DEPARTMENT OF CIVIL ENGINEERING

FACULTY OF ENGINEERING

AHMADU BELLO UNIVERSITY, ZARIA

DEPARTMENTAL HANDBOOK FOR UNDERGRADUATE STUDENTS

2025

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1.0 INTRODUCTION

1.1 Overview

Engineering programmes of Ahmadu Bello University, Zaria was first founded in the Nigerian College of Arts, Science and Technology (N.C.A.S.T.), Zaria, in 1955, which in 1957 became the Faculty of Engineering of the University College, Ibadan. Students were then trained for the B.Sc. (Eng.) degrees of the University of London under the scheme of Special Relation; the first London Degrees being awarded In October, 1960. The Faculty of Engineering of the Ahmadu Bello University, Zaria, began in October, 1962 with three (3) Departments namely, Civil, Electrical and Mechanical Engineering. Students registered thereafter followed courses of study for the honours degree in Engineering of the Ahmadu Bello University, Zaria. The courses for the special relation examinations for the University of London Degree came to an end in June, 1965.

1.2 Philosophy

The Bachelor of Engineering and Technology B.Eng/B.Tech degree programme in Civil Engineering is based on the philosophy that the rate at which a nation progresses technologically is determined to a great extent by the size, quality, motivation and orientationof its science and engineering workforce. The programme should, thus, seek to train civil engineers who can best contribute to national development. For this, they must be equippedwith the tools to understand, analyze, design and construct all possible physical facilities thatcan possibly promote appropriate development by conceiving and adapting techniques, processes and materials as necessary. In consequence of the above, the programme is structured in such a way that students will have opportunity to take courses that will provide a basic understanding of all areas of civil engineering practice.

Civil engineers plan, design and supervise construction of many essential facilities and structures such as bridges, dams, roads, buildings, ports, etc. Included in the study of civilengineering are courses in water resources and environmental engineering that are directlyrelated to the solution of hazardous waste and pollution problems, providing potable and economical water supply systems, and maintaining a safe environment.

1.3 Objectives of the Programme

The objective of the Civil Engineering programme is to train civil engineers who are equippedwith a broad-based experience ranging from engineering analysis and design to laboratory testing and experimentation in all areas of Civil Engineering with further concentration in thelater years on, at least, several of the specialties. They would be equipped with:

1. a good grounding in basic engineering courses;
2. a good grasp of the essential application and utility courses;
3. a thorough understanding of the experimental and practical bases for the relevant theoretical engineering principles;
4. a good knowledge of all the various branches of civil engineering with further specialization;
5. construction engineering and management skills (combining engineering and management skills to complete construction projects designed by other engineers

and architects);

6. geotechnical engineering skills (analysis of soils and rock in support of engineering projects/applications - building foundations, earthen structures, underground facilities, dams, tunnels, roads.);
7. structural engineering skills (design of all types of stationary structures - buildings, bridges,dams);
8. Surveying skills (measure/map the earth's surface in support of engineering design and construction projects and for legal purposes - locating property lines.);
9. transportation engineering skills (design of all types of transportation facilities/systems – streets/highways, airports, railroads, other mass transit, harbours/ports);
10. water resource skills (control and use of water, focusing on flood control, irrigation, raw water supply, and hydroelectric power applications);
11. environmental engineering (air pollution control, hazardous waste treatment and disposal,recycling and solid waste disposal, sanitary engineering (municipal and industrial water and wastewater treatment);
12. substantial practical skills for tackling real life engineering problems; and
13. Knowledge of entrepreneurial and management principles upon which enterprisingprofessional careers can be built.

2.0 INTENDED LEARNING OUTCOMES FOR THE PROGRAMME

2.1 Learning Outcomes (LOs)

1. Apply core principles of mathematics, physics, and engineering science to solve complex problems in civil engineering, with emphasis on Nigerian environmental and infrastructural contexts.
2. Design, analyse, and evaluate sustainable infrastructure—including highways, bridges, buildings, and foundations—using appropriate engineering codes, standards, and technologies.
3. Assess and optimize concrete mix designs, material properties, and performance characteristics for various structural applications, including durability and sustainability in tropical climates.
4. Design and manage efficient, safe, and inclusive highway and transportation systems that respond to the World's urbanization, traffic growth, and rural accessibility needs.
5. Design and manage efficient, safe, and inclusive highway and transportation systems that respond to Nigeria and world's urbanization, traffic growth, and rural accessibility needs.
6. Apply structural mechanics and computational tools to design safe and resilient structures, considering load combinations, material behaviour, and failure mechanisms.
7. Employ modern engineering software, digital tools, and ICT platforms for modelling, simulation, and project documentation in civil engineering practice.
8. Exhibit ethical behaviour, leadership, and responsibility in engineering decision-making, project execution, and stakeholder engagement, in line with Nigerian regulatory and cultural expectations.
9. Conduct applied research to address local engineering challenges, such as material scarcity, climate resilience, and infrastructure deterioration, contributing to national development.
10. Demonstrate readiness for lifelong learning, professional certification, and entrepreneurial ventures in civil engineering, with the ability to adapt to evolving industry demands.

2.2 Programme Outcome (POs)

Programme Outcome	Programme Outcome abilities
PO1: Engineering Knowledge	Ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of developmental and complex engineering problems
PO2: Problem Analysis	Ability to identify, formulate, research literature and analyse developmental and complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences
PO3: Design/Development of Solutions	Ability to proffer solutions for developmental or complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations
PO4: Investigation	Ability to conduct investigation into developmental or complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions
PO5: Modern Tool Usage	Ability to create, select and apply appropriate techniques, resources and modern engineering and ICT tools, including prediction, modelling and optimization to developmental and complex engineering activities, with an understanding of the limitations
PO6: The Engineer and Society	Ability to apply reasoning informed by contextual knowledge including Humanities and Social Sciences to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice
PO7: Environment and Sustainability	Ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development
PO8: Ethics	Ability to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice, including adherence to the COREN Engineers' Codes of Conduct
PO9: Individual and Team work	Ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings
PO10: Communication	Ability to communicate effectively on developmental or complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions

PO11: Project Management	Ability to demonstrate knowledge and understanding of engineering, management and financial principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments
PO12: Lifelong Learning	Ability to recognize the need for, and have the preparations and ability to engage in independent and lifelong learning in the broadest context of technological and social changes

2.3 Programme Educational Objectives (PEOs)

The PEOs developed for the Civil Engineering programme are **broad, long-term goals** describing what the graduates are expected to achieve **within a few years (typically 3–5 years) after graduation**. They are statements about **career and professional accomplishments**, **ethical practice**, and **societal contributions** rather than immediate skills.

For Civil Engineering: *"Graduates will establish themselves as competent civil engineers capable of designing sustainable infrastructure and contributing positively to society while adhering to professional ethics."*

PEO 1: Professional Practice, Technical Expertise and ICT Skills development
Graduates will demonstrate competence in applying principles of civil engineering to analyse, design, and implement infrastructure systems that meet national and global standards. And also be able to use the basic knowledge of ICT to develop simple computer programmes for the analysis and design of civil engineering structural elements.

PEO 2: Professional integrity & Societal Responsibility
Graduates will uphold the highest standards of professional ethics, safety practices in civil engineering works, and social responsibility, contributing to sustainable development and addressing societal challenges in Nigeria and beyond.

PEO 3: Lifelong Learning & Research and Innovation
Graduates will pursue continuous professional development, adapt to emerging technologies, and contribute to research and innovation in civil engineering and related fields. They will also have the ability to analyse and interpret data to develop and conduct appropriate experimentation, and using engineering judgement to draw conclusions.

PEO 4: Advanced study, Leadership & Teamwork

Graduates will have basic foundation to pursue postgraduate degrees or careers as researchers, educators or leaders in the field of civil engineering and thus will be able to demonstrate effective communication, teamwork, project management, and leadership skills in multidisciplinary and multicultural environments.

PEO 5: Project cost estimation, Entrepreneurship & Economic Development

Graduates will be able to conduct market surveys of materials used in civil engineering projects, analyse data collected from market survey and produce cost estimates for economic management of projects and also engage in entrepreneurial activities and contribute to national development through infrastructure delivery, consultancy, and engineering services aligned with Nigeria's economic goals.

Table 1: HEADS OF DEPARTMENT AND DATES

S/No.	NAME	DATE
1.	Professor A. M. Neville	1962-1963
2.	Professor A.H. Naylor	1963-1967
3.	Prof. J.A. Sandover	1967-1971
4.	Prof. D. A. El-Turabi	1971-1972
5.	Dr. P. Igharo	1972 - 1974
6.	Prof. S.O. Oleskiewicz	1974-1983
7.	Prof. A.O. Abatan	1983-1991
8.	Prof. Olusegun Adebisi	1991-1994
9.	Dr. Stephen Pinder Ejeh	1994-1998
10.	Dr. Kolawole Juwonlo Osinubi	1998 – 2002
11.	Dr. J. O. Afolayan	2002 – 2005
12.	Dr. Stephen Pinder Ejeh	2006 – 2010
13.	Dr. Idris Abubakar	2010 – 2014
14.	Prof. Yusuf Dada Amartey	2014 – 2018
15.	Prof. Jibrin Mohammed Kaura	2018 -2023
16.	Prof. Bilkisu Hassan Sada Amartey	2023 – Date

3.0 GENERAL REQUIREMENTS

3.1 Admission Requirements

Candidates are admitted into the degree programme in any of the following two ways:

1. Normal Admission
2. Direct Entry (DE)
3. Special Admission

3.1.1 Normal Admission

a. In order to be eligible for admission into the undergraduate (B. Eng. degree) programme, a candidate, in addition to satisfying the University general entry requirements, must obtain at least **Five (5) O' Level** (Senior Secondary School certificate Examinations or equivalent)

passes at credit level in subjects which must include **English**, **Mathematics**, **Physics** and **Chemistry** and having offered at **English**, **Mathematics**, **Physics** and **Chemistry** at **UTME**.

3.1.2 Direct Entry

Candidates who have satisfied above and in addition have passes in each of Mathematics, Physics and Chemistry at the GCE Advanced Level or equivalent may be admitted directly into the 200 Level of the undergraduate programme.

b. Candidates with **OND in Civil Engineering or any other course deemed acceptable equivalent** at **Upper Credit Level**, may be admitted directly into the 200 Level of the undergraduate programme.
c. Candidates with **HND (Civil Engineering)** may also be admitted into the **200 Level with minimum of lower credit or 300 Level with minimum of upper credit**

3.1.3 Special Admission

For candidates with higher than the stipulated minimum entry requirements, their qualifications shall be assessed and equated to the relevant courses. In such cases, Senate may, on the recommendation of the Faculty Board of Engineering permit the candidate to start at the appropriate level.

3.2 Duration of Programme

Candidates admitted into the degree programme as Normal Admission are required to spend 5 Years, while candidates admitted as Direct Entry (DE), are required to spend 4 Years while those for Special Admission spend 3 years.

3.3 Graduation requirements

The following regulations shall govern the conditions for the award of honours degree in Engineering and Technology:

1. Candidates admitted through the UTME mode shall have registered for a minimum of 50 and maximum of 180 units of courses during the 5 – year engineering degree programme. Such candidates shall have spent a minimum of ten academic semesters.
2. Candidates admitted through the Direct Entry mode shall have registered for minimum of 120 and maximum of 150 units of courses during a 4– year engineering degree programme. Such candidates shall have spent a minimum of eight academic semesters
3. The minimum and maximum credit load per semester is 15 and 24 credit units respectively.
4. A student shall have completed and passed all the Courses registered for, including all compulsory courses and such elective /optional courses as may be specified by the university/faculty or department; obtained a minimum Cumulative Grade Point Average (CGPA) specified by the university but not less than 1.00.
5. A student shall also have earned the 15 credit units of Students Industrial Work ExperienceScheme (SIWES), eight credit units of University General Study courses and four credit units of Entrepreneurship courses.
6. For the purpose of calculating a student's cumulative grade point average (CGPA) in order to determine the class of Degree to be awarded, grades obtained in ALL the courses registered,

whether compulsory or optional and whether passed or failed must be included in the computation. Even when a student repeats the same course once or more before passing it or substitutes another course for a failed optional course, grades scored at each and all attempts shall be included in the computation of the GPA.

Pre - requisite courses must be taken and passed before a particular course at a higher level. Furthermore, if a student fails to graduate at the end of normal academic session, he or she would not be allowed to exceed a total of 15 semesters in the case of students admitted through UTME and 13 semesters in the case of Direct Entry students.

Summary of the graduation requirements

S/N	Level	Total CU
1	100L	40
2	200L	36
3	300L	47
4	400L	32
5	500L	37
TOTAL		**192**

ENTRY LEVEL	GRADUATION CU
100L	**192**
200L (DE)	**152**
300L (SPECIAL)	**116**

4.0 THE COURSE CREDIT SYSTEM (CCS)

4.1 The Course Credit

The course units in the Department are organised on the course credit system per semester. A semester lasts for approximately 18 weeks, including the periods of registration and examinations provided that no less than 15 weeks are devoted to actual teaching. **One credit unit is the equivalent of 15 contact hours of classroom teaching or 30 hours of laboratory work.** Most of the course units in the Department carry the weight of 3 or 2 credit units, suggesting that they are taught for 45 or 30 hours in the semester or 3 or 2 one-hour periods per week. In courses with strong practical component, this means that there are 15 hours of teaching and 45 hours of practical to qualify for 2 credit units or 30 hours of teaching and 45 hours of practical for 3 credit unit courses. However, there are fewer 3 credit unit courses which suggest that more work is required to be done in 45 contact hours per semester or the equivalent in terms of practical and classroom teaching.

At the end of each semester, a final examination is administered and this constitutes 60% of the total score, while the remainder of 40% is usually made up by the continuous assessment.

4.2 Categories of Course

The courses within the Faculty are categorized as follows:

a. Core Courses
b. Cognate Courses
c. General Courses
d. Restricted electives
e. Unrestricted electives

f. Pre-requisite Courses

4.2.1 Core Courses

Core courses are central to the degree programme in view, and are normally offered by the Department offering the degree. They must constitute **NOT LESS** than 60% (i.e. 90 credit units) of all the course units that the student must offer to meet up with the requirements for graduation.

4.2.2 Cognate Courses

Cognate courses are prescribed courses from related fields offered by service departments, which are essential for understanding and appreciation of the student's major field. A student must pass all his cognate courses to be eligible for graduation.

4.2.3 General Courses

General courses are courses offered by the University to all students offered admission irrespective of degree program been pursued. A student must pass all his general courses to be eligible for graduation.

4.2.4 Restricted Electives

Restricted Electives are a set of courses from which a student is made to select one or more courses as the case may be. These courses may be from within or outside the Department but a student must pass the minimum required number of restricted elective courses (about 15% or 23 credit units) of all the course units required for the degree) to be eligible for graduation.

4.2.5 Unrestricted Electives

Unrestricted electives are courses, normally from outside the Department, which are opted for by the student in accordance with his or her own interest. These courses **MUST NOT** constitute more than 5% (i.e. 8 credit units) of the total courses units required for graduation but a student must pass the minimum required number of unrestricted elective courses to be eligible for graduation.

4.2.6 Pre-Requisite Courses

Pre-requisite courses are courses that must be passed before student can offer a higher level course.

4.3 Registration Guidelines

Registration of students offered provision admission into the university is conducted in a central location and last one or two weeks depending on the university calendar. Registration process commences with an interview in the faculty of Engineering and only those candidates who are cleared by the interviewing panel as indicated by a stamp and

signature of the Registrar/ Academic Secretary may then proceed with the next stage of the registration.

At the venue of the central registration, each department has a stand and the Dean of the Faculty and the Registration Officer from Academic Office will check and ensure that the student is on the admission list before issuing such a student with the University registration forms to complete. The originals of the following documents are also checked:

a) Admission letter and interview clearance
b) Academic certificates (SSCE 'O' Level, UTME, POST-UTME scores etc.) to confirm that the student fulfils the University, Faculty and Departmental entrance requirements.
c) Student's names should correspond with the once on the certificates.
d) Local Government Area Indigene letter
e) Birth certificate or declaration of age.

If certified with the qualification and the credentials, the Dean and the Admission Officer will sign the registration forms. The student then proceeds to the Student Affairs stand for hostel room allocation information on/off-campus accommodations and payment of all fees. Payment of fees is done online and can only be made after the student is given a matriculation/Registration number from the registration desk in his/her faculty. Thereafter, the student's details are uploaded onto the University portal. A short waiting period of some hours will have to be observed between issuance of matriculation/Registration number and uploading of student details on the portal before the MIS office in the Directorate of Academic Planning and Monitoring (DAPM) completes the task. Using your matriculation/Registration number you can printout from the portal details of the fees that is due for you to pay. You then proceed to any of the designated banks and pay the prescribed amount. The bank payment process will generate a transaction ID which you will use to confirm and finalise the payment on the portal. Note that this segment of payment does not include accommodation. Payment for accommodation requires slightly different process.

University identity card may then be issued to the bona-fide student of A.B.U by the Security Office on presentation of cash carbonized receipt clearly marked "A.B.U, Admission Only".

4.4 Examination Guidelines

4.4.1 Guidelines

Examinations are normally held at the end of each semester. Examinations may take the form of written papers, oral examinations, practical, the submission of projects, any combinations of these, or any other form as may be approved by the senate of the University. The continuous assessment of course work is normally included in determining the final score of any examination.

4.4.2 Eligibility

In order to be admitted to any examinations, a student must have been registered for the course to be examined and must have fulfilled any University requirements concerning

residence, attendance (75%), fees or other matters. At least 75% attendance is required in all classes, tutorials, laboratories etc to qualify to sit for semester examinations. The student must also have fulfilled any departmental requirements regarding satisfactory completion of any course work, practical, assignments, projects or other matters.

4.4.3 Conduct

1. A student shall be at the examination room at least thirty (30) minutes before the advertised time of the examination. A student is required to supply his own writing and drawing materials, calculator etc.
2. A student may be admitted up to fourty five (45) minutes after the start of the examination but he shall not be allowed extra time. If a student arrived later than fourty five (45) minutes after the start of the examination an Invigilator may at his/her discretion admit him/her if he/she is satisfied that the student had good reason for his lateness. The Invigilator shall report the circumstances to the Faculty Examination Officer who shall advise the Board of Examination which shall decide whether to accept the student's paper.
3. A student may be permitted by an invigilator to leave the examinations room during the course of an examination; but that:
    a) No student shall normally be allowed to leave during the first hour or last fifteen (15) minutes of the examinations.
    b) A student must hand over his script to the invigilator before leaving if he does not intend to return.
    c) A student who leaves the examination room shall not be re-admitted unless throughout the period of his absence, he has been continually under the supervision of an invigilator or security personnel.
4. A student shall bring his identify card and examination card to each examination and display it in a prominent position on his desk.
5. Each student shall complete an attendance form or any form of attendance bearing his registration number, name, booklet number and signature which shall be collected by the Invigilator of each examination.
6. During an examination, no student shall speak to any other student, or except as essential, to the invigilator, or make any noise or disturbance.
7. No book, printed paper, or written document or unauthorized aid may be taken into an examination hall by any student, except as may be stated in the rubrics of any examination paper.
8. A student is required to deposit any handbag, briefcase, etc. at the invigilator's desk or a desk provided for the purpose before the start of the examination.
9. A student must not during an examination directly or indirectly give assistance to any other student or permit any other student to copy from or otherwise use his papers. Similarly, a student must not directly accept assistance from any other student or use any other student's papers.
10. If any student is suspected or found to be infringing any of the provisions or paragraphs 3 and 5 to 10 or in any way cheating or disturbing the conduct of the examination, a report shall be made as soon as possible to the Faculty

Examinations Officer and the Dean. The Dean will cause the circumstances to be investigated by the Faculty Examination Regulations and Irregularities Committee (FERIC) and reported to the Faculty Board. The student concerned shall be allowed to continue with the examinations provided he causes no disturbance but the Board of Examiners may subsequently recommend to the Faculty Board and Senate whether his appearance should be accepted and as to any other action that should be taken in the case.

11. A student shall write his matriculation/Registration number, not his name, distinctly at the top of the cover of every answer book or separate sheet of paper.
12. The use of scrap paper is not permitted. All rough work must be done in answer books and crossed neatly, or in supplementary answer books which must be submitted to the invigilator. Except for the printed question paper a student may not remove from the examination room or mutilate any paper or other material supplied.
13. At the end of the time allotted, each student shall stop writing when instructed to do so and shall gather his scripts together in order for collection by the invigilator.

4.4.4 Results

Semester grades are calculated as Grade Point Average (GPA) on the basis of A (70 - 100), B (60 - 69), C (50 - 59), D (45 - 49) and F (0 - 44) which are equivalent to 5, 4, 3, 2 and 0 Grade Points (GP), respectively. The minimum pass mark is 45% or GPA of 1.50 is required for graduation. In order to obtain an overall pass in the examinations in any year of study, a student is required to maintain a CGPA of at least 1.50 to be in "good academic standing"; a student whose CGPA falls below 1.50 at the end of any year of study shall be placed on probation.

A student who remains on probation for two consecutive semesters and who fails to attain the status of "good academic standing" at the end of that year of study shall be withdrawn from the program of study.

NOTE: A student who scores a CGPA < 1.50 for two consecutive semesters is put on **Academic Probation.** A student who scores a CGPA < 1.50 for four consecutive semesters is deemed to be **withdrawn** on academic grounds.

Failure in any course shall be recorded as such and can only be redeemed by re-taking the course as a **carry-over** and passing the examination. However, the initial credit point and the carry-over credit point shall count towards the CGPA. Subject to the conditions for withdrawal and probation as set out, a student may continue to re-take a failed course at the next available opportunity but will be expected to register lower level failed/untaken courses first.

A student is registered in the next level depending on the Total Credit Units Earned (TCUE). A student is eligible for 200L if he/she has earned **24** credit units, 300L if he/she has earned up to **48** credit units, 400L if he/she has earned up to **72** credit units and 500L if he has earned up to **120** credit units.

A student who is absent from any examination shall be deemed to have failed the course-units missed, unless allowed as below to sit as his first attempt. The Senate, on the

recommendation of the Faculty Board may allow the student to sit the missed course-units later, as his first attempt, if the absence is explained (prior to the examination) on medical grounds (including, for female students, being more than 34 weeks pregnant), certified by an Ahmadu Bello University Medical Officer, and if a supplementary examination should be taken, then the Faculty board, may allow this; provided it can be arranged in time, within which the student has been absent from the examination other than on medical grounds, or he was absent on medical ground but not certified by an Ahmadu Bello University Medical Officer, then the student on the recommendation of the Faculty board may only be allow that the student's sitting the missed course-unit later should be accepted as his first attempt.

The number and titles of the core and elective course-units to be examined shall be as specified in the syllabus approved by Senate.

The Faculty may determine from time to time, on the recommendation of the Department, and shall make any change known to the affected students by the start of the relevant teaching:

a. the method of determining continuous assessment marks;
b. the weight to be given continuous assessment marks in the marks for each course-unit provided that the total of the continuous assessment marks for any year of studies shall fall within range from a minimum of 40% up to a maximum of 60% of the aggregate marks allowed for the year.

The first degree shall be classified according to the student's final CGPA as follows:

CGPA				CLASSIFICATION OF DEGREE
4.50	-	5.00	-	First Class
3.50	-	4.49	-	Second Class (Upper Division)
2.40	-	3.49	-	Second Class (Lower Division)
1.50	-	2.39	-	Third Class
	<	1.50	-	Fail

4.4.5 Deferment

A student is allowed to defer, on a semester basis, his academic programme on any of the following grounds:

a. Health/Medical
b. Financial
c. Academic
d. Any other reasons deemed acceptable by the department.

It is expected that a student should register first before applying for deferment.

Note: Any student who is absent from the University for four consecutive semesters will be deemed to have forfeited those semesters and beyond that the student will be deemed to have voluntarily withdrawn from the programme.

4.4.6 Discipline

The examination regulations set out above bind all students, breach of which carries serious punishments prescribed as follows:

4.4.6.1 Expulsion from the University

The following offenses shall carry the punishment of expulsion:

- **a.** Impersonation at examinations. This may involve the exchange of registration numbers/names/answer sheets or the intentional use of someone else's registration number.
- **b.** Introduction of relevant foreign materials and cheat notes into the examination hall.
- **c.** Exchange of relevant materials in examination hall which may involve the exchange of question papers containing relevant jotting and materials, collaboration/copying from each other, exchange of answer scripts.
- **d.** Theft/Removal of examination scripts or materials
- **e.** Mischief by fire to examination scripts or materials
- **f.** Copying from cheat notes
- **g.** Consulting cheat notes outside the examination hall
- **h.** Facilitating/abetting cheating.

4.4.6.2 Rustication for one academic year

The following offenses shall carry the punishment of rustication for one session:

a. Non-submission or incomplete submission of answer scripts.
b. Introduction of foreign materials not relevant to the examination into the examination hall.
c. Non-appearance at the Faculty Examination Regulations and Irregularities Committee (FERIC)
d. After first warning, the student shall be rusticated for one year.

4.4.6.3 Written Warning

a. Speaking/conversation during examination
b. Writing on question papers/scripts.

4.4.7 Notification of Results

Upon submission of results by the examiners, the departmental Board of Examiners will sit over the results and then pass it on to the Faculty Board of Examiners for deliberations. After the Faculty Board has decided on the recommendations to be made to Senate of the University for Formal Approval, the Dean may publish them (letter grades, GPA, CGPA) to the students as provisional examination result **Subject to Senate Approval**. The Head of Department may notify students of the letter grades and CGPA they have obtained. Transcripts of examination result may only be issued on request to institutions of higher

education and to institutional sponsors. Statement of results and Certificate of the award of degrees approved by the Senate shall be issued to successful graduates.

Note: Any student not satisfied with the grades awarded he/she can apply to the Academic Secretary for re-marking.

4.4.8 Calculation of Grade Point Average (GPA) And Cumulative Grade Point Average (CGPA)

Examinations are administered at the end of each course, usually at the end of the semester. The approved scoring system is as summarised in Table 2.

TABLE 2 APPROVED SCORING AND GRADING SYSTEM

(I) Credit Unit	(II) Percentage Scores	(III) Letter Grade	(IV) Grade Points (GP)	(V) Grade Point Average (GPA)	(VI) Cumulative Grade Point Average (CGPA)	(VII) Class of Degree
Vary according to contact hours assigned to each course per week per semester and according to work load carried by student	70 – 100 60 – 69 50 – 59 45 – 49 0 – 44	A B C D F	5 4 3 2 0	Derived by multiplying I and IV and dividing by total credit units	4.50 – 5.00 3.50 – 4.49 2.40 – 3.49 1.50 – 2.39 < 1.49	First Class Second Class Upper Second Class lower Third Class Fail

Example

Suppose a 100 Level student in the Department has the following results in the first year:

First Semester

(a) Course	(b) Grades	(c) Grade Points	(d) Credit Units	(e) Credit Points (c*d)
CHEM101	65(B)	4	2	8
CHEM121	76(A)	5	2	10
CHEM161	70(A)	5	1	5
COSC101	47(D)	2	2	4
GENS101	72(A)	5	1	5
GENS103	57(C)	3	2	6
MATH101	73(A)	5	2	10
MATH103	67(B)	4	2	8
MATH105	60(B)	4	2	8

PHYS111	63(B)	4	2	8
PHYS131	72(A)	5	2	10
PHYS161	41(F)	0	1	0
	Total		**21**	82

$$Credit\ Units\ Registered\ (CUR) = 2+2+1+2+1+2+2+2+2+2+2+1 = 21$$
$$Credit\ Units\ Earned\ (CUE) = 2+2+1+2+1+2+2+2+2+2+2+0 = 20$$

Thus, first semester GPA

$$GPA = \frac{82}{21} = 3.90$$

Second Semester

(a) Course	(b) Grades	(c) Grade Points	(d) Credit Units	(e) Credit Points (c*d)
CHEM112	75(A)	5	2	10
CHEM132	72(A)	5	2	10
CHEM162	64(B)	4	1	4
ENGG102	69(B)	4	1	4
GENS102	70(A)	5	1	5
MATH102	78(A)	5	2	10
MATH104	75(A)	5	2	10
MATH106	62(B)	4	2	8
PHYS122	56(C)	3	2	6
PHYS124	50(C)	3	1	3
PHYS162	72(A)	5	1	5
STAT102	45(D)	2	2	4
	Total		**19**	**79**

$$Credit\ Units\ Registered\ (CUR) = 2+2+1+1+1+2+2+2+2+1+1+2 = 19$$
$$Credit\ Units\ Earned\ (CUE) = 2+2+1+1+1+2+2+2+2+1+1+2 = 19$$

Thus, second semester GPA

$$GPA = \frac{79}{19} = 4.16$$

$$CGPA = \frac{Previous\ TCP + Present\ CP}{Previous\ TCUR + Present\ CUR}$$

Where: TCP - Total Credit Points
CP - Credit Points
TCUR - Total Credit Units Registered
CGPA - Cumulative Grade Point Average

$$Hence, CGPA = \frac{82+79}{21+19} = \frac{161}{40} = 4.03$$

5.0 COURSE STRUCTURE

100 Level First Semester

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CHEM101	Introductory General Chemistry	30		2	CR	
2	CHEM121	Introductory Inorganic Chemistry	30		2	CR	
3	CHEM161	Introductory Chemistry Practical I		45	1	CR	
4	COSC101	Introduction to Computing	30		2	CR	
5	GENS101	Nationalism	15		1	CN	
6	GENS103	English and Communication Skills	30		2	CN	
7	MATH101	Sets and Number Systems	30		2	CR	
8	MATH103	Trigonometry and Co-Ordinate Geometry	30		2	CR	
9	MATH105	Differential and Integral Calculus	30		2	CR	
10	PHYS111	Introductory Mechanics	30		2	CR	
11	PHYS131	Heat Properties of Matter	30		2	CR	
12	PHYS161	General Physics Practical I		45	1	CR	
		Total			**21**		

100 Level Second Semester

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CHEM112	Introductory Physical Chemistry	30		2	CR	
2	CHEM132	Introductory Organic Chemistry	30		2	CR	
3	CHEM162	Introductory Chemistry Practical II		45	1	CR	

4	ENGG102	Introduction to Engineering Profession	15		1	CR	
5	GENS102	Environmental Health	15		1	CN	
6	MATH102	Algebra	30		2	CR	
7	MATH104	Conic Sections and Application of Calculus	30		2	CR	
8	MATH106	Vectors and Dynamics	30		2	CR	
9	PHYS122	Electricity, Magnetism and Modern Physics	30		2	CR	
10	PHYS124	Geometric and Wave Optics	15		1	CR	
11	PHYS162	General Physics Practical II		45	1	CR	
12	STAT102	Introductory Statistics II	30		2	CR	
		Total			**19**		

Elective

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	GENS104	History of Scientific Ideas	15		1	EL	

200 Level First Semester (Pre-Requisite: TCUE 24)

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	ENGG203	Analysis of structures	30	15	2	CR	
2	ENGG205	Electrical Circuit and Field Theory	30		2	CR	PHYS122
3	ENGG207	Electric Machine, Power and Installation	30		2	CR	PHYS162
4	MATH241	Calculus I	45		3	CR	MATH105
5	MATH243	Method of Linear Algebra I	30		2	CR	MATH106
6	ENGG201	Engineering Graphics		90	2	CR	MATH103
7	ENGG209	Fundamental of Material Science	30		2	CR	

8	ENGG211	Fluid Mechanics I	30		2	CR	
		Total			**17**		

Electives

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	GENS201	Moral Philosophy	15		1	EL	
2	URPL205	Urban Land Use Component	30		2	EL	
3	ARCH101	Graphic Communications	30		2	EL	

200 Level Second Semester

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	ENGG210	Introduction to Management	15		1	CR	
2	ENGG298	SWEP				CR	
3	ENGG212	Electronics, Measurements and Transducers	30		2	CR	
4	GENS202	Entrepreneurship and Innovation	30		2	CN	
5	MATH242	Calculus II	30		2	CR	
6	MATH244	Methods of Linear Algebra II	45		3	CR	
7	ENGG202	Engineering Drawing	15	90	3	CR	
8	ENGG204	Strength of Materials I	30	15	2	CR	
9	ENGG206	Fundamentals of Dynamics	30		2	CR	
10	ENGG208	Basic Thermodynamics	30		2	CR	
		Total			**19**		

300 Level First Semester (Pre-Requisite: TCUE 48)

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CVEN301	Theory of Structures I	30		2	CR	ENGG203

2	CVEN303	Reinforced Concrete Fundamentals	30		2	CR	ENGG203
3	CVEN305	Mechanics of Materials	30		2	CR	ENGG203
4	CVEN321	Soil Mechanics	30	45	3	CR	
5	CVEN331	Civil Engineering Materials I	30	45	3	CR	
6	GENS301	Business Creation and Growth	30		2	CN	
7	LNSV331	Surveying for Professionals I	30		2	CR	
8	MATH341	Differential Equations and Transforms	45		3	CR	MATH242
9	QTYS309	Development Economics	15		1	CR	
10	STAT343	Statistics	30		2	CR	STAT102
11	WREN301	Fluid Mechanics II	30		2	CR	ENGG211
		Total			**24**		

Electives

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	MEEN309	Applied Thermodynamics	15		1	EL	

300 Level Second Semester

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	COSC344	Basic Computer Knowledge and Fortran	45		3	CR	
2	CVEN302	Theory of Structures II	30		2	CR	CVEN201
3	CVEN304	Design of Structural Elements	30		2	CR	
4	CVEN306	Design of Concrete Structures	45		3	CR	
5	CVEN312	Elements of Highway Design	30		2	CR	

6	CVEN322	Engineering Geology	45		3	CR	
7	CVEN332	Civil Engineering Materials II	30		2	CR	
8	LNSV332	Surveying for Professionals II	30		2	CR	
9	MATH342	Functions of Several Variables	30		2	CR	MATH241
10	WREN302	Fluid Mechanics III	30		2	CR	ENGG211
		Total			**23**		

Electives

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	URPL204	Site Planning	15		1	EL	
2	URPL206	Urban Economic	30		2	EL	
3	ARCH204	Architectural Graphics	30		2	EL	

400 Level First Semester (Pre-Requisite: TCUE 72)

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CVEN401	Theory of Structures III	30		2	CR	
2	CVEN403	Reinforced Concrete Serviceability Limit State	30		2	CR	CVEN303
3	CVEN405	Design of Steel Elements	30		2	CR	CVEN305
4	CVEN411	Transportation Engineering	30		2	CR	
5	CVEN413	Highway Engineering	30		2	CR	CVEN312
6	CVEN421	Geotechnical Design of Foundation	45		3	CR	CVEN321
7	CVEN441	Engineering Computer Methods	30		2	CR	COSC344
8	MATH443	Numerical Analysis	45		3	CR	
9	QTYS421	Law For Engineers	15		1	CR	
10	STAT443	Design of Experiments and Quality Control	30		2	CR	

11	WREN401	Hydraulics and Hydrology	45		3	CR	WREN301
		Total			**24**		

400 Level Second Semester

S/N	Code	Title	LT	CU	CS	Pre-requisite
1	CVEN499	Industrial Attachment (SIWES)	Six Months	6	CR	**TCUE 72**
		Total		**6**		

500 Level First Semester (Pre-Requisite: TCUE 120)

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CVEN501	Design of Reinforced Concrete Structures	45		3	CR	CVEN403
2	CVEN503	Plastic Design of Steel Structures	30		2	CR	CVEN405
3	CVEN511	Traffic Engineering	45		3	CR	CVEN411
4	CVEN521	Design of Soil Structures	45		3	CR	CVEN421
5	CVEN597	Final Year Project I	45		3	CR	
6	QTYS407	Measurement of Civil Engineering Works I	30		2	CR	
7	WREN503	Engineering Hydrology	45		3	CR	WREN401
		Total			**19**		

Electives

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CVEN505	Advanced Theory of Structures	30		2	EL	CVEN401
2	CVEN507	Advanced Reinforced Concrete	30		2	EL	CVEN403
3	CVEN513	Advanced Transportation Engineering	30		2	EL	CVEN411
4	CVEN523	Advanced Foundation Engineering	30		2	EL	CVEN421

500 Level Second Semester

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CVEN502	Theory of Structures IV	30		2	CR	
2	CVEN518	Introduction to Construction Management	15		1	CR	
3	CVEN504	Prestressed Concrete Structures	30		2	CR	
4	CVEN506	Timber Structures	45		3	CR	
5	CVEN512	Transportation Planning	45		3	CR	
6	CVEN598	Final Year Project II	45		3	CR	
7	QTYS508	Measurement of Civil Engineering Works III	30		2	CR	
8	WREN514	Environmental Engineering	30		2	CR	
		Total			**18**		

Electives

S/N	Code	Title	LT	L	CU	CS	Pre-requisite
1	CVEN508	Precast Concrete Structures	30		2	EL	
2	CVEN514	Advanced Highway Design	30		2	EL	CVEN413
3	CVEN516	Bridge Engineering	30		2	EL	CVEN401
4	CVEN522	Rock Mechanics	30		2	EL	CVEN322
5	CVEN532	Construction Materials	30		2	EL	CVEN331

KEY

CN - Cognate
CR - Core
CS - Course Status
CU - Credit Units
L - Laboratory Hours
LT - Lecture and Tutorial Hours
EL - Elective

6.0 COURSE SYLLABUS

100 LEVEL COURSES: FIRST SEMESTER

CHEM 101: Introductory General Chemistry (2 Credit Units)
Atoms; molecules; elements and compounds; laws of chemical combination; the mole concept; gross features of atomic structures; periodic table; chemical bounding and shape of molecules; oxidation & reduction reactions; general concept of acids and bases; hydration and hydrolysis; and weak and strong electrolytes.

CHEM 121: Introductory Inorganic Chemistry (2 Credit Units)
Periodic table (Gradation of physical and chemical properties within the table, the first transition elements series, and comparison of chemistry of the elements of periods and): transition metal complexes (nomenclatures, isomerism and hybridization involving d-orbitals)

CHEM 161: Introductory Practical chemistry I (1 Credit Unit)
Basic apparatus; terminologist; safety regulations; basic working skills in the chemical laboratory; acid-based titration; redox titration; weighing and gravimetric analysis.

GENS 103: English & Communication Skills (2 Credit Units)
Speaking Skill: Active listening skills, Eliciting views and comments, Agreeing and disagreeing techniques, Persuasions and counter argument, Clarifying and checking skills Interrupting skills, Signalling devices, Body language, meetings, presentation.
Pronunciation: Problems individual sounds Elements of connected speech, intonation and pitch.
Reading: Skimming and scanning, identifying main ideas, Understanding gist.
Listening: Listening for gist and specific information, Note taking, Prediction.
Writing: understanding purpose, planning and organization, Style and register changing convections of electronic media
Structure and Vocabulary: Overview of tense system, principles of word grammar, common idiomatic language, common transfer error Modifying techniques, hypothesis and like hood.

MATH 101: Set theory and Number system (2 Credit Units)
Set (definition of set, finite and infinite sets, equality of sets, subsets, union, intersection, universal set, complements empty set Venn diagram, symmetric difference, power sets, De-Morgan theorems, inclusion-exclusion principle, elements of relations and functions); some properties of number systems (natural numbers, integers, rational, irrational and real, order relations in the set of numbers, open and closed intervals on the number line); complex numbers (definition of a complex number, addition, multiplication and division, geometric interpretation modules and conjugation, polar representation, De moiré's theorem, nth roots of a complex number, nth roots of unity).

MATH 103: Trigonometry & Co-ordinate Geometry (2 Credit Units)
Circuit measures (trigonometric rations of angles of any magnitude, inverse trigonometric functions); addition formula (sin (A-B), cos (A-B), tan (A-B) and their proofs, multiple and half angles, solutions of simple trigonometric equations, factor formula, solution of triangles heights and distances including three-dimensional problems); plane polar co-ordinates (relation between polar and Cartesian co-ordinates, plotting and sketching of simple curve whose polar equations

are known); co-ordinate geometry of lines and circles (pair of straight lines and system of circles with emphasis on concepts rather than formulae

MATH 105: Differential & Integral Calculus (2 Credit Units)
Functions of real variable (odd, even periodic functions and their symmetries, graphs limits and continuity); differentiation (first principle techniques of differentiation in general, higher derivatives); integration (integration as the inverse of differentiation, techniques of integration in general, definite integral); Rate of change (velocity, acceleration and other rates); curve sketching (asymptotes, maxima and maxima and minima, shall increments, approximations and errors, newton's approximation, simple application of integration to areas and volumes); differential equations (first order differential equations only).

PHYS 111: Introductory Mechanics (2 Credit Units)
Unit and Dimensions; Dimension methods for checking correctness of equations and for deriving simple relations; vectors and Scalar Quantities; projectiles; Newton laws; Conservation laws; linear Motion; Concept of Force; Elastic Collisions; Work, Energy and power; Circular Motion; simple Harmonic motion; Motion of rigid body; Statics, Gravitational potential circular orbit, escape velocity.

PHYS 131: Heat and Properties of Matter (2 Credit Units)
Structure of solids, liquids and gases; kinetic theory of ideal gases; Elasticity, Surface Tension; Fluids in motion: Solid Friction and viscosity; Bernoulli's law, Aerofoil; thermodynamics; EM radiation provost's theory of heat exchange; thermal radiation detectors; optical pyrometer; Calorimetric; Thermal Expansion and Heat Transfer.

100 LEVEL COURSES: SECOND SEMESTER

CHEM 112: Introductory physical Chemistry (2 Credit Units)
States of matter; kinetic theory; colligative properties, structure of solids; crystal lattice structures; thermochemistry; chemical kinetics of first and second order reactions; chemical equilibrium; Buffer solution; hydrolysis constants and solubility products; and electrochemistry.

CHEM 132: Introductory Organic Chemistry (2 Credit Units)
Scope of organic chemistry; types of organic compounds and determination of molecular formulae, alkanes, alkynes and simple aromatic compounds; types of organic

CHEM 162: Introductory Practical Chemistry II (1 Credit Unit)
Qualitative analysis of inorganic anions and cation; and organic qualitative analysis

MATH 102: Algebra (2 Credit Units)
Quadratic and other polynomial functions (elementary properties of quadratic expressions, roots of quadratic equations, application to symmetric functions, polynomial functions of third and fourth degrees, remainder theorem, location of roots, permutation and combination); notion of factorials (nPr, nCr and simple applications, mathematical induction principle and applications); binomial theorem (expansion of all rational index, interval of convergence, approximations and errors).

MATH 104: Conic Section and Application (2 Credit Units)
Conic (properties of parabola, ellipse, hyperbola, rectangular hyperbola, their Certesian and parametric equations, problems involving elimination of parameters, tangents and normals).

MATH 106: Vector and Dynamic (2 Credit Units)
Vectors (geometric representation of vectors in 1-3 dimensions, components, direction cosines, addition, scalar multiplication, linear independence of vectors, scalar and vector products of vectors, differentiation and integration of vectors w.r.t. a scalar variable); dynamics (kinematics of a particle, components of velocity and acceleration of a particle moving in a plane, force, momentum, laws of motion under gravity, projectiles, resisted vertical motion, elastic strings, simple pendulum, impulse, impact of two smooth spheres, and of a sphere and a smooth sphere).

PHYS 122: Electricity, Magnetism and Modern Physics (2 Credit Units)
Electric force; field and potential; electric flux and Gauss's theorem; Capacitance; Current Electricity, Magnetic force; Magnetic Effects of current; Magnetic materials; Electromagnetic Induction; Alternating currents; Planck's constant and quanta of light energy; photoelectric effect; Radioactivity Nuclear composition; binding energy Nuclear fission and fusion; Thermionic emission; rectification by diodes; the transistor.

PHYS124: Geometric and Wave Optics (1 Credit Unit)
Reflection; refractive index; snells law measurement of refractive index total internal reflection; air cell; Refraction through prism; minimum deviation; tens formula; lenses in contact; Newton formula; spherical and chromatic aberrations power of lenses; dispersive powers; classification of spectra. Optical instruments; Interference phenomenon Newton rings; Polarization Malu's law; Polaroids.

PHYS162: General Physics Practical II (1 Credit Unit)

ENGG 102: Introduction to Engineering Profession (1 Credit Unit)

<u>200 LEVEL COURSES: FIRST SEMESTER</u>

ENGG 201: Engineering Graphics (2 Credits)

Principles of Engineering Drawing, Engineering Lettering, figures and Types of Lines, Sectioning and Projections, Computer Sketching in 2D, solid Modelling in 3D, Generation of Animation, graphics Software application for process Equipment, Team Graphics Design Project. Dimensioning. Sections and Conventions. Auxiliary views. Representation and specification of threads. Bolted joints. Keys and cottered joints. Conventional representations.

ENGG 203: Analysis of Structures I (2 Credit Units)
Concept of Structural analysis, Stability and determinacy of frameworks. Analysis of statistically determinate structures. Bending moment and shear force diagrams for determinate beams. Beam deflection. Framework deflections and strain energy in frames. Suspension cables. Determinate arches, stability of gravity sections.

MATH 241: Calculus I (3 Credit Units)
Sequences and functions: Infinite sequences; Units Functions and their limits. Differential calculus; Differentiability; Techniques; Applications; L'Hospital rule; Curvature, etc; Leibnitz formula.

Integration: Indefinite integrals; Techniques, reduction formula; the definite integrals; Applications.

MATH 243: Methods of Linear Algebra I (2 Credit Units)
Complex numbers (addition, multiplication, division, Argand diagram, polar representation, de-Moiré's theorem); Vector Algebra (definition of vector and physical examples, addition, multiplication by scalar, scalar and vector products, triple products, components, applications in geometry); vector analysis (Cartesian and polar coordinates in two and three dimensions) Determinants and matrices (definition and properties of a determinant, its evaluation); matrices (addition, multiplication by scalar, product, adjoint, inverse of a non-singular matrix, rank and its evaluation); simultaneous linear equations, consistency, linear dependence, solutions); eigenvalues and eigenvectors; special matrices; symmetric, skew-symmetric, and orthogonal.

ENGG 209: Material Science (2 Credit Units)
Review (materials classification, atomic structure and bonding); Structure of perfect solids (lattices, spacing and cell volume, crystal structure and analysis); structure of imperfect solids (crystal defects) and equilibrium concentration, polymorphism, chain and larger structures, corrosion – inducing defects, phase transformation and equilibrium (one –component and multi-component systems, equilibrium diagrams).

ENGG 211: Fluid Mechanics I (2 Credit Units)
Fluid properties. Properties of fluids, Determination of viscosity and its application to lubricated bearings. Fluid statics. Pressure intensity and pressure head, and their measurements. Hydrostatic forces on a submerged surface. Buoyancy and flotation. Fluid Kinematics. Classifications of fluid flow. Equation of continuity Bernoulli's equation. Fluid mass under acceleration. Forced vertex. Flow measurement. Venturimeter, orifices, mouthpieces, nozzles, pitat tube and sharp crested weirs/notches. Steady flow through pipes. Darcy weishbach equation. Losses in pipelines, Hydraulic and energy gradient. Transmission of energy, Uniform flow in open channels. Chezy's and Manning's Equations. Economical rectangular and trapezoidal cross-sections. Compressible fluids. Isothermal and adiabatic follow. Continuity and energy equations, steady flow of gasses through venturimeter and pipes.

200 LEVEL COURSES: SECOND SEMESTER

ENGG 210: Introduction to Management (1 Credit Unit)
Introduction (definition, uses and types of organization, need for management, the manager and its functions), planning, decisions makings, organizing, directing and leadership (motivation, communication and leadership); control.

MATH 242: Calculus II (2 Credit Units)
Infinite (number) series and their properties, test of convergence, complex number series; improper integers; partial differentiation; and ordinary differential equations.

MATH 244: Methods of Linear Algebra II (3 Credits)
Determinants and matrices (definition and properties of a determinant, its evaluation); matrices (addition, multiplication by scalar, product, adjoint, inverse of a non-singular matrix, rank and its evaluation); simultaneous linear equations, consistency, linear dependence, solutions); eigenvalues and eigenvectors; special matrices; symmetric, skew-symmetric, and orthogonal.

ENGG 204: Strength of Materials I (2 Credit Units)
Stress; simple stress, shearing stress, bearing stress, thin wall cylinders, strain, stress diagram, Hook law, Poisson's ratio, thermal stress; torsion; torsion formula, flanged bolt; bolt; coupling helical springs; shear and bending moments diagrams; analytical and graphical deflection; buckling; special topics. Types of stresses and strains. Load extension diagrams. Hooke's Law. Temperature stresses. Geometrical properties of plane areas. (Centroid. Moment of Inertia & Product of Inertia). Shearing force and Bending Movements for simply supported beams, Cantilever and overhanging beams. Theory of simple Bending and shearing stresses in Beams. Theory of Torsion in circular shafts (solid and hollow).

ENGG 202: Engineering Drawing (2 Credits)
Projection of lines and surfaces, letters, numerals, scales; process engineering symbols; sketching and orthographic projections; projection and isometric drawing; sectioning; dimensioning, fits and tolerance; detail and assembly drawing; introduction to Computer Aided Design (CAD) in the engineering workplace; use of CAD for process engineering drawings; using CAD as a design tool; and CAD exercises. Detail drawing. Belts, Chains, Gears. Bearing and lubrication arrangements. Couplings brakes, Flexible shafts, Universal joints, etc. Assembly drawings. Revisions

ENGG 206: Fundamentals of Dynamics
Kinematics of particles: Rectilinear motion, plane curvilinear motion, appropriate choice of reference frame in solving problems. Relative motion-translating axes. Kinetics of particles. Newton's laws of motion. Kinetic energy and momentum analyses, kinetics of system particles: Defining equations, steady mass flow, and variable mass problems. Plane kinematics of rigid bodies. Absolute motion; relative velocity, instantaneous center of zero velocity; relative acceleration. Plane Kinetics of rigid bodies. General equations of motion; Translation, Fixedaxis motion. General equations of motion; work energy relations; impulse and momentum equations for rigid bodies. Equilibrium of simple structures and machine parts.

ENGG 208: Basic Thermodynamics (2 Credit Units)
Fundamental, The system, working substance, heat and work, ideal gas, pure substance, properties and state, ideal gas, kinetic theory of gases including discussion of the specific heat of gases. Phase process, cycle, temperature scales. Definition and Units of basic system parameters. Following topics with emphasis on hydrocarbon fluids: First Law of thermodynamics. Internal energy, enthalpy, phase rule, hear capacity, Volumetric properties of Pure Fluids, PVT Behaviour of pure substances, equation of state and correlation. Heat Effects with and without phase Change. Second Law of Thermodynamics. Heat engine, entropy. Volumetric Properties of Multi component Fluids: PVT. Behaviour of pure substances, equation of state and correlations. Heat effects with and without Phases change. Thermodynamics of flow in pipes, expansion and compression processes. Conversion of heat into work: Steam power plant – Internal combustion engines, auto and diesel engine. Heat Exchangers. Types, the overall heat transfer co-efficient, log mean temperature difference, parallel flow and counter flow heat exchanger, multiphase and cross-flow heat exchanger, the effective NTU relations. Boiling and condensation. Boiling curve for pool boiling condensation over vertical plates, empirical correlations.

300 LEVEL COURSES: FIRST SEMESTER

CVEN 301: Theory of Structures I (2 Credit Units)
Pre-Requisite: CVEN 201
Review of Bending Moment and Shear forces in determinate beams, Frames and Trusses. Principles of Indeterminacy and Static Stability of Plane Frames and Trusses. Moment Area Method. Force (Flexibility) Method. Applications to indeterminate beams and simple frames. Flexibility coefficients - practical interpretation. Compatibility equations. Virtual work method principles of virtual displacements. Applications to beams, trusses and plane frames. Use of 1st and 2nd theorems of Castigliano in Structural Analysis.

CVEN 303: Reinforced Concrete Fundamentals (2 Credit Units)
Pre-Requisite: ENGG 203
Concept of reinforced concrete and historical development of its theory and practice. An introduction to different methods of analysis. Limit states. Review of physical and mechanical properties of concrete and reinforcement. Safety factors. Ultimate limit state of bending. Analysis and design of singly reinforced cores sections. Doubly reinforced cross-sections. Flanged cross-sections. Bond and anchorage. Shear and punching shear.

CVEN 305: Mechanics of Materials (2 Credit Units)
Pre-Requisite: ENGG 203
Analysis of three - dimensional state of stress in structural systems. Principal stresses and maximum shear stresses. Analysis of three - dimensional state of strain; experimental stress analysis; strain gauges and applications. Energy theorems and applications for response of statically indeterminate structural systems. Strength theories applied to failure of structural elements. Analysis/design of compound and composite structural elements. Theory and design of slender members. Critical load and stresses. Euler's theory and its limitations. Bending of curved bars and springs.

CVEN 321: Soil Mechanics (3 Credit Units)
Lectures
Soil classification for engineering purpose. Soil as a multi-phase system. Seepage analysis in one and two dimensions. The principle of effective stress. Shear strength.
Laboratory
Soil classification on the basis of index properties. Particle size analyses. Soil compaction. Constant-head permeability test. Direct shear on sand. Soil compressibility.

CVEN 331: Civil Engineering Materials I (3 Credit Units)
Production, use and properties of cements. Production, use and properties of bricks and blocks (ceramic and sand-crete). Insulation and finishing materials (oats, papers, rendering and plasters) for roofs, floors, underground water retaining structures and foundations.

CVEN 351: Aspects of Civil Engineering (1 Credit Unit)
The engineering properties and behaviour of soils, concrete, timber and steel. The design of selected civil engineering structures, e.g., steel towers.

MATH 341: Differential Equation & Transforms (3 Credit Units)
Exact equations, linear equations of first and second order with variable coefficient, geometrical interpretation, Isoclines. Statement of existence theorem. Series solution of differential equation with non-singular points. Definition and properties of Bessel equation and Bessel function of the

first kind. Definition and properties of the Legendre equation, polynomials, Fourier integrals and transforms, Laplace transform and its applications to the solution of differential equations.

STAT343: Statistics (2 Credit Units)
Importance of statistics, descriptive and inferential statistics, pictorial description of data, random sample selection, data classifications, frequency distributions, cumulative frequency distributions, graphical representation of data histograms, frequency polygon, measures of probability variation and the binomial distributions, Poisson distribution, normal distribution, correlation and regression analysis. Measure of central tendency. Measures of dispersion. Frequency distributions normal, Chi square, student's-t, and F-distributions, estimations and hypothesis testing, confidence intervals analysis of variance. Regression analysis. Linear-simple and multiple polynomial-power, orthogonal, non-linear, step-wise. Correlation.

300 LEVEL COURSES: SECOND SEMESTER

CVEN 302: Theory of Structures II (2 Credit Units)
Pre-Requisite: ENGG 203
Influence lines for reactions, shears and bending moment in determinate beams, lattice girders and three hinged arches. Maximum moments and shear envelopes slope deflection method. Moment distribution method. Analysis of indeterminate beams and frames. Analysis of two hinged tied and fixed arches including numerical methods. Introduction to Plastic Analysis. Estimation of yield and collapse loads for simple beams and plane frames using virtual work methods.

CVEN 304: Design of Structural Elements (2 Credit Units)
Pre-Requisite: ENGG 203
Curtailment (development) of bars (simplified and precise). One way spanning and two-way spanning solid slabs. Columns, axially, eccentrically, biaxially loaded, short and slender. Torsion in RC. Deep beams, short cantilevers. Detailing and drawings of RC structures. General characteristics of steel and other metals: classification of metal structures, skeleton and shell system. Production of steel and other metals. Advantages and disadvantages of metal products. Loading of structural steel systems. Method of analysis and design of structural elements. Structural steel connections.

CVEN 306: Design of Concrete Structures (3 Credit Units)
Pre-Requisite: ENGG 203
Typical design of a complete storey (at least five storey) building with complete details from roof to the foundation using typical hand computation, computer programming to get moments, shears and using AUTOCAD to draw the details in addition to using hand to detail. Any other computer aided software for design.

CVEN 312: Elements of Highway Design (2 Credit Units)
Highway classification, planning and traffic volume forecast. Factors affecting route location, methods of route location. Geometric design of vertical and horizontal alignments. Correlation of vertical alignment with horizontal alignment. Transition curves and methods of applying super-elevation. Typical cross-section (urban/rural). Design of inter sections-at-grade and grade-separated intersections. Design examples based on AASHO and British Standard specifications. Design volume and speed. Factors which influence selection of design vehicle. Road surface characteristics, skid resistance tests on selected roads.

CVEN322: Geology for Engineers (3 Credit Units)
Classification of minerals and rocks; Geological structures; Maps; Surface and sedimentary processes; the collection and interpretation of geological data for engineering use; Engineering properties of intact rocks; Influence of discontinuities on rock mass behaviour.

CVEN332: Civil Engineering Materials II (2 Credit Units)
Production, use and properties of aggregates: concrete - mix design, quality control, special concrete (admixtures); production, use and properties of concrete; timber, Reinforcing steel bars and steel profiles for structures.

MATH342: Functions of several Variables (2 Credit Units)
Total differential and partial differentiation, chain rule for partial implicit function, gradient and its geometrical interpretations. DIV and CURL of vector field, Laplacian Maxima and minima, multiple integrals and their evaluation by change of variables, applications, volume mass centre of gravity, moment of inertia, surface and line integrals: green, gauss and stokes theorems. Series of function: Uniform convergence, Differentiation and integration of series, power series, radius of convergences, expansions of elementary functions in McLaren and Taylor series. Use of series to find values of integrals and roots periodic functions. Fourier series: definition and evaluation of Fourier coefficients. Expansion in Fourier sine-cosine series of a periodic function of period Fourier sine and cosine series for a function, defined on the integral (a,b). complex exponential form of a Fourier series.

400 LEVEL COURSES: FIRST SEMESTER

CVEN 401: Theory of Structures III (2 Credit Units)
Pre-Requisite: CVEN 302
Influence lines for redundant plane frames, continuous beams, rigid frames and arches. Use of numerical methods for influence lines including Newmarks method. Advanced moment distribution analysis of multi-storey buildings with sway. Model analysis of structures (direct/indirect). Plastic analysis, collapse design-yield line analysis. Damped and undamped dynamic response of structures to periodic impulsive disturbances.

CVEN 403: Reinforced Concrete Serviceability Limit States (2 Credit Units)
Pre-Requisite: CVEN 303
Cracking moment. Uncracked fully cracked and partially cracked reinforced concrete sections. Calculation of width of cracks. Calculation of short term and long term deflections. Simplified methods for checking cracks and deflections. Fire resistance. Resistance to corrosion.

CVEN405: Design of Steel Structures (2 Credit Units)
Pre-Requisites: CVEN 302, 304
Introduction to structural steel design principles; design of members in tension, compression (simple and compound columns) and bending (simple and compound beams, plate girders). Design of steel trusses.

CVEN407: Design of Hydraulic Structures (2 Credit Units)
Pre-Requisites: CVEN 302, 303
Eccentrically loaded structures; Limit state of cracking; Stress analysis for gravity, arch, earthfill, and rock fill dams, spillways and reservoirs; Design of water tanks and retaining walls; Criteria for stability.

CVEN411: Transportation Engineering (2 Credit Units)
Railways: Planning and geometric design of track structure, rails, ballast, terminal facilities, rolling stock, sidings, turnouts; control of traffic operation. Airports: Operational aspects of air transportation, elements affecting location of airports; elements of geometric design ground facilities, earthworks, drainage, pavements; Transportation/Bituminous laboratory.

CVEN413: Highway Engineering (2 Credit Units)
Pre-Requisite: CVEN312
Earth - moving operations: Site inspection, factors affecting selection of construction equipment, economic utilization of construction equipment; Mass Haul Diagrams; Drainage and protection against erosion. Aesthetic and landscaping considerations; Highway structures: Bridges; culverts; tunnels, Highway materials and pavement design: suitability of soil and materials for pavement construction; Bituminous pavements, rigid pavements; machinery for construction; soil stabilization, maintenance of highways; Provision of access roads, parking facilities, and landscaping and drainage for building premises.

CVEN421: Geotechnical Design of Foundations (3 Credit Units)
Prerequisite: CVEN321
Compressibility, consolidation and settlement; Induced stresses and displacements; Rigid retaining structures; Shallow footings; Compensated foundations; Deep foundations and Dewatering.

CVEN441: Engineering Computer Methods (2 Credit Units)
Pre-Requisite: COSC344
Review of computer programming languages; elements of operations research techniques - linear programming etc. Introduction to finite difference/finite element methods. Computer applications to water resources allocation, control theory, traffic analysis and structural analysis/design. Special computer-aided design projects in specific fields (i.e., structural, transportation, geotechnical, water resources, and environmental engineering) of civil water engineering.

500 LEVEL COURSES: FIRST SEMESTER

CVEN501: Design of Reinforced Concrete Structures (3 Credit Units)
Pre-Requisite: CVEN403
Flat slabs, circular slabs, multispan slabs, hollow slabs, openings, lift slab stairs. Industrial halls. Precast elements and structures. Tall buildings. Wind load. Frames shear walls. Foundations. Retaining walls. Tanks. Bunkers and Silos. Airy's and Jansen's methods. Redistribution of moments and forces. Hydraulic structures.

CVEN 503: Plastic Design of Steel Structures (2 Credit Units)
Pre-Requisite: CVEN405
Design of steel structures, steel frame structures, connections in steel structures, industrial halls, tall buildings, towers, and shell systems (e.g., steel tanks).

CVEN 505: Advanced Theory of Structures (2 Credit Units)
Pre-Requisite: CVEN401
Review and generalised tension methods for computing displacements of framed structures. Review and generalised tension methods for analysis of indeterminate framed structures. The elastic stability of structures.

CVEN507: Advanced Reinforced Concrete Structures (2 Credit Units)
Pre-Requisite: CVEN403
Review of design silos, tanks, shells, tall buildings, large panel precast building etc. design of members under torsion and biaxial bending of beams and columns.

CVEN511: Traffic Engineering (3 Credit Units)
Pre-Requisite: CVEN411
Capacity and level of service. Speed and delay studies. System of traffic signal controls. Safety measures. Lighting standards. Comprehensive transportation Planning (basic concepts). Public transportation problems. Parking (survey and analysis). Project management and low Economical analysis Road user benefit analysis. Land acquisition and right-of-way.

CVEN513: Advanced Transportation Engineering (2 Credit Units)
Pre-Requisite: CVEN411
Transportation system characteristics. Transportation survey analysis and planning. Application of linear programming. The aims and scope of environmental planning. The influence of planning theories on urban form. Factors affecting the use of ion. Newtons and current planning theories and trends.

CVEN521: Design of Soil Structures (3 Credit Units)
Pre-Requisite: CVEN421
Soil slopes. Flexible retaining structures. Reinforced earth. Earth dams and embankments. Hydraulic fracturing. The monitoring of geotechnical structures.

CVEN523: Advanced Foundation Engineering (2 Credit Units)
Pre-Requisite: CVEN421
Analysis, design and construction of foundations for buildings, bridges and other structures including excavation, footings, piling, caissons, retaining walls, sheet pile bulkheads, tunnels, fills, embankments, earth-fill and rock dams including seepage dewatering and grouting. Field measurements and controls. Foundations subjected to dynamic forces.

500 LEVEL COURSES: SECOND SEMESTER

CVEN 502: Design of Structures IV (2 Credits)
Pre-Requisite: CVEN 401
Application of Finite Difference Method for Computing Deflections and Moments in Indeterminate Beams and Plates. Collapse analysis and critical loads (Elastic Instability) of Struts and Rigid Frames. Stability Functions. Southwell's Plot and other Failure Theories. Plane stress/strain Elasticity Problems. Theory of thin plates and shells. Matrix methods of structural analysis using direct stiffness method. Generation of the stiffness matrix. Practical applications to beams, Frames and Grillages. Computer applications.

CVEN 504: Prestressed Concrete Structures (2 Credits)
Pre-Requisites: CVEN 304, 401
Concept of prestressed concrete structures, systems of prestressing. Types of anchorages. Allowable stress for concrete and prestressing steel. Prestress conditions (stages), Minimum sectional modulus, prestressing force, cable zone (precise and simplified formulae). Losses of prestressing force. Ultimate limit state of bending and shear. Deflections of prestressed elements continuous prestressed concrete beams. Applications of prestressed concrete structures.

CVEN 518: Introduction to Construction Management (1 Credit)
Programming and progress, project scheduling, arrow diagrams, time schedule and bar charts, Network programming/diagram and critical path method (CPM). Pre and post contract planning, management (man, material and machine) the three MS, progress reporting, quality control and workmanship.

CVEN 506: Timber Structures (3 Credits)
Pre-Requisites: CVEN 304, 401
Introduction to timber. Characteristics and nomenclature of timber. Types of commercial timber in Nigeria; the Nigerian code of Practice on the use of timber in building. Deterioration of timber. Preservation of timber. Analysis and design of structural timber members. Connections in timber structures.

CVEN 508: Precast Concrete Structures (2 Credits)
Pre-Requisites: CVEN 304, 401
Definitions, advantages and disadvantages of precast concrete structures. Production of precast members, storage of precast members, design, handling and transportation of precast members. Connections of precast members.

CVEN 512: Transportation Planning (3 Credits)
The Transportation Planning Process: Basic Elements of Transportation Planning, Transportation Planning Institutions, Urban Transportation Planning, Forecasting Travel. Forecasting Travel Demand: Demand Forecasting Approaches, Trip Generation, Trip Distribution, Mode Choice, Traffic Assignment. Evaluating Transportation Alternatives: Basic Issues in Evaluation, Evaluation Based on Economic Criteria, Evaluation Based on Multiple Criteria

CVEN 514: Advanced Highway Design (2 Credits)
Pre-Requisite: CVEN 413
Soils and materials used in pavement construction. Theory of stresses and deformation in layered systems. Review of soil survey. Design methods of flexible and rigid pavements. Bituminous materials. Types of bituminous surfacing and their performance. Machinery for bituminous pavement. Types of rigid pavements and their performance. Machinery for rigid pavements. Soil stabilization. Machinery for Soil stabilization. Low cost pavements. Highway maintenance.

CVEN 516: Bridge Engineering (2 Credits)

Pre-Requisite: CVEN 401
Safety, economy and aesthetics of bridge engineering. British HA and HB loading Specifications, American AASHO loading specifications; rate of application of super-imposed loadings on classified roads. Main types of bridge: slab and beam types, arches and multi-span bridges, pre-stressed deck beams, suspension bridges. Design examples. Expansion joints, bearings and provision of good drainage for bridge decks. Main types of abutments and design examples. Methods of providing drainage for bridge abutments. Methods of bridge deck analysis. Hydrological factors which affects design of waterways for highway structures.

CVEN 522: Rock Mechanics (2 Credits)

Pre-Requisites: CVEN 305, 322
Two dimensional analyses of stresses and strains in solids. Strength and deformability of intact rocks, rock discontinuities, and rock masses. The measurement of in-situ stresses. The design of rock slopes and underground openings.

CVEN 532: Construction Materials (2 Credits)

Pre-Requisite: CVEN 331
Introduction to the internal structure of construction materials; fundamental groups of construction materials. Deterioration of building materials and causal factors. Polymer materials in construction.

7.0 INTERNATIONAL COLLABORATION

In 2018, Memorandum of Understanding (MOU) was signed between Ahmadu Bello University, Zaria and the Central south University, Changsha, China on 3+2 Double degree collaboration in Civil and Transportation Engineering. The ABU and CSU Civil Engineering Curriculums were harmonised and all eligible student that fit into the arrangement are required to complete and pass all 100, 200 and 300 in ABU or 200 and 300 level for those that are admitted through direct entry. Then they proceed to the Central South University and then take and pass 400 and 500 level courses. At the end of the programme, the 100, 200 and 300 level ABU results would be transmitted to CSU to be considered along with the 400 and 500 level results done at CST for the award of CSU B,Eng. Civil Engineering/Transportation Engineering degree. Likewise the 400 and 500 level results from CSU would be transmitted to ABU to be considered along with the 100, 200 and 300 level results obtained in ABU to consider for the award of ABU B.Eng Civil Engineering degree. Each participating student will therefore be entitled to two certificated concurrently.

8.0 STAFFING

8.1 ACADEMIC STAFF

1.	Prof. Bilkisu H.S Amartey	B.Eng, M.Sc, PhD, MNSE, MNICE, COREN (Head of Department)
2.	Prof. J. M. Kaura	B.Eng, MSc, PhD, MNSE, R.ENGR
3.	Prof. K.J. Osinubi	M.Sc, Ph.D, MNSE, MASCE, MG-I, ASCE, COREN
4.	Prof. S. P. Ejeh	B.Eng, M.Sc, Ph.D, FNSE, COREN
5.	Prof. O. S. Abejide	B.Eng, M.Sc, Ph.D, MNSE, COREN
6.	Prof. .I. Abubakar	B.Eng, M.Sc, Ph.D, MNSE, COREN
7.	Prof. Y.D. Amartey	B.Eng, M.Sc, Ph.D, MNSE, COREN
8.	Prof. A. Ocholi	B.Eng, M.Sc, Ph.D, MNSE, COREN
9.	Prof. A.O. Eberemu	B.Eng, M.Sc, Ph.D, MNSE, COREN
10.	Prof. T.S. Ijimdiya	B.Eng, M.Sc, Ph.D, MNSE, COREN

11.	Prof. A.A Murana	B.Eng, M.Sc, PhD, MNSE, COREN
12.	Prof J. Ochepo	B.Eng, M.Sc, PhD, MNSE, COREN
13.	Dr. H.S. Otuoze	B.Eng, M.Sc, PhD, MNSE, COREN
14.	Prof. A. Lawan	B.Eng, M.Sc, PhD, MNSE, COREN
15.	Dr. I. Aliyu	B.Eng M.Sc, PhD, MNSE, COREN
16.	Dr. A. S. Abdurrasheed	B.Eng M.Sc, PhD, MNSE, COREN
17.	Dr. A. Usman	B.Eng M.Sc. PhD, MNSE, COREN
18.	Dr. A. Mohammed	B.Eng M.Sc, PhD. MNSE, COREN
29.	Dr. Tasiu Ashiru S	B.Eng, M.Sc. PhD. MNSE, COREN
20.	Dr. I.A. Ja'e	B.Eng M.Sc, PhD. MNSE, COREN
21.	Dr. N. S. Yaro	B.Eng, M.Sc, Ph.D, MNSE
22.	Dr. Ismaila M.A.	B.Eng, M.Sc, Ph.D, MNSE, COREN (Adjunct Lecturer)
23.	Dr. Y.K. Galadima	B.Eng, M.Sc, PhD. MNSE, COREN
24.	Engr. A. A. Abdulrahman	B.Eng. M.Sc, MNSE, COREN
25.	Engr. I. Iliyasu	B.Eng, M.Sc, MNSE, COREN
26.	Dr. A.A. Shuaibu	B.Eng M.Sc. PhD. MNSE, COREN
27.	Engr O. A Aliyu	B.Eng, M.Sc, MNSE, COREN
28.	Engr. M. M. Musa	B.Eng, M.Sc, MNSE, COREN
29.	Dr. B. Ibrahim	B.Eng, M.Sc, PhD. MNSE, COREN
30.	Engr. Aliyu Umar Mani	B.Eng. M.Sc, MNSE
31.	Engr. Suleiman A.	B.Eng. M.Sc, MNSE, COREN
32.	Engr. Y. M. Hashim	B.Eng, M.Sc. MNSE, COREN
33.	Engr. Esther A. N.	B.Eng. M.Sc. MNSE, COREN
34.	Dr. Yusuf Yau	B.Eng, M.Sc. PhD. MNSE, COREN
35.	Engr. H. A. Umar	B.Eng, M.Sc. MNSE COREN
36.	Engr. S. A. Wada	B.Eng, M.Sc. MNSE, COREN
37.	Engr. S. A. Ado	B.Eng. M.Sc MNSE, COREN
38.	Engr I. Garba	B.Eng. M.Sc. MNSE, COREN
39.	Engr. M. Abdullahi	B.Eng. M.Sc. MNSE, COREN

40.	Engr. A. Ahmad	B.Eng. M.Sc MNSE, COREN
41.	Dr. Idayat O. Sholadoye	B.Eng. M.Sc PhD. MNSE, COREN
42.	Engr. A. A Aziz	B.Eng. M.Sc. MNSE, COREN (Adjunct Lecturer)

8.2 List of Technical Staff

S/NO	NAME	Section	
1	Dan'azumi M. Barau	Soil Mechanics Lab	Senior/Chief
2	Ejembi Chris Williams	Concrete Lab	Senior
3	Aminu Sidi Bala	Model Analysis Lab	Senior
4	Abubakar Yaroson Yusuf	Mechanical W/shop	Senior
5	Isah Abdullahi Suleiman	Soil Mechanics Lab	Senior
6	Inuwa Abubakar Abdurrahman	Model Analysis Lab	Senior
7	Abel Anda Onivehu	Concrete Lab	Senior
8	Markus Ishaya	Mechanical W/Shop	Senior
9	Lawal Abdulkarim	Electrical Workshop	Senior
10	James Paul Bisi	Soil Mechanics Lab	Senior
11	Nuraddeen M Sani	Electrical Workshop	Senior
12	Lawal Nasiru	Transportation Lab	Senior
13	Balarabe Danjuma	Concrete Lab	Senior
14	Aminu Dalhatu	Transportation Lab	Senior
15	Idris Yakubu Surakat	Transportation Lab	Senior
16	Muhammad A Yunisa	Engraving Lab	Senior
17	Shafiu Abdullahi	Mechanical Workshop	Junior
18	Idris Umar	Plumber	Junior
19	Aliyu Barau	Carpentry Workshop	Junior
20	Abubakar Umar	Carpentry Workshop	Junior
21	Lawal Idris	Soil Mechanics Lab	Junior
22	Nura Abdullahi	Transportation Lab	Junior
23	Samaila Abdullahi	Carpentry Workshop	Junior

24	Ibrahim Zubairu	Drawing Lab	Junior
25	Aliyu Abubakar Gambo	Mechanical Workshop	Junior
26	Bilal Kabiru	Engraving Lab	Junior
27	Zakari U Angulu	Concrete Lab	Junior
28	Haruna Abdulmalik	Concrete Lab	Junior
29	Sani Ibrahim	Concrete Lab	Junior
30	Abdulazeez Ibrahim	Concrete Lab	Junior

9.0 FINAL YEAR B. ENG. GENERAL PROJECT GUIDELINES

This document outlines the guidelines and requirements for successful completion of students' project report in partial fulfillment for the award of a B. Eng. Degree in Engineering, Civil Engineering.

General format:

A. Preliminary Pages

i) Title page
ii) Declaration
iii) Dedication
iv) Acknowledgments
v) Table of Contents
vi) Abstract

B. Content Pages

1. Chapter 1: Introduction
2. Chapter 2: Literature Review
3. Chapter 3: Materials and Methodology and Tools/Data Presentations (if necessary)
4. Chapter 4: Analysis and Discussion of Results
5. Chapter 5: Conclusion and Recommendations
6. References
7. Appendix (if any)

Preliminary Pages

(i) Title page

This page bears the title of the project, names of the author, the registration number, a clause and date (i.e., the month and year in which the project was done). The clause should read as follows:

A PROJECT SUBMITTED TO THE DEPARTMENT OF CIVIL ENGINEERING, AHMADU BELLO UNIVERSITY, ZARIA-NIGERIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF ENGINEERING (B. ENG) IN CIVIL ENGINEERING.

(ii) Declaration

This page should contain a declaration statement like:

I, (state the name of the author), hereby declare that this project titled (state the project title) has been carried out by me under the supervision of (state the name of the Supervisor). It has not been presented for award of any degree in any institution. All sources of information are specifically acknowledged by means of reference.

_____ _____

Name Signature

(iii) Certification

This page should contain the following:

THIS PROJECT ENTITLE (mention project title here) **BY** (state the name of the author) **MEETS THE REQUIREMENTS GOVERNING THE AWARD OF THE DEGREE OF BACHELOR OF ENGINEERING IN CIVIL ENGINEERING AND IS APPROVED FOR ITS CONTRIBUTION TO KNOWLEDGE AND LITERARY REPRESENTATION**.

_____ _____

Project Supervisor Date

_____ _____

Head of Department date

(iv) Dedication page

This inclusion of this page is expected to be in concise form and in good English

(v) Acknowledgments

A few paragraphs recognizing and thanking the Head of Department and those who contributed in one way or another to the success of the project. The language used should be clear, to-the-point and polite irrespective of style and not more than one page

(vi) Abstract

The abstract gives a concise description of what work is done, results obtained conclusions, deductions made and limitations of the work. It should be between 150-200 words and must be written in a single paragraph.

(vii) Table of contents

This gives an outline of projects contents arranged under specific titles along with respective pages and arranged in the order they appear in the project.

CONTENT PAGES

Chapter 1: Introduction

This brings to light the concept and motivation of the whole project idea. It should be able to relate to similar past work with relevant references. The introduction should eventually lead up to a definite statement that justifies the study and the mode of approaching the problems raised if any.

Chapter 2: Literature Review

This should give the relevant background information with respects to the area under study, backed up by relevant references (both old and new). This chapter should explain what is missing in the literature. It is very important that the candidate demonstrate knowledge of what is available in the literature to avoid repeating work done by others.

Chapter 3: Materials, Methodology and Tools/Data Presentations

The methodology or approach adopted in addressing the project's idea should be explained clearly and the tools used to accomplish the project. The relevance of any data collected/generated and/or both tools used must be justified and their limitations pointed out. This section should be such that anyone wanting to repeat the work done in the project should be able to do it without difficulties.

Chapter 4: Analysis and Discussion of Results

The findings (results) of the project should be presented in a clearly understandable form; tables, figures (graphs and diagrams etc.) should be appropriately numbered. Where a piece of software is developed, its utility should be highlighted while its major strengths and weaknesses should also be pointed out.

Chapter 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

This should relate to the significance and objectives of the whole project and presented in a concise form

References

The reference list should be well arranged in APA format i.e. in an alphabetical order of first authors' surnames for example,

(a) Book

Yoder, E.J and Witczak, M.W (1975) Principles of Pavement Design. New York John Wiley and Son

(b) Journal

Olowosulu, A.T (2000) Design for Tropical Climate. Journal of Civil Engineering, Vol. 5, No. 1 pp. 44-51.

(c) Proceedings

Bamiro, O. A. (1979): Towards a National Solar Energy Policy: Proc. Conf. on Energy Policy, (Edited By E. N. C. Osakwe). Think Tank Publications, pp- 375- 394

(d) Reports

Darter, M. I. and Hudson, W.R (1973) Probabilistic Design Concepts Applied to Flexible Pavement system Design. Report 123-18 Centre for Transportation Research, University of Texas at Austin.

Appendix (if any)

For projects where a piece of software is developed, the appendix should contain a User's Manual, Design Documents (class diagrams, activity diagram, use-cases, story boards, etc,) source code and test suite (where applicable)

C. Pagination

Pagination is ascribing number to the pages of the written project. The paging starts from the Title page to the last under references or Appendix (if any). Different coding systems however are used. Starting from the Title page up to the last page of the abstract inclusive, roman numerals (i, ii, iii, iv, etc.), are used. Arabic numerals (1, 2, 3, etc.) are used from introduction to the last page of reference or appendix (if any).

D. Language Usage

The write-up should be in English Language written in simple form that can be easy understood without sacrificing the technical nature of the study.

E. Type of paper

The type of paper to be used should be A4 size and white in colour

F. Acceptance of the project

For the project to be accepted, students must take care of the following

a. The project should be typed and printed on one side of paper only, with double line spacing
b. It should be between 30 to 50 A4 size pages (don't use quarto or foolscap size paper)
c. The binding should conform with Dark green colour
d. Four copies of the project and two CDs must be submitted
e. Any project report that violates the above guidelines will not be accepted

G. Submission of the Project

1. Oral examination or internal defence

The copy of the project report to be submitted for internal defence should be in spiral bound form and must reach the project Coordinator within seven days after the Second semester examination.

Oral defence will take place two weeks after the Second semester examination and Presentation should be on power point

2. Final copy

After all necessary corrections from the internal defense to the satisfaction of the project Supervisor four copies should be bound permanently. Each student should submit his/her project through his/her supervisor who will forward them to the project coordinator.

H. Method of Assessment

1. Supervisor Assessment	40 marks
2. Internal Defence	60 marks

10. ANY OTHER RELEVANT INFORMATION

10.1 Employability Skills

1. Ability to apply scientific and engineering principles to plan, design and

supervise civilengineering projects;
2. Skills to convey technical material persuasively to clients, colleagues and subordinates;
3. Knowledge of contemporary issues and ability to keep up with emerging technologiesrelevant to executing civil engineering projects; and
4. Capacity to utilise the skills acquired in government (including regulatory and executingagencies), industry (including consulting, construction organisations) and academia.

10.2 21st Century Skills

The 21st century skills includes the innovative skills:

1. Creativity and innovation;
2. Critical thinking/problem solving/decision making;
3. Communication;
4. Collaboration (team work);
5. Learning to learn/metacognition;
6. Citizenship (local and global);
7. General computer literacy and mastery of relevant information technology;

Unique Features of the Programme

1. Sound exposure to all areas of civil engineering, including environmental engineering;
2. Good exposure to allied areas such as law, economics and management;
3. Familiarity with general knowledge, including philosophy, entrepreneurial skills andhistory;
4. Ability to communicate ideas effectively using modern tools involving computers, internetand telecommunication; and
5. Capacity of graduates to establish their own businesses and go into paid employment withgovernment or in industry; or pursue further studies.

Prof. Bilkisu Hassan Sada Amartey

HOD, Civil Engineering.