1.0 INTRODUCTION

1.1 History and Background

Discussions on energy, the environment and natural resource use have for many decades generated arguments that call for the sustainable interventions towards the utilisation of natural resources. In Ghana, the rate at which natural resources are depleted through human activities is alarming and has called for interventions to protect natural resources for now and for future use. The need for sustainable energy generation at the other end of the development continuum has also presented some challenges that need swift national attention. The sustainable availability of energy and the need to reduce the dependency on fossil fuels has become a global concern and more importantly for developing countries such as Ghana. The environmental impacts of fossil fuels such as coal and crude oil on the natural environment, with dire global warming consequences have also called for alternative energy sources.

In Ghana, policies on sustainable energy and natural resource use date back to the early post independence era. For example, the Seven-Year Development Plan of Dr. Kwame Nkrumah outlined plans to implement energy solutions to match the development needs of the Country. This Plan, however, was short lived due to political tensions at the time. Several policies on natural resource use and sustainable energy needs of Ghana exist but their implementation remains questionable. In the face of these, establishing a higher institution of learning and research with adequate focus on energy and natural resources became pertinent and important for Ghana.

The University of Energy and Natural Resources (UENR); a public funded University established by an Act of Parliament (The University of Energy and Natural Resources Act, 2011, Act 830) was established in 2011 to provide leadership in science, technology and management of energy and natural resources and be a centre of excellence in these critical areas. The University admitted its pioneer students in the 2012/13 academic year. The University is mandated to train the next generation of graduates to acquire requisite skills to help alleviate the numerous challenges confronting the energy and natural resource needs of the country.

The University will approach its programmes and research emphasizing interdisciplinary collaboration and taking into account areas, such as economics/geography, law and policy, management, science, technology and engineering, as well as social and political issues affecting energy and natural resources The University, at full operation, would be made up of six academic Schools, namely:

- School of Engineering*;
- School of Sciences**;
- School of Geosciences;
- School of Agriculture and Technology;
Apart from the main campus in Sunyani, the University shall have campuses in Nsoatre and Dormaa Ahenkro. The School of Sciences, School of Natural Resources and Environmental Management and the School of Graduate Studies shall be situated on the main campus in Sunyani. The School of Engineering shall be situated in Nsoatre whilst the Schools of Agriculture and Technology and Geosciences shall be situated in Dormaa Ahenkro. The University shall in addition establish four (4) field training centres in Mim, Brosankoro and Kyeraa for students in Agriculture and Forest Resources Management and one at Bui for students in Engineering.

The University has local and international collaborations with research institutions, universities and industry giants to provide cutting edge education in energy and natural resources.

1.2 Vision and Mission

1.2.1 Our Vision

The University exists to become a world class institution for generating, advancing and applying knowledge in energy and natural resource sciences. The University looks forward to a more dynamic future where its core businesses-teaching, research and community outreach in the areas of energy and natural resources would become directly and indirectly significant to the socio economic development needs of Ghana, Africa and the world. To achieve this, the University in the short, medium and long terms shall pursue vigorous organisation of resources and expansion in admissions and infrastructure to support teaching and learning. The University shall assign well trained human resources in areas that are more critical to the developmental agenda of the Country. The University shall build, strengthen and enhance teaching and research at the undergraduate level. At the post graduate level, the University shall improve existing courses; build staff capacity which shall lead to the mounting of new programmes.

1.2.2 Our Mission

The mission of the University is to promote the development of human resources and skills required to solve critical energy and natural resources challenges of society and undertake interdisciplinary academic, research and outreach programmes in engineering, science, economics and environmental policy. The University shall operationalize its vision and mission by adhering to its core values.

1.3 Core Values

The University shall be shaped by the following core values:
• Promote innovation, creativity, freedom of the thought and creative expression;
• Operate with integrity, commitment and transparency;
• Respect for conservation of energy and the environment;
• Partnership with stakeholders in skills and knowledge generation and application;
• Responsive to the needs of its students and partners communities; and
• Promote and incorporate sustainability concepts across all University courses/programmes as well as exemplifying the sustainability culture by faculty, staff, students and alumni.

The University’s main mission is, therefore, to train the next generation of skilled personnel to formulate energy and natural resources policies and manage the socio economic development policies, plans, programmes and projects at all levels of national development. The University, based on its core values, shall approach energy and natural resource education in a multi dimensional and interdisciplinary manner.

1.4 Aims of the University

The aims of the University are to:

• provide higher education in science, technology and sustainable harnessing and management of energy and natural resources through teaching and research to all persons suitably qualified and capable of benefiting from such education;
• establish partnerships, disseminate and apply knowledge gained through research to address the energy and natural resource needs and aspirations of the people of Ghana, in particular and the world, in general;
• provide technical and other skills services and contribute to improving the management and use of Ghana’s energy and natural resources;
• provide leadership and be a role model institution, promoting the design and construction of energy-efficient buildings and create eco-friendly environments;
• Promote partnership between local and international institutions to create synergy to attain the mission.

1.5 Governance

The University of Energy and Natural Resources is modelled on a two-tier or bicameral system of governance, i.e., the Council and Academic Board as stated in the law establishing the University. In addition, internal structures, such as School Boards and Committees, will be set up to ensure good order. These will be guided by the statutes promulgated by Council.

1.6 General Admission Requirements

1.6.1 Entry Routes
The University has four entry routes:

- Entry by means of SSSCE/WASSCE (Entry at Level 100)
- Foreign student (Entry at Level 100)
- Entry by means of the mature students (Entry at Level 100)
- Entry by means of professional certificates and tertiary level diplomas depending on assessment of the diploma and performance at interview.

1.7 Structure of Semester
A semester shall be 17 weeks’ duration and shall be structured as follows:

- 13 weeks of Teaching;
- 1 week of Revision;
- 3 weeks of Examinations.

1.8 Course Coding System
The University shall apply the generally-agreed course coding system to ensure clarity, harmonization, identification and combination of courses. All degree courses shall have letter and number codes beginning with four letters, signifying a Department or subject, followed by a three-digit number in one of the following ranges:

- Level 100 Courses : 100-199
- Level 200 Courses : 200-299
- Level 300 Courses : 300-399
- Level 400 Courses : 400-499

The third digit in the number code shall be:

- Zero (0), for a course that is offered in both semesters;
- Odd (1, 3, 5, 7 or 9) for course offered in the first semester; and
- Even (2, 4, 6 or 8) for a course offered in the second semester.

1.9 Grading System
The University shall adopt a fair and transparent grading system for all its courses. Numerical grades awarded by examiners will conform to the following interpretations and grade points:

<table>
<thead>
<tr>
<th>Grade Numerical</th>
<th>Marks %</th>
<th>Interpretation</th>
<th>Grade Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80-100</td>
<td>Excellent</td>
<td>4.00</td>
</tr>
<tr>
<td>B+</td>
<td>75-79</td>
<td>Very Good</td>
<td>3.50</td>
</tr>
<tr>
<td>Grade</td>
<td>Range</td>
<td>Description</td>
<td>GP</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>-------------------</td>
<td>-----</td>
</tr>
<tr>
<td>B</td>
<td>70-74</td>
<td>Good</td>
<td>3.00</td>
</tr>
<tr>
<td>C+</td>
<td>65-69</td>
<td>Fairly Good</td>
<td>2.50</td>
</tr>
<tr>
<td>C</td>
<td>60-64</td>
<td>Average</td>
<td>2.00</td>
</tr>
<tr>
<td>D+</td>
<td>55-59</td>
<td>Below Average</td>
<td>1.50</td>
</tr>
<tr>
<td>D</td>
<td>50-54</td>
<td>Marginal Pass</td>
<td>1.00</td>
</tr>
<tr>
<td>E</td>
<td>45-49</td>
<td>Unsatisfactory</td>
<td>0.50</td>
</tr>
<tr>
<td>F</td>
<td>0-44</td>
<td>Fail</td>
<td>0</td>
</tr>
<tr>
<td>X</td>
<td>-</td>
<td>Fail</td>
<td>0</td>
</tr>
<tr>
<td>Z</td>
<td>-</td>
<td>Disqualification</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>-</td>
<td>Incomplete</td>
<td>0</td>
</tr>
<tr>
<td>Y</td>
<td>-</td>
<td>Continuing</td>
<td>0</td>
</tr>
</tbody>
</table>

1.9.1 Grade Point (GP)
Grade points are awarded to each grade earned by a student. This is computed as the product of the number of credits for the course and the grade point equivalent letter of the grade obtained in that course.

1.9.2 Cumulative Grade Point Average (CGPA)
The cumulative grade point average is calculated by dividing the total number of grade points obtained, up to any specified time, by the total number of credits of all courses for which the student has registered up to that time.

1.9.3 Final Grade Point Average (FGPA)
The FGPA is the CGPA for all courses under consideration calculated up to the end of the student’s academic programme.

1.10 Existing Four-Year Bachelor’s Programmes (As at September 2013)

1.10.1 Bachelor of Science (Renewable Energy Engineering)

1.10.2 Bachelor of Science (Environmental Engineering)
1.10.3 Bachelor of Science (Electric and Electronic Engineering)

1.10.4 Bachelor of Science (Mechanical Engineering)

1.10.5 Bachelor of Science (Computer Science)

1.10.6 Bachelor of Science (Applied Mathematics)

1.10.7 Bachelor of Science (Natural Resources Management) with options in:
   a) Forest Resources Management
   b) Wildlife and Range Management
   c) Ecotourism
   d) Social Forestry
   e) Wood Science and Forest Products
   f) Land Reclamation and Restoration
   g) Fisheries and Aquaculture

2.0 DETAILS OF ACADEMIC SCHOOLS AND PROGRAMMES

2.1 School of Natural Resources and Environmental Management (SNREM)

An appreciation and efficient management of forest products, pulp and paper, and allied industries is crucial for Ghana’s economy. The School Natural Resources and Environmental Management at UENR is poised to provide a strong and vibrant leadership to the forest and natural resources industry to meet the increasing demand for housing, recreation, tourism and green spaces. This will require an intimate knowledge of climate, species, and infrastructure, political, social and legal systems. Issues of interest include the increased demand for market and non-market goods and services from forests and related natural resources, land availability for industrial forestry and natural resource conservation, natural resource sustainability, habitat conservation, and ecosystem management. The School will provide instruction, research and outreach to address these issues. Research at the School will be need-based with strong community and industry inputs and integrated with natural resource management.

Areas of academic interest will include forest conservation and restoration of ecology, forest resource management, fisheries and wildlife sciences, urban and community forestry, wood science and technology, fire science and management, land and water resources management. The programmes will provide graduates with a working knowledge of a broad span of natural resources and introduce them to the critical relationships between human activities and the environment. The Philosophy of the School hinges on using a strong partnership approach, prepare future leaders and provide solutions in the conservation and sustainable management of forests and other natural resources.

Our Vision
To be the centre of excellence in the training of expertise and extension in, and research into, natural and environmental resources in Ghana and Africa.

**Our Mission**
The SNREM is dedicated to training high-quality graduates and generating and disseminating timely, high quality science-based information for the sustainable management and use of natural and environmental resources.

### 2.1.1 Departments
At full operation, the School of Natural Resources will have six (6) Departments:

**A  Department of Forest Sciences and Resources (DoFSR)**
- Integrated Forest Resources Management
- Wildlife & Range Management
- Wood Science and Forest Products
- Social Forestry and Governance
- Forest Health (pests and diseases)
- Forest Engineering and Technology

**B  Department of Water Resources (DoWR)**
- Watershed Management
- Fisheries and Aquaculture
- Wetlands Management and Water conservation

**C  Department of Ecotourism, Outdoor Recreation & Hospitality (DoEORH)**
- Outdoor Recreation and Urban Forestry
- Eco-tourism
- Hospitality Management

**D  Department of Environmental Management (DoEM)**
- Global Environmental Change (Climate Change)
- Environmental Conservation and Management
- Land Reclamation and Restoration
- Environmental Education and Extension
- Fire and Safety Science

**E  Department of Resource & Environmental Economics (DoREE)**
- Natural Resource Economics & Governance
- Energy Economics & Policy
- Environmental Economics & Policy
Department of Resource Enterprises and Entrepreneurship (DoREE)

- Forest farming and forest product enterprises
- Ecotourism and Recreational Enterprises
- Forest Plantation Development Enterprises
- Forest Products and Marketing
- Resource Enterprise Management
- Resources Management and Entrepreneurship
- Natural Resource Administration
- Resource Management and Environmental Financing

2.1.2 Academic Programmes

These unique programmes are carefully developed to provide expertise to address the increasing natural resource and environmental challenges such as global environmental change (climate change), environmental degradation and sustainable development. Each department will offer one undergraduate degree and contribute to the joint degree in integrated resources management. By 2022, the School will offer a total of 17 degrees: 6 undergraduate degrees in natural resource management and environmental management, 6 master’s and 5 PhD degrees.

2.1.2.1 Undergraduate Programmes (4 years)*

1. BSc in Integrated Resource Management
2. BSc in Forest Resources (with options in wildlife, wood science, and forestry)
3. BSc in Water Resources
4. BSc in Outdoor Recreation, Tourism & Hospitality
5. BSc in Resource Enterprise & Entrepreneurship
6. BSc in Environmental Management

*Students will have an opportunity to earn a minor specialization in management or policy in addition to the major specializations above

2.1.2.2 Master’s Programmes (2 years)

1. MSc in Forestry
2. MSc in Water Resources
3. MSc in Wildlife & Range Management
4. MSc in Outdoor Recreation, Tourism & Hospitality
5. MSc in Environmental Management
6. MSc in Natural Resources & Environmental Economics

2.1.2.3 Doctoral Programmes (3-5 years)
1. PhD in Forest Sciences
2. PhD in Wildlife Management
3. PhD in Water Resources Management
4. PhD in Environmental Management
5. PhD in Natural Resources & Environmental Economics.

As at the commencement of the 2013/14 academic year, the academic programme offered at the School of Natural Resources was the Four-Year Bachelor of Science Programme (Natural Resources Management), with options in:

   i. Ecotourism;

   ii. Wood Science & Forest Products;

   iii. Social Forestry; and

   iv. Land Reclamation & Restoration.

2.1.3 Programme Outcomes

Students who shall successfully go through training in BSc or Diploma in Natural Resources are expected to:

- Have knowledge and technical skills in the areas of natural resources management to support sustainable management of Forest Resources
- Be social workers with the responsibility of strengthening the local management of Forest resources for the benefit of local population
- Be well exposed to the external environment yet deeply rooted in local resource and environmental management
- Conduct demand-driven research and disseminate appropriate technologies to forest resource managers, companies/industries and relevant policy-making agencies of Government.
- It is envisaged that after the programme, students can easily identify their various fields of interest and specialization and develop it thereupon. It is also anticipated that students can hereafter translate natural resources policies into actionable terms.

2.1.4 ADMISSION REQUIREMENTS

A SSSCE/WASSCE Applicants

To be admitted to any Degree programme, SSSCE Candidates should have Passes (A-D) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3)
elective science subjects from Biology/General Agriculture/Forestry, Geography/Economics, Chemistry, Physics and Mathematics. WASSCE Candidates should have Credit Passes (A1-C6) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects from Biology/General Agriculture/Forestry, Geography, Chemistry, Physics and Mathematics. In addition, SSSCE and WASSCE Candidates should have at least a grade D and C6 in Social Studies, respectively.

B  Foreign Applicants

i. **Required subjects for Sciences:** English, Mathematics, Further Mathematics, Biology/Agriculture, Physics and Chemistry plus a pass in one Arts subject.

ii. **Other Qualifications:** Other qualifications acceptable for consideration for admission include *International Baccalaureate (IB), IGCSE, GCSE, American Grade 13 examinations* and other external qualifications which have equivalences to the WASSCE/SSSCE and the GCE (A Levels).

iii. Foreign certificates will be sent to the National Accreditation Board for assessment and advice.

C  Mature Students’ Entry

Mature students entry avenues to tertiary education provide opportunities for people who could not do so earlier in their lives to further their education at the tertiary level after some years in the workplace (preferably, the formal workplace). Such applicants should normally not exceed 5% (for Public Tertiary Educational Institutions) and 20% (for Private Tertiary Educational Institutions) of the total admissions of an institution in a given academic year. The applicant must:

- be at least 25 years old by 1st September of the academic year one wants to enrol;
- show proof of age with birth certificate or any legitimate documentary proof of birth date which is at least 5 years old at the time of application;
- provide introductory letter from employer or show any other proof of employment;
- pass Mature Students’ Entrance Examinations conducted by UENR (English Language, Mathematics and an Aptitude Test). In lieu of such examinations, the applicant should show proof of credit passes in English and Mathematics in SSSCE/WASSCE or any other nationally recognized standard High School level examinations (for qualifications from countries outside WAEC’s NAB should be consulted.

D  Professional and Post-Diploma Applicants

Candidates in this category must:

- Possess a Diploma or Higher National Diploma (HND) or its equivalence in a relevant programme from a recognised institution (e.g. Agriculture, Forestry etc);
- Pass an interview;
- Have two years post qualification working experience;

Candidates with HND/relevant professional or diploma certificates and who obtained **First class or Second class upper honours** will enter at **level 300**. Those with **Second class lower honours or pass** will enter at **level 200**. In addition to the general admission requirements above, Schools and Departments may have their specific requirements.

### 2.1.5 Duration and structure

The minimum period for completion of the Bachelor’s programmes shall be 8 semesters and the maximum shall be 12 semesters. The University may adjust this duration to satisfy new programmes as approved by the Academic Board and the Council. These minimum and maximum periods are calculated from the first day of registration.

### 2.1.6 Requirements for Bachelor Graduation

A student shall be deemed to have satisfied the requirements for graduation, if:

1. s/he has satisfied all General University, School and Departmental requirements;
2. s/he has accumulated the minimum number of credits required by the Faculty, including core and prescribed electives.

### 2.1.7 Job Opportunities

UENR’s degree programme in Natural Resources prepares graduates for positions in the following institutions/organizations but not limited to:

- Timber Industries
- Forestry Commission
- NGOs working in the forestry and the environment sectors
- Ministry of Land and Natural Resources
- Ministry of Fisheries and Aquaculture Development
- Water Research Institute
- Commercial Fish Farms
- Municipal and District Assemblies
- Private Plantation Developers
- Mining Companies
- Environmental Protection Agency
- Ministry of Environment, Science and Technology
- Ministry of Tourism
- Teaching and Research institutions
• Ghana Tourist Board
• National Parks
• Green Industries in Public Relations, Marketing, Management and Education
• Green Advocate Lawyers: A Growing Green Job of Today
• Private Institutions and NGO’s (WWF, GTZ, Conservation International, Care International, SNV, ARocha Ghana)
• Hotels
2.2 School of Engineering

2.2.1 Background
The rationale for establishing a University for Energy and Natural Resources is a plausible one. All of the advances of the past two centuries whether they are economic, political or social in nature, are connected in part to the massive consumption of energy. The per capita energy consumption in a society is a good measure of its relative state of advancement. However, countries should seek to reduce the energy intensity of their economies. With the many forms of energy resources available, each nation must position itself to understand the science, technology and economics and management of energy. Globally, countries are increasingly in search of affordable and sustainable energy sources.

The bulk of the world’s energy comes from fossil fuels which are finite. The extraction of energy from fossil fuels gives rise to adverse global climatic changes. Alternatives to fossil fuels appear to be renewable energy and nuclear power. As a result, various engineering programmes are providing concentrations or specializations in energy engineering to educate and train future engineers to address this problem. It is in this light that the School of Engineering will focus on the development of human capacity to manage and solve problems of extracting, collecting, conversion and utilising energy and natural resources. Ghana is endowed with renewable and non-renewable sources of energy. With the recent discovery of oil in Ghana, it is imperative that skills and knowledge base for harnessing all forms of energy resources and associated engineering applications are developed. The School of Engineering shall provide leadership in this very important area of the national economy. The philosophy is to provide students with competitive skills and professional leadership within the energy and engineering sector.

2.2.2 Departments
The School of Engineering is proposed to comprise eight (8) Departments:

1. Department of Energy and Environmental Engineering
2. Department of Computer Engineering
3. Department of Electrical and Electronic Engineering
4. Department of Petroleum and Petrochemical Engineering
5. Department of Materials Science Engineering
6. Department of Mechanical Engineering
7. Department of Biological and Agricultural Engineering

Whilst each Department offers programmes leading to the award of undergraduate and post-graduate degrees, to strengthen their link with industry, all Departments will offer short courses for continued professional development. These will be offered under part-time and flexible distance learning modes of
study. The overall objective will be to provide practical and theoretical grounding in technologies and wider knowledge relevant to the energy sector for engineers and other professionals.

2.2.3 Academic Programmes

2.2.4 Bachelor of Science (Renewable Energy Engineering)

The four-year BSc Renewable Energy Engineering programme was introduced in 2012/2013 academic year with the aim of fully integrating renewable energy generating technologies and environmental issues to meet the changing demands of the energy industry particularly in Ghana and the West Africa sub-region. The programme has been designed in response to a recognized need from the energy industry for university graduates who have a detailed knowledge, appreciation and fundamental understanding of the various sources of energy, their production, harnessing, conversion, and environmental concerns associated with the use of energy. How well energy can be managed in industries and domestic settings to overcome environmental issues associated with the use of energy is also critical.

The renewable energy engineering programme provides knowledge in the scientific and engineering foundations and skills for such needs as alternative fuel technology, renewable energy, hydrogen fuel cell development and utilization, solar energy, energy extraction and geothermal storage, fusion and nuclear energy and the technologies for understanding and mitigating the environmental impacts of energy usage. The programme also includes some aspects of materials sciences, chemistry, geosciences, and biosciences that support energy processes, environmental remediation and waste management. Students will be equipped with skills in developing technical solutions, alternative technologies and regulations related to renewable energy. In addition, the Department will provide knowledge and skills in computational modelling and simulation for problems that may not be solved with traditional theoretical and experimental approaches, hazardous to study in the laboratory, or time-consuming. This will include applied mathematics for modelling complex physical, biological, and energy systems.

2.2.5 Admission requirements

A SSSCE/WASSCE Applicants

To be admitted to any Engineering Degree programme, SSSCE Candidates should have Passes (A-D) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects from Chemistry, Physics/Applied Electricity and Mathematics. WASSCE Candidates should have Credit Passes (A1-C6) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects from Chemistry, Physics/Applied electricity and Mathematics. In addition, SSSCE and WASSCE Candidates should have at least a grade D and C6 in Social Studies, respectively.
**B  Foreign Applicants**

i. **Required subjects for Sciences:** English, Mathematics, Biology/Agriculture, Physics and Chemistry, Further Mathematics for Physical Sciences and a pass in one arts subject

ii. **Other Qualifications:** Other qualifications acceptable for consideration for admission include *International Baccalaureate (IB), IGCSE, GCSE, American Grade 13 examinations* and other external qualifications which have equivalences to the WASSCE/SSSCE and the GCE (A Levels).

International students whose first language is not English are required to have one of the following English language qualifications before they can register on the programme. However, applicants from English speaking countries may have these requirements waived.

- IELTS 6.0 (no less than 5.0 in any element)
- TOEFL paper-based 550 (no less than 4.0 in TWE)
- TOEFL IBT 79 (no less than 17 in any element)

**C  Mature Students**

Must be at least 25 years old by 1st September of the academic year one wants to enrol. Original results slip (O & A Level/SSSCE/WASSCE are required. Candidates must have passes in core subjects including English, Mathematics and Integrated Science and three elective science subjects including chemistry, physics/Applied Electricity and Mathematics. Mature student applicants must pass UENR entrance examination and or interview.

**D  Professional and Post-Diploma Applicants**

Candidates in this category must possess:

- A Diploma or Higher National diploma or its equivalence in a relevant programme from a recognised institution (e.g. electrical, chemical, mechanical, civil, material etc);
- Must pass an interview;
- Two years post qualification working experience.

**2.2.6 Duration and structure**

The minimum period for completion of the Bachelor’s programmes shall be 8 semesters and the maximum shall be 12 semesters. The University may adjust this duration to satisfy new programmes as approved by the Academic Board and the Council. These minimum and maximum periods are calculated from the day of first registration.

**2.2.7 Requirements for Bachelor Graduation**

A student shall be deemed to have satisfied the requirements for graduation, if:
i. s/he has satisfied all General University, School or Departmental requirements;
ii. s/he has accumulated the minimum number of credits required by the School, including core and prescribed electives.

2.2.8 Job Opportunities
Students can gain employment in the under listed but not limited to the following institutions/ organizations/companies:

a) Ministry of Energy
b) Energy Commission
c) Forestry Commission
d) NGOs working in the renewable energy and the environment sectors
e) Ministry of Land and Natural Resources
f) Municipal and District Assemblies
g) Private Renewable Energy Companies
h) Environmental Protection Agency
i) Ministry of Environment, Science and Technology
j) Teaching and Research institutions

2.3 Bachelor of Science (Environmental Engineering)
The four-year BSc Environmental Engineering programme was introduced in the 2013/2014 academic year with the aim of fully integrating environmental engineering technologies and management principles to meet the challenging and dynamic demands of the industries as well as other biotic and abiotic activities in Ghana and the West Africa sub-region. The programme has been designed in response to a recognized need for efficient and sustainable uses of Ghana and Africa’s energy and natural resources. University graduates who undergo training in the environmental engineering programme will have a detailed knowledge, appreciation and fundamental understanding of the economical, efficient and sustainable uses of various sources of water, energy, and other natural resources in an environmentally friendly manner.

The environmental engineering programme will provide knowledge in the scientific and engineering foundations and skills for such needs as efficient and sustainable uses of natural resources, regeneration and alternative uses of water, energy and wastes in all faculties of society. These will be done in the framework of technologies with the view of understanding and mitigating the environmental impacts of biotic and abiotic factors on society. The programme also includes some aspects of materials sciences, chemistry, biology, physics, hydrology, geosciences, atmospheric and other sciences that support and explain environmental pollution, remediation technologies and waste management. The BSc programme seeks to create graduates who are well prepared for placement within almost all the industries in Ghana and
elsewhere, whether for a work with a company as sustainable and efficient material, water and energy resource managers or continued study at an advanced level at the MSc and PhD levels.

2.3.1 Programme Outcomes

The following are the learning outcomes expected from the programme with respect to knowledge and understanding:

- Fundamental, cross-disciplinary principles and practices that underpin sustainable energy, water, waste generation and their industrial and research applications and environmental issues;
- A range of key, specialist information primarily focused on water, energy, wastes and associated environmental issues;
- Awareness of Ghana and international policy, regulations and incentive schemes put in place for energy providers and users;
- An appreciation of how industry utilises greater fundamental and applied research findings in the field of Environmental engineering;
- Specialist knowledge in the design of environmental systems and topical issues in sustainable uses of resources through taught modules and by undertaking a field-based research project;
- A range of relevant practical techniques and methodologies and their uses, together with appropriate procedures for analysis and presentation of environmental data.

2.3.2 Admission requirements

A SSSCE/WASSCE Applicants

To be admitted to any Engineering Degree programme, SSSCE Candidates should have Passes (A-D) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects as follows: Physics, Elective Mathematics, Chemistry/Applied Electricity/Applied Electronics. WASSCE Candidates should have Credit Passes (A1-C6) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects from Physics, Elective Mathematics, Chemistry/Applied Electricity/Applied Electronics. In addition, SSSCE and WASSCE Candidates should have at least a grade D and C6 in Social Studies, respectively.

B Foreign Applicants

In addition to the above, other qualifications acceptable for consideration for admission include International Baccalaureate (IB), IGCSE, GCSE, American Grade 13 examinations and other external qualifications which have equivalences to the WASSCE/SSSCE and the GCE (A Levels).

C Foreign certificates shall be referred to NAB for evaluation
International students whose first language is not English are required to have one of the following English language qualifications before they can register on the programme. However, applicants from English speaking countries may have these requirements waived.

- IELTS 6.0 (no less than 5.0 in any element)
- TOEFL paper-based 550 (no less than 4.0 in TWE)
- TOEFL IBT 79 (no less than 17 in any element)

**D Mature Students’ Entry**

Mature students entry avenues to tertiary education provide opportunities for people who could not do so earlier in their lives to further their education at the tertiary level after some years in the workplace (preferably, the formal workplace). Such applicants should normally not exceed 5% (for Public Tertiary Educational Institutions) and 20% (for Private Tertiary Educational Institutions) of the total admissions of an institution in a given academic year. The applicant must:

- be at least 25 years old by 1st September of the academic year one wants to enrol;
- show proof of age with birth certificate or any legitimate documentary proof of birth date which is at least 5 years old at the time of application;
- provide introductory letter from employer or show any other proof of employment;
- pass Mature Students’ Entrance Examinations conducted by UENR (English Language, Mathematics and an Aptitude Test). In lieu of such examinations, the applicant should show proof of credit passes in English and Mathematics in SSSCE/WASSCE or any other nationally recognized standard High School level examinations (for qualifications from countries outside WAEC’s NAB should be consulted.

**E Professional and Post-Diploma Applicants**

Candidates in this category must possess:

- A Diploma or Higher National Diploma (HND) or its equivalence in a relevant programme from a recognised institution (e.g. electrical, chemical, mechanical, civil, material etc);
- Must pass an interview;
- Two years post qualification working experience;

Candidates with HND/relevant professional or diploma certificates and who obtained **First class or Second class upper honours** will enter at level 300. Those with **Second class lower honours or pass** will enter at level 200.

2. 3. 3 Duration and structure
The minimum period for completion of the Bachelor’s programmes shall be 8 semesters and the maximum shall be 12 semesters. The University may adjust this duration to satisfy new programmes as approved by the Academic Board and the Council. These minimum and maximum periods are calculated from the day of first registration.

2.3.4 Requirements for Bachelor Graduation

A student shall be deemed to have satisfied the requirements for graduation, if:

i. s/he has satisfied all General University and Faculty requirements;

ii. s/he has accumulated the minimum number of credits required by the School or Department, including core and prescribed electives.

2.3.5 Job Opportunities

Upon the successful completion of the programme, students can gain employment in but not limited to the under listed institutions/organizations/companies:

k) Ministry of Energy

l) Energy Commission

m) Forestry Commission

n) Mining companies

o) Water companies

p) Waste Management Companies

q) NGOs working in the water and the environment sectors

r) Ministry of Land and Natural Resources

s) Municipal and District Assemblies

t) Private Renewable Energy Companies

u) Environmental Protection Agency

v) Ministry of Environment, Science and Technology

w) Teaching and Research institutions

2.4 Bachelor of Science (Mechanical Engineering)

The Mechanical Engineering Programme was introduced in the 2013/2014 academic year to admit its first batch of students who met the general university admission requirements as well as department admission requirements. The programme has been designed to produce the next generation of mechanical engineers with the necessary knowledge and skills to provide cutting edge solutions to everyday issues confronting society. In addition, students will be equipped with the necessary engineering tools and entrepreneurial skills that will make them highly integral and useful for industries in Ghana in particular and the world at large.
Four main sections or areas of specializations will be established under the Mechanical Engineering Program. The four sections are: (1) Thermofluids and Energy Systems Engineering; (2) Applied Mechanics; (3) Automobile Engineering and (4) Design and Manufacturing Engineering. Courses administered in these four sections will help to train and develop the students with multidisciplinary and pragmatic approach of developing engineering solutions to meet the challenges of everyday life. Students enrolled in the mechanical engineering programme from first year to third year will have the opportunity to study basic core courses in all the four main sections. However, in the final year, students will be allowed to select only one section for specialization that will define the student’s unique area of interest.

2.4.1 Admission requirements

A  SSSCE/WASSCE Applicants

To be admitted to any Engineering Degree programme, SSSCE Candidates should have Passes (A-D) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects including Elective Mathematics and Physics/Applied Electricity. WASSCE Candidates should have Credit Passes (A1-C6) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects including Elective Mathematics and Physics/Applied electricity. In addition, SSSCE and WASSCE Candidates should have at least a grade D and C6 in Social Studies, respectively.

B  Foreign Applicants

i.  Required subjects for Sciences: English, Mathematics, Biology/Agriculture, Physics and Chemistry, Further Mathematics and a pass in one arts subject

ii.  Other Qualifications: Other qualifications acceptable for consideration for admission include International Baccalaureate (IB), IGCSE, GCSE, American Grade 13 examinations and other external qualifications which have equivalences to the WASSCE/SSSCE and the GCE (A Levels).

International students whose first language is not English are required to have one of the following English language qualifications before they can register on the programme. However, applicants from English speaking countries may have these requirements waived.

- IELTS 6.0 (no less than 5.0 in any element)
- TOEFL paper-based 550 (no less than 4.0 in TWE)
- TOEFL IBT 79 (no less than 17 in any element)

C  Mature Students

Must be at least 25 years old by 1st September of the academic year one wants to enrol. Original results slip (O & A Level/SSSCE/WASSCE are required. Candidates must have passes in core subjects including English, Mathematics and Integrated Science and three elective science subjects including chemistry,
physics/Applied Electricity and Mathematics. Mature student applicants must pass UENR entrance examination and or interview.

D Professional and Post-Diploma Applicants
Candidates in this category must possess:

- A Diploma or Higher National diploma or its equivalence in a relevant programme from a recognised institution (e.g. electrical, chemical, mechanical, civil, material etc);
- Must pass an interview;
- Two years post qualification working experience;

Candidates with similar/relevant professional or diploma certificates and who obtained First class or second class honours will enter at level 300. Those with pass and second class honours will enter at level 200.

2.4.2 Duration and structure
The minimum period for completion of the Bachelor’s programmes is 8 semesters and the maximum shall be 12 semesters. The University may adjust this duration to satisfy new programmes as approved by the Academic Board and the Council. These minimum and maximum periods are calculated from the day of first registration.

2.4.3 Requirements for Bachelor Graduation
A student shall be deemed to have satisfied the requirements for graduation, if:

i. s/he has satisfied all General University and Faculty requirements;
ii. s/he has accumulated the minimum number of credits required by the Faculty, including core and prescribed electives.

2.4.4 Job Opportunities
Students after successful completion of the Mechanical Engineering Program can gain employment in industries not limited to the under listed institutions/organizations/companies:

a) Toyota Ghana Company Limited
b) Baker Hughes, Ghana
c) Mining Companies (e.g. AngloGold Companies, Newmont Gold; Ghana Manganese Company etc
d) Oil Companies e.g. Tullow Company Limited, Tema Oil Refinery (TOR)
e) Technip, Ghana
f) Schlumberger, Ghana
g) Unilever
h) VALCO
i) Juaben Oil Mills
j) Ghana Coca Cola Company  
k) Log and Lumber Limited (LLL)  
l) Volta River Authority (VRA)  
m) Ghana Grid Company (GRIDCo)  
n) Ministry of Energy  
o) Energy Commission  
p) Environmental Protection Agency  
q) Ministry of Environment, Science and Technology  
r) Teaching and Research Institutions  
s) Genser Power Ghana Limited  
t) Communications Industries (MTN, Tigo, Vodafone etc)  
u) Aluworks Limited Ghana  
v) Oil distribution companies (e.g. Shell Ghana Limited, Total, Goil etc)  
w) Ghana Gas Company  
x) Ghana Police  
y) Ghana Army

2.5 Bachelor of Science (Electric and Electronic Engineering)

The four-year BSc Electrical & Electronic Engineering programme was introduced in the 2013/2014 academic year with the aim of producing graduates with firm grounding in the principles at the heart of the subject, through teaching, practical work, and projects which foster innovation and creativity, supported by excellent ICT and laboratory teaching facilities.

The programme has been designed in response to a recognized need from industry for highly skilled Electrical & Electronic Engineers who have a detailed knowledge, appreciation and fundamental understanding in Communications & Networks, Integrated Circuits & Embedded Systems, Control, Intelligent Systems & Robotics, Signal Processing, Microelectronics Technologies & Devices, Microwave and RF, Power and Energy Systems. The availability of such highly skilled human resource will rapidly enhance Ghana’s drive to industrialise the economy. The programme revolves around a core electrical & electronic energy engineering curriculum that provides a broad but balanced framework for power systems and machines, electronics and communications, automation and control. The four-year duration of the course makes it possible to include specialist electrical & electronic engineering courses.

During their senior years of study (third and final years), students may choose to specialize in electrical or electronic engineering through their selection of elective modules. Students who specialize in electrical engineering may select elective modules which concentrate on:

- Electrical Machines
- Power Systems analysis and Protection
- Plant Automation and Control
- Renewable Energy Systems

Others who choose electronic engineering may select elective modules which concentrate on:

- Communications Systems & Networks
- Integrated Circuits & Embedded Systems
- Intelligent Systems & Robotics
- Signal Processing

The educational and professional objectives of the BSc. Electrical & Electronic Engineering programme are to train graduates who have the following attributes:

1. **Technical skills:** are technically competent to solve complex problems in electrical & electronic engineering and can adapt effectively in a fast changing environment
2. **Critical thinking:** are able to critically think, analyse and make decisions that give due consideration to global issues in business, ethics, society and the environment
3. **Leadership, team building:** are able to communicate effectively, act with integrity, and have the inter-personal skills needed to engage in, lead, and nurture diverse teams
4. **Attitude:** are committed to lifelong learning, research oriented, resourceful and embrace global challenges and opportunities to make a positive impact in society.

2.5.1 **Programme Outcomes**

By the end of the BSc Electrical & Electronic Engineering programme, the student will have demonstrated through essay writing, written and numerical examination, simulation and oral presentation, comprehensive academic knowledge, ability and practical skills related to integrated approach to design of power, control and electronic communication systems, both in theory and in practice. The following are the learning outcomes expected from the programme with respect to knowledge and understanding:

- **A1.** The fundamental, cross-disciplinary principles and practices that underpin power generation and its industrial and research applications.
- **A2:** Knowledge of a basic core of electrical engineering principles necessary to analyze electrical and electronic devices, software, and systems.
- **A3:** An appreciation of how industry utilises greater fundamental and applied research findings in the field of electrical & electronic engineering.
- **A4:** Specialist knowledge in the design of power, control and electronic communication systems through taught modules and by undertaking a research project.
• A5: A range of relevant practical techniques and methodologies and their uses, together with appropriate procedures for analysis and presentation of energy generation and consumption data.
• A6: An ability to apply knowledge of mathematics, science and engineering to the solution of complex engineering problems.

2.5.2 General Admission Requirements

A SSSCE/WASSCE Applicants
To be admitted to any Engineering Degree programme, SSSCE Candidates should have Passes (A-D) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects as follows: Physics, Elective Mathematics, Chemistry/Applied Electricity/Applied Electronics. WASSCE Candidates should have Credit Passes (A1-C6) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects Physics, Elective Mathematics, Chemistry/Applied Electricity/Applied Electronics. In addition, SSSCE and WASSCE Candidates should have at least a grade D and C6 in Social Studies, respectively.

B Foreign Applicants
In addition to the above, other qualifications acceptable for consideration for admission include International Baccalaureate (IB), IGCSE, GCSE, American Grade 13 examinations and other external qualifications which have equivalences to the WASSCE/SSSCE and the GCE (A Levels). Foreign certificates shall be referred to NAB for evaluation. International students whose first language is not English are required to have one of the following English language qualifications before they can register on the programme. However, applicants from English speaking countries may have these requirements waived.

• IELTS 6.0 (no less than 5.0 in any element)
• TOEFL paper-based 550 (no less than 4.0 in TWE)
• TOEFL IBT 79 (no less than 17 in any element)

C Mature Students’ Entry
Mature students entry avenues to tertiary education provide opportunities for people who could not do so earlier in their lives to further their education at the tertiary level after some years in the workplace (preferably, the formal workplace). Such applicants should normally not exceed 5% (for Public Tertiary Educational Institutions) and 20% (for Private Tertiary Educational Institutions) of the total admissions of an institution in a given academic year. The applicant must:

• be at least 25 years old by 1\textsuperscript{st} September of the academic year one wants to enrol;
• show proof of age with birth certificate or any legitimate documentary proof of birth date which is at least 5 years old at the time of application;
provide introductory letter from employer or show any other proof of employment;

pass Mature Students’ Entrance Examinations conducted by UENR (English Language, Mathematics and an Aptitude Test). In lieu of such examinations, the applicant should show proof of credit passes in English and Mathematics in SSSCE/WASSCE or any other nationally recognized standard High School level examinations (for qualifications from countries outside WAEC’s NAB should be consulted.

D Professional and Post-Diploma Applicants

Candidates in this category must possess:

- A Diploma or Higher National Diploma (HND) or its equivalence in a relevant programme from a recognised institution (e.g. electrical, chemical, mechanical, civil, material etc);
- Must pass an interview;
- Two years post qualification working experience;

Candidates with HND/relevant professional or diploma certificates and who obtained First class or Second class upper honours will enter at level 300. Those with Second class lower honours or pass will enter at level 200.

2.5.3 Duration of Study

The minimum period for completion of the Bachelor’s programmes shall be 8 semesters and the maximum shall be 12 semesters. The University may adjust this duration to satisfy new programmes as approved by the Academic Board and the Council. These minimum and maximum periods are calculated from the day of first registration.

2.5.4 Requirements for Bachelor Graduation

A student shall be deemed to have satisfied the requirements for graduation, if:

a. s/he has satisfied all General University and School requirements;
b. s/he has accumulated the minimum number of credits required by the School and Department, including core and prescribed electives.

2.5.5 Job Opportunities

After the successful completion of the programme, students can gain employment in but not limited to the under listed institutions/organizations/companies:

a) Ministry of Energy
b) Energy Commission
c) Electricity Utility Companies
d) Electric Power Generation Companies  
e) Telecommunication Companies  
f) Municipal and District Assemblies  
g) Private Renewable Energy Companies  
h) Manufacturing Companies  
i) Information and Communication Technology Firms  
j) Ministry of Environment, Science and Technology  
k) Teaching and Research institutions  
l) National Communications Authority  
m) Ghana Civil Aviation Authority
2.3 School of Sciences

2.3.1 Background
The School of Sciences at UENR shall provide first class, cutting edge education that offers students the opportunity to discover and fulfil their potentials in various fields of science. The School of Sciences is poised to prepare students for careers in a rapidly changing national and international market. The School of Sciences, in line with the University’s vision and mission, shall at all time provide an interdisciplinary and multi-dimensional curriculum that is capable of infusing into students the skills and knowledge in entrepreneurship.

The modern world economy has been shaped by scientific and technological advancement, resulting in the emergence of the Knowledge Economy. No country has been able to modernize its economy without reliance on scientific and technological inputs on a massive scale. The importance of science and technology as the main tool for economic and social development has been stressed in several major world forums and documents.

The government of Ghana has recognized the weak Science and Technology governance structure of Ghana as a major obstacle to successful entrepreneurship. Ghana needs to rapidly train and create the critical mass of scientists and technologists to enable her provide and manage emerging industries and take full advantage of the global technological explosion with the required human capital. The country needs to modernize and re-equip existing scientific, technological and industrial establishments to meet current challenges and cope with current and future global trends.

2.3.2 Vision
The vision is to become a centre of academic excellence that provides students with competitive skills and professional leadership within the sciences sector.

2.3.3 Mission
The School of Sciences shall provide trained leadership in the sciences for the socio economic development needs of Ghana and Africa.

2.3.4 Objectives
The ultimate goal of the School is to become a centre of excellence for the training of high calibre science graduates, critical to the industrial and economic development needs of Ghana and Africa.

2.4 Departments
The School of Sciences is proposed to comprise six (6) Departments:

- Department of Computer Science and Informatics
- Department of Mathematics and Statistics
• Department of Chemistry
• Department of Engineering Physics
• Department of Biology
• Department of Environmental Sciences

Whilst each Department offers programmes leading to the award of undergraduate and post-graduate degrees, to strengthen their link with industry, all Departments will offer short courses for continued professional development. These will be offered under part-time and flexible distance learning modes of study. The overall objective will be to provide practical and theoretical grounding in technologies and wider knowledge relevant to the energy sector for engineers and other professionals.
2.5 Bachelor of Science (Computer Science)

The four-year Bachelor of Science in Computer Science programme was introduced in the 2013/2014 academic year with the aim of fully integrating both the theoretical and practical technologies of computer science to meet the changing demands of the information, communication and technology industry particularly in Ghana and the West Africa sub-region. In today's fast changing World, building, maintaining and enhancing global competitiveness requires the talents of well-rounded, holistic individuals with technical knowledge and business acumen to address challenging issues.

The overall aim of the Computer Science Programme at Honours Degree level is to provide an education which will produce graduates who are equipped to follow a productive career as professionals in the computing industry. The programme has been designed in response to a recognized need from the information, communication and technology industry for university graduates who have a detailed knowledge, appreciation and fundamental understanding of the various computers, their production, harnessing, conversion, and environmental concerns associated with the use of IT.

The Department of Computer Science and Information Systems is concerned with the theory, design, development and application of computer systems and information processing techniques. The mission of the Department is to educate undergraduate and graduate majors as well as the broader community in the fundamental concepts of the computing discipline, to create and disseminate computing knowledge and technology, and to use our expertise in computing to help society solve problems.

2.5.1 Programme Outcomes

Upon the successful completion of the programme students will be able to:

(i) demonstrate a sound understanding of the fundamental principles, theories and practices underlying both the computing industry and computing as an academic discipline;

(ii) contribute to the building, documentation, testing, management and evaluation of a range of computer applications;

(iii) demonstrate a high level of expertise in the use of a range of computer hardware and software systems;

(iv) select and avail themselves of a range of structured and integrated methods in the design and engineering of computer applications;

(ix) demonstrate an understanding of a range of business, administrative and professional environments within which computers are used and of the implications of their use for individuals, organisations and society;

(v) demonstrate an understanding of the principles underlying the design and performance of computer hardware and software systems;
(vi) effectively communicate their ideas, proposals and designs to colleagues in the computing industry and to potential computer users with a range of levels of expertise;
(vii) function effectively as part of a project team;
(viii) carry out and manage a directed programme of work with minimal supervision;
(x) appreciation the role and responsibilities of the professional and the culture of rapid change and development in the computing industry;
(xi) compare and critically evaluate a range of integrated methods currently in use in the development of computer applications;
(xiii) use and critically evaluate a range of formal methods in the design and engineering of computer applications;
(xiv) demonstrate an appreciation of current research and development in a selected range of aspects of the theory and engineering of computer applications;
(xv) demonstrate self-reliance in the use of the subject literature and other relevant sources of information.

2.5.2 Admission requirements

A SSSCE/WASSCE Applicants

To be admitted to any Engineering Degree programme, SSSCE Candidates should have Passes (A-D) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects from Chemistry, Physics/Applied Electricity and Mathematics. WASSCE Candidates should have Credit Passes (A1-C6) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science subjects from Chemistry, Physics/Applied electricity and Mathematics. In addition, SSSCE and WASSCE Candidates should have at least a grade D and C6 in Social Studies, respectively.

B Foreign Applicants

i. Required subjects for Sciences: English, Mathematics, Further Mathematics Biology/Agriculture, Physics and Chemistry and a pass in one arts subject

ii. Other Qualifications: Other qualifications acceptable for consideration for admission include International Baccalaureate (IB), IGCSE, GCSE, American Grade 13 examinations and other external qualifications which have equivalences to the WASSCE/SSSCE and the GCE (A Levels).

International students whose first language is not English are required to have one of the following English language qualifications before they can register on the programme. However, applicants from English speaking countries may have these requirements waived.

- IELTS 6.0 (no less than 5.0 in any element)
• TOEFL paper-based 550 (no less than 4.0 in TWE)
• TOEFL IBT 79 (no less than 17 in any element)

B Mature Students’ Entry
Mature students entry avenues to tertiary education provide opportunities for people who could not do so earlier in their lives to further their education at the tertiary level after some years in the workplace (preferably, the formal workplace). Such applicants should normally not exceed 5% (for Public Tertiary Educational Institutions) and 20% (for Private Tertiary Educational Institutions) of the total admissions of an institution in a given academic year. The applicant must:

• be at least 25 years old by 1st September of the academic year one wants to enrol;
• show proof of age with birth certificate or any legitimate documentary proof of birth date which is at least 5 years old at the time of application;
• provide introductory letter from employer or show any other proof of employment;
• pass Mature Students’ Entrance Examinations conducted by UENR (English Language, Mathematics and an Aptitude Test). In lieu of such examinations, the applicant should show proof of credit passes in English and Mathematics in SSSCE/WASSCE or any other nationally recognized standard High School level examinations (for qualifications from countries outside WAEC’s NAB should be consulted.

C Professional and Post-Diploma Applicants
Candidates in this category must possess:

• A Diploma or Higher National Diploma (HND) or its equivalence in a relevant programme from a recognised institution (e.g. electrical, chemical, mechanical, civil, material etc);
• Must pass an interview;
• Two years post qualification working experience;

Candidates with HND/relevant professional or diploma certificates and who obtained **First class or Second class upper honours** will enter at **level 300**. Those with **Second class lower honours or pass** will enter at **level 200**.

2.5.3 Duration and structure
The minimum period for completion of the Bachelor’s programmes shall be 8 semesters and the maximum shall be 12 semesters. The University may adjust this duration to satisfy new programmes as approved by the Academic Board and the Council. These minimum and maximum periods are calculated from the day of first registration.

2.5.4 Examination and Requirements for Graduation
A student shall be deemed to have satisfied the requirements for graduation, if:

i. s/he has satisfied all General University and School requirements;
ii. s/he has accumulated the minimum number of credits required by the School, including the department of computer science prescribed courses.

2.5.5 Job Opportunities
Upon the successful completion of the programme, students can gain employment in but not limited to the under listed institutions/ organizations/ companies:

a) Ministry of Environment, Science and Technology
b) Ministry of Information
c) Banks in Ghana
d) NGOs
e) Ministry of Communication
f) Municipal and District Assemblies
g) MTN, Ghana
h) Vodafone, Ghana
i) Ministry of Environment, Science and Technology
j) Teaching and Research institutions.
2.6 Bachelor of Science (Mathematics)

The four-year Bachelor of Science in Mathematics programme in the Department of Mathematics and Statistics was introduced in the 2013/2014 academic year with the aim of training a well practical and knowledge based mathematicians to meet the high demands of qualified science and mathematicians in industry particularly in Ghana and the West Africa sub-region.

The programme has been designed to link and solve real life problem in the world. The Department is concerned with equipping students with the basic concept of mathematics and its applications to solving problems. The mission of the Department is to train undergraduate and graduate majors as well as the broader community in the fundamental concepts of mathematics, to create and disseminate mathematical knowledge and technology, and to use this knowledge to help society solve problems.

Mathematics prepares graduates for a career in a diverse range of areas, and as science and technology become integrated into more and more aspects of our lives, employers are clamouring for employees with mathematical skills and problem-solving abilities. The overall aim of the Mathematics programme at Honours Degree level is to provide an education which will produce graduates who are equipped to follow a productive career as professionals to be able to use the knowledge acquired to work in almost all field of work.

This course seeks to prepare students to use mathematics as a tool to solve real world problem, analyse data and interpret it, model some of the challenges we face in our industries and health sector and serve as a preparatory ground for any profession in the higher level of learning. We are poised to produce graduate who will be self-motivated to solve real life problems. The Department educates its graduates in a broad range of modern mathematics to:

- Produce graduates with strong ability to solve practical problems
- Apply mathematics to other critical areas
- Create rigorous mathematical arguments
- Provide a rigorous study of the theory and principles underlying modern applications of mathematics
- Link the rigorous study of the theory and principles underlying modern applications of mathematics to real issues in our daily lives.

2.6.1 Programme Outcomes

Upon successful completion of their studies, students will be able to:

- apply critical and analytical reasoning and present logical and concise arguments;
- develop problem solving skills;
- assimilate and manipulate substantial bodies of knowledge;
- understand and present sophisticated mathematical arguments and rigorous proofs;
• comprehend high levels of abstraction in the study of pure mathematics;
• apply physical insight and mathematical techniques to the solution of problems in applied mathematics and real live situations;
• possess enhanced investigative, communication and presentation skills; and
• use mathematics as a tool to help solve numerous problems faced in our country.

2.6.2 Admission requirements

A SSSCE/WASSCE Applicants
To be admitted to any Engineering Degree programme, SSSCE Candidates should have Passes (A-D) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science; and three (3) elective science/arts/business subjects including elective Mathematics (from Chemistry, Physics/Applied Electricity and Mathematics for science students; two elective arts or business subjects and elective Mathematics for arts and business students). WASSCE Candidates should have Credit Passes (A1-C6) in six (6) subjects comprising core subjects, including English Language, Mathematics and Integrated Science or Social Studies; and three (3) elective science subjects including Elective/Further Mathematics. In addition, SSSCE and WASSCE Candidates should have at least a Pass in the 4th core subject.

B Foreign Applicants
i. Required subjects for Sciences: English, Mathematics, Biology/Agriculture, Physics and Chemistry, Further Mathematics for Physical Sciences and a pass in one arts subject
ii. Other Qualifications: Other qualifications acceptable for consideration for admission include International Baccalaureate (IB), IGCSE, GCSE, American Grade 13 examinations and other external qualifications which have equivalences to the WASSCE/SSSCE and the GCE (A Levels).

International students whose first language is not English are required to have one of the following English language qualifications before they can register on the programme. However, applicants from English speaking countries may have these requirements waived.
• IELTS 6.0 (no less than 5.0 in any element)
• TOEFL paper-based 550 (no less than 4.0 in TWE)
• TOEFL IBT 79 (no less than 17 in any element)

C Mature Students’ Entry
Mature students entry avenues to tertiary education provide opportunities for people who could not do so earlier in their lives to further their education at the tertiary level after some years in the workplace (preferably, the formal workplace). Such applicants should normally not exceed 5% (for Public Tertiary Educational Institutions) and 20% (for Private Tertiary Educational Institutions) of the total admissions of an institution in a given academic year. The applicant must:
• be at least 25 years old by 1st September of the academic year one wants to enrol;
• show proof of age with birth certificate or any legitimate documentary proof of birth date which is at least 5 years old at the time of application;
• provide introductory letter from employer or show any other proof of employment;
• pass Mature Students’ Entrance Examinations conducted by UENR (English Language, Mathematics and an Aptitude Test). In lieu of such examinations, the applicant should show proof of credit passes in English and Mathematics in SSSCE/WASSCE or any other nationally recognized standard High School level examinations (for qualifications from countries outside WAEC’s NAB should be consulted.

D Professional and Post-Diploma Applicants

Candidates in this category must possess:
• A Diploma or Higher National Diploma (HND) or its equivalence in a relevant programme from a recognised institution (e.g. electrical, chemical, mechanical, civil, material etc);
• Must pass an interview;
• Two years post qualification working experience;

Candidates with HND/relevant professional or diploma certificates and who obtained First class or Second class upper honours will enter at level 300. Those with Second class lowerhonours or pass will enter at level 200.

2.6.3 Duration and structure

The minimum period for completion of the Bachelor’s programmes shall be 8 semesters and the maximum shall be 12 semesters. The University may adjust this duration to satisfy new programmes as approved by the Academic Board and the Council. These minimum and maximum periods are calculated from the day of first registration.

2.6.4 Examination and Requirements for Graduation

A student shall be deemed to have satisfied the requirements for graduation, if:
 a) s/he has satisfied all General University and School requirements;
 b) s/he has accumulated the minimum number of credits required by the School, including core and prescribed electives.

2.6.5 Job Opportunities

Employers look for graduates to have certain skills. These include problem solving, thinking logically and high level quantitative and numerical skills. A degree in Mathematics opens doors to many sectors and career paths. These include:

• Finance
• Accounting
• Banking
• Actuarial Profession
• Tax
• Pensions
• Risk Management
• Computing e.g. Web Developer, Software Engineer
• Retail
• ICT
• Teaching and Academia
• Insurance
• Economist
• Engineering Analyst
• Marketing Research Analyst
• Meteorologist
• Numerical Analyst
• Operations Research
• Statistician
• Systems Analyst etc.