in several industries including manufacturing, aviation, chemical, food processing, automobile, power generation, electronics etc

h) Mechanical Engineering

The program aims to produce graduate engineers with expertise in Design, Manufacturing/Production and maintenance of mechanical systems, processes and products. The program has a very strong emphasis in engineering design. In the final two years, graduates can specialize in Thermo fluids, Automotive or Production Engineering.

Graduates of this program can find work in a wide range of industries such as in manufacturing, aviation, oil industry, building services, vehicle manufacturers, power generation and transmission, etc.

i) Marine Engineering

This degree program is designed to provide qualified manpower that can develop and maintain ship propulsion units, ship structures and all support machinery, as well as initiate manufacturing projects or improve existing maritime operations. The curriculum is designed to meet the standards of the International Maritime Organization. The graduates of this program will work in



the high seas as well inland. In addition to covering the academic and practical content, students also undergo cadet training, to acquire the necessary life skills, as well as some IMO-prescribed mandatory courses.

j) Mining and Mineral Processing Engineering

This programme aims at producing Engineers specialized in both mining and mineral processing. Mining engineering is basically the process of taking minerals resources from the earth in response to man's needs. Mineral processing engineering involves separating valuable elements of material from unwanted waste material from the ore body. Besides the core units, a student will take elective units in either mining or mineral processing engineering. Each student undergoes mandatory industry based practical attachment at the end of the second, third and fourth year of study. Graduates of this programme will work in the various areas of the mining industry as well as in other industries dealing with materials processing.

k) Environment and Water Management

This is a 4-year programme aimed at producing graduates with the necessary knowledge and skills for sustainable land development and natural resources utilization. The graduates of this programme apply the knowledge of mathematics, sciences and management principles to diagnose and analyze problems that require sound environmental solutions and to solve problems in production systems. The graduate will find jobs in both government and public sectors as Water and Environmental managers involved in sustainable exploitation of natural resources for Agricultural and Industrial Development.

l) Agricultural and Biosystems Engineering

This programme aims at producing specialized Engineers combining biological and technical skills to address issues in agro-industrial development and the consequent environmental problems. The programme allows students to major in Soil, Water and Environmental Engineering or Biomechanical and Processing Engineering options during the fourth and fifth year of study. Graduate engineers of this programme are equipped with necessary knowledge and skills for sustainable utilization of natural resources, optimal design and management of bio-production and processing systems, and harnessing and management of energy systems. Graduates find jobs in both private and public sectors in various engineering fields and in particular bio-processing systems design, design and production of bio-processing machines and structures, waste management, irrigation and drainage engineering, soil and water conservation and environmental management.

m) Energy and Environmental Technology

This is a four year programme that aims at producing market driven and competitive graduates who are specialists in energy and environmental technology. The programme allows graduates to specialize in Energy Management, Energy Technology and Environmental Technology during their fourth year. Graduates in this programme are equipped with necessary knowledge and skills for sustainable exploitation and utilization of natural resources, especially harnessing and management of energy systems. Graduates find jobs in both the private and public sector including Non-governmental organizations as energy and environment technologists and managers.



n) Architectural Studies

This course is the First part of the Two-Tier programme comprising the Bachelor of Architectural Studies (4 Years) and the Bachelor of architecture (2 Years). It concerns both planning and designs of the built and natural environment. Emphasis is on art approach to design. Upon completion of the 4 years, holders of Bachelor of Architectural Studies can take up the following career paths among many others:- Can work as assistants to registered Architects, Project Managers, Contractors, etc.; Can work in project implementation teams; Can apply for the Bachelor of Architecture Degree to become eligible for registration as Architects; Can pursue other professional degrees in design-related fields such as interior design, product design as well as Architectural Conservation; Can apply for M. Phil programmes in Design related fields.

o) Architecture

This course is the second part of the Two-Tier programme comprising the Bachelor of Architectural Studies (4 Years) and the Bachelor of Architecture (2 Years). Upon Successful completion, one can take up the following career path for registration as an Architect:- Work as Graduate Architects under supervision of a Registered Architect; Be registered by the Board of Registration of Architects and Quantity Surveyors (BORAQS) as Architects upon successful completion of internship and passing a professional examination; Become a corporate members of Architectural Association of Kenya (AAK) after application and upon registration as an Architect by BORAQS.

p) Construction Management, Quantity Surveying and Real Estate

Student are trained virtually in all aspects of construction processes and management from building through services engineering to infrastructure services (roads, water, waste water, ICT etc) and quantifying of construction projects. Those who graduate can work in the following areas:- Building and civil engineering contractors, Architectural firms, Project management, Engineering firms, Project evaluation and costing firms, Quantity surveying firms, Contracting and consultancy, Sales and marketing, Production and manufacturing companies (maintenance), Property and facilities management, Energy sectors, Roads, Banking industries e.g mortgages.

q) Landscape Architecture

Landscape Architecture is an environment based profession. As a discipline, it is broad in scope developing into the design, planning and management of landscapes and the environment. The broad objective of the program in landscape architecture is to develop a taste for beauty, admiration for surrounding natural world, appreciation of natural environment habitats and at the same time a rejection of selfish oriented consumption attitudes. Focus areas are: Architectural Communication, Planting Design, Site Planning, Landscape Engineering and Urban design.

More details on all the programs listed above should be obtained at <http://www.jkuat.ac.ke>

