CENTRE FOR OPEN DISTANCE & e-LEARNING (CODeL) of the FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE, NIGERIA

STUDENTS’ HANDBOOK
2019/2020
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Of the Federal Republic of Nigeria

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Foreword

This students handbook of the Centre for Open Distance & e-Learning (CODeL), Federal University of Technology, Minna has been made to assist in understanding all of the features of CODeL, its operation and the instructional delivery methods.

It describes the general organisation of the Centre, registration and matriculation procedure, assessment and evaluation, learner supports, course structure and synopses and other students’ issues relating to academic programme.

The course description in this document is based on strict adherence to the Benchmark Minimum Academic Standards (BMAS) curriculum in the Computer Science Programme as produced by the National Universities Commission (NUC).

In order to provide effective development of enriched, comprehensive and targeted academic activities, as well as maintain a balance with the current operational realities of the University, we have limited our programme to Computer Science that is critical to the development and aspirations of the country.

More programmes would be offered to serve the needs of students in aspects of Science and Technology disciplines as we move along this path.

I hope you find this information package useful as a guide towards achieving the excellent quality education programme you will like to have.

I and my team look forward to serving you better in order to make Nigeria great.

Professor A. M. Aibinu
Director, CODeL
April, 2020
The University Anthem

FU-Tech Minna (2x)
We lift your name on high
Yours it is to set, the pace for others
Excellence is your goal
Federal Unitech, Minna, Niger state
A citadel of learning
Technological advancement of our land
Is your primary goal
To build a self reliant force
Of sound mind and moral
Who will make our nation relevant
In global development.
FU-Tech Minna (2x)
We lift your flag up high
The pride of Nigeria you are
And you will ever be
Our love for you won’t cease.
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Chapter One

Introduction

1.0 Introduction

This chapter provides a brief historical background of Federal University of Technology (FUT), Minna and Centre for Open Distance and e-Learning (CODEL). This includes the vision and mission statements of the University and the Centre.

1.1 Background of Federal University of Technology, Minna

Federal University of Technology, Minna, Niger State is a Federal Government owned University in Nigeria, established on 1st February, 1983. The vision of the university is to become one of Nigeria’s leading Universities and a centre of excellence, recognized nationally, regionally and internationally for its quality, pedagogy, and research which is supported by visionary leadership, responsible citizenship, internal and external partnership and a unique value system.

As a specialized University, we are committed to the training of skilled and innovative work force that would harness the forces of nature to transform Nigeria’s natural resources into goods and services to positively affect the economy and thus the quality of life of her people. The University’s objective is to give effect to the nation’s drive for the much needed self-reliance in Science, Engineering and Technology. The University’s motto is Technology for Empowerment. The current Vice-Chancellor is Professor Abdullahi Bala.

The University has two (2) Campuses at Bosso and Gidan-Kwano. The University runs a School system; an integrated unit of related disciplines with common academic interest in teaching and research.

Presently, there are Ten (10) Schools at FUT Minna, these are:

(i) School of Agriculture and Agricultural Technology (SAAT),
(ii) School of Environmental Technology (SET),
(iii) School of Electrical Engineering and Technology (SEET),
(iv) School of Infrastructure, Process Engineering and Technology (SIPET)
(v) School of Entrepreneurship and Management Technology (SEMT),
(vi) School of Information and Communication Technology (SICT) Technology,
(vii) School of Life Sciences (SLS),
(viii) School of Physical Sciences (SPS),
(ix) School of Science and Technology Education (SSTE), and
(x) Postgraduate School (PGS).

Each School is headed by a Dean and an Administrative head known as School Secretary, who works with the Dean and coordinates administrative matters of the School.

1.2 Vision of the University

The University strives to become a world class and Nigeria’s leading University recognized for its excellence in capacity building and service delivery.

1.3 Mission of the University

Federal University of Technology, Minna as a specialized University is committed to the training of skilled and innovative workforce that would transform Nigeria’s natural resources into goods and services, driven by entrepreneurship and information and Communication Technology (ICT) to positively affect the economy and thus, the quality of life of her people.

1.4 Brief on the Centre for Open Distance and e-Learning

The concept of establishing Centre for Open Distance and e-Learning (CODeL) in Federal University of Technology, Minna was born out of the necessity to provide access to higher education to a larger number of interested students presently limited by the existing structure (human and physical resources) or engaged in other life demanding activities.
This is in line with the Nigerian National Policy on Education (FRN, 2004) which recognized open and distance learning as a way of providing access to quality university education for those who otherwise would have been deprived through the conventional process.

The Federal University of Technology, Minna has demonstrated its commitment to partnership with other tertiary institutions and international educational bodies to promote open and distance learning. This development informed the University Senate’s position to approve the establishment CODeL in 2011 and the University Council in May, 2012.

On the 19th October, 2015, the governing board of the Centre was inaugurated by the then Vice-Chancellor of the University, Prof. M. A. Akanji.

1.5 The Vision and Mission Statement of the Centre

The Vision of the Centre

To be a global Centre of excellence in e-learning providing access to flexible, open and long-life learning education.

Mission of the Centre

The Centre is committed to the delivery of quality distance learning through dynamic and pragmatic training, research and entrepreneur services, driven by Information and Communication Technology (ICT) that would transform Nigeria's natural resources into goods and services, thus, impacting on our economy and the quality of life of her people positively.

1.6 Objectives of the Centre

The objectives of the programme are in line with the National Policy on Education 2004 which shall be:

i. To provide access to quality education and equity in educational opportunity for those who otherwise would have been denied.
ii. To meet the special needs of employers by mounting special certificate courses for their employees at their work place.

iii. To ameliorate the effect of internal and external brain drain in the University by utilizing Nigerian experts teachers regardless of their location or places of work.

1.7 Programme

Presently, CDeL will be offering Computer Science Programme at undergraduate level. In later years, more programmes at both undergraduate and postgraduate levels would be introduced.

1.8 Administration

The office of the Director is responsible for the overall administration of the Centre. The Director is assisted by two (2) Deputy Directors and the Centre Secretary. See Appendix I for Organogram of the Centre.

1.9 Background of Computer Science Department

The Department of Computer Science was established in 2009. It was created from the defunct Department of Mathematics/Computer Science with the aim that it is the backbone of the Information and Communication Technology (ICT). The Department of Computer Science is one of the departments in the School of Information and Communication Technology (SICT). The Department offers a unique educational opportunity for students to achieve excellence through vigorous classes, practical and participation in cutting edge ICT research.

1.10 Philosophy of the Department

To build national capacity for the country through the provision of sound and well-grounded theoretical and practical computer science leading to advancement in Information and Communication Technology that drives development and develop high level manpower that will create job and wealth through the use of ICT and reduce unemployment and poverty.
1.11 Vision of the Department
To be a leading academic center of excellence in Computer Science providing both software and hardware expertise and solutions that will shape the Information and Communication Technology landscape both nationally and internationally.

1.12 Mission of the Department
The Department of Computer Science will build and develop human capacity to high level through comprehensive educational programs, research in collaboration with industry and the government, dissemination through scholarly publications, and services to professional societies, the community, the state, the nation and the world at large.

1.13 Objectives of the Department
i. To provide graduates with solid foundation in Computer Science and knowledge that is required for employment in the industry, postgraduate studies and research.

ii. To provide and promote sound practical and theoretical training in computer hardware, software, and application areas, that will make our graduates useful in both private and public sectors of the economy.

iii. To develop the students for the purpose of self-employment.

iv. To promote the career opportunities offered by Computer Science and to meet with the ongoing needs of the industry.

Chapter Two
Registration and Matriculation

2.0 Introduction
This chapter contains information on admission requirements, registration, course registration, registration procedure, orientation, matriculation, programme duration, students’ identity cards, etc. A very important chapter to read.
2.1 Programme
The Centre undertakes undergraduate degree programme in computer science based on the accreditation status of Computer Science Department of the University.

2.2 Admission Requirements
Candidates seeking admission into CODEL’s degree programme must have the minimum entry requirement. Admission shall be offered during the first and second semesters and shall be the responsibility of the Admission Committee of the Centre.

(a) UTME Entry Requirements
Candidates are required to have obtained five (5) O’Level credits in English Language, Mathematics, Physics, Chemistry, and either Biology or Geography in NECO, WAEC or NABTEB in not more than two (2) sittings.

(b) Direct Entry (DE)
(i) Holders of National Diploma (ND) in Computer Science/Engineering with a minimum of Lower Credit may qualify for admission into 200 Level.
(ii) Holders of HSC/GCE-A Level/IJMB with credit passes in Mathematics, Physics and Chemistry may also qualify for admission into 200 Level.
(iii) Holders of Higher National Diploma (HND) with at least Upper Credit in Computer Science may qualify for admission into 300 Level.

Note: (i) The DE requirements are in addition to the O’Level grades stipulated in (a) above. Also, DE students must take and pass the General Studies courses offered in 100 and 200 Levels.

(ii) All candidates for admission must pass the University’s Screening Exercise.

2.3 Duration of the Programme
A student can only graduate after meeting the minimum graduation requirements. The Bachelor of Technology degree in
Computer Science is designed to last for a minimum of five (5) sessions (10 semesters) and maximum of 7 1/2 sessions (15 semesters) for a UTME candidate, minimum of four (4) sessions (8 semesters) and maximum of six (6) years(12 semesters) for a Direct Entry (200 level) candidate and minimum of three (3) sessions (6 semesters) and maximum of six (6) sessions (9 semesters) for a Direct Entry (300 level) candidate.

2.4 Students’ Registration

Students’ registration is carried out online on the CODEL portal at https://codel.futminna.edu.ng/. Online payment will be accepted using master Card, ATM cards, etc. All registration processes will be via online system once a student paid the school fees. Students are expected to register for courses after completing all necessary payments for the semester.

The course registration portal contains the list of all courses offered in the programme. Students are expected to register a maximum of 24 credit units per semester which must include a minimum of one elective course per semester.

Academic registration shall cease a day before the matriculation exercise for fresh students. Students must register at the beginning of the session within the first to third (1st – 3rd) weeks of the semester. Those that were not registered would not be allowed for the semester examination.

All fresh and returning students must first complete the Central Registration Exercise before registering for individual courses. Returning students with course deficiencies must first register the deficient courses before proceeding to register other courses for the new session.

At the Centre, all fresh students must produce original copies of their certificates or any certified documentary evidence of their qualifications and must submit photocopies of all their credentials during registration for record keeping. Students should register with names by which they were admitted into the University. The University does not approve change of names except with a written approval from the Registrar.
(a) Procedure For Online Registration

All successful candidates admitted into CODel programme must visit the University webpage at https://codel.futminna.edu.ng/ for online registration.

(b) Course Registration

Students are required to visit the course registration portal at www.codel.futminna.edu.ng and follow the instructions provided for registration. Upon completion of the exercise, do not forget to print and keep a copy of the printout of your registered courses for record keeping.

In addition, fresh student are required to come along with the original and copies of the following documents for further registration. Flexibility would be given regarding this process.

1. Letter of Admission into the University, issued by Federal University of Technology, Minna.
2. Academic credentials (certificates).
3. Birth certificates or statutory declaration of age.
4. Evidence of payment of prescribed charges.
6. Letter of Attestation on character from candidate’s parent/guardian, in addition.
7. Eight copies of passport photograph.

(c) Opening and Closing of Course Registration Portal

The registration portal opens at the beginning of every semester and closes before the commencement of Continuous Assessment (CA). Once the portal is closed, students will not be allowed to register for courses until it opens again during subsequent semester. Thus, students who were unable to register before the closure of the course registration portal would not be eligible to take the CA and examinations for the course(s).

(d) Add and/or Drop Courses

CODel course registration portal makes provision for students to drop and add courses. To add or drop a course, visit the Course Registration portal and follow all the necessary instructions.
Students should ensure to complete this process before the course registration portal closes.

(e) **Registration at Other Units**

Fresh students may be further required to register at the following centres/units to have access to the facilities provided by the respective Centres/units:

(i) University Health Centre
(ii) University Library
(iii) Student Affairs Division

2.5 **Matriculation**

All fresh students will be required to take part in the University’s matriculation ceremony similar to those on face-to-face study mode. This ceremony is the official acceptance of new students to the University. However, it can also be performed online, with all necessary documents dully signed and return to the CODeL office.

On matriculation day each fresh student is required to take an oath and sign a declaration of his/her formal admission to the University affirming that he/she will observe the Statutes and Rules of the University as follows:

“**I ……………………………………………. solemnly undertake and swear to observe and respect the provision of the Federal University of Technology, Minna, Law, Statutes, and Regulations lawfully made there under, which are now in force and which shall from time to time be brought into force. I sincerely vouch and swear that I shall refrain and abstain from forming, joining or being a member or encourage membership of any secret societies within or outside the campus. I further pledge and declare that I will pursue my educational career diligently, and to hold myself in honour bound at all times to promote the ideals and good name of the University. So, help me God**”.

Only students that meet all University requirements for admission and are duly registered in the University shall be matriculated.

Academic gowns can be hired and are issued after payment of the stipulated fees. The gowns must be returned within 24 hours after
the matriculation ceremony. Failure to return the hired gown will
attract a fine.

(a) Matriculation Numbers
Each student would be assigned a matriculation number upon
registration. No official student paper or document may be
regarded as complete or valid unless it carries the correct
matriculation number. For this reason, students are strongly
advised to know and to be always definite about their
matriculation numbers and to use the number in all official
transactions.

(b) Submission of Student Personal Record File
All the matriculated students are expected to submit their student
personal record file to the Centre’s Secretary office, not later than
three weeks from the date of matriculation. Any student who fails
to submit his/her file within the stipulated period should consider
his/her registration cancelled.

2.6 Orientations
At the end of every admission registration, an orientation
programme would be arranged for fresh students by the Centre.
During the Orientation Programme, activities would be arranged to
familiarize the students with the Open Distance Learning (ODL)
system and the University system.

2.7 Students’ Identity Card
The Registry office is responsible for the issuance of Students’
Identity (ID) cards. Each student upon registration in the
University is issued with an official Student ID card valid for one
session only, or as may be indicated on the card.

Students may be required at any time to identify themselves upon
request by authorized University officials acting in the
performance of their duties.

Some University facilities are open only to students who are able
to show valid identity card. Students are required to take very
good care of their ID cards, carry them always and be ready to
produce them any time on demand. For a student to be issued a new identity card at the beginning of a new session, he/she must surrender the old one. Even upon graduation, the ID cards are useful items as they are required for collection of certificates.

Students must submit their ID cards to the Centre Secretary office upon their graduation or withdrawal from the University. Failure to do so shall be regarded as a breach of discipline.

**Replacement of Lost of ID Cards**

A lost ID card will be replaced only upon production of a police report/court affidavit, a letter of introduction from the student’s programme co-ordinator and payment of replacement fee.

**2.8 Academic Session**

Federal University of Technology, Minna, operates a semester system. Accordingly, there are two separate semesters of 17 weeks each in one calendar year. Those two semesters together constitute an academic session.

**2.9 Deferments**

A student can apply to defer admission, a session or a semester.

For deferment, a student is required to write to the Centre Secretary stating reason(s) for the deferment with evidence of payment of acceptance fee and sessional/semesterial registration and other required fees.

**2.10 Condonation**

An academic session or semester may be condoned for a student based on the principle of openness and flexibility.

The period of condonation will not count against the student’s maximum period of stay.
Chapter Three

Assessment and Evaluation

3.0 Introduction

Assessment and evaluation are the means by which students’ learning outcomes are measured against the stated learning objectives for each course and programme. Three types of assessment are employed in CODEL: self-assessment exercise, tutor-marked assessment/continuous assessment, and end of semester examination. Information on contact periods, students’ attendance, facilitation, tutorial and practical activities are highlighted in this chapter. Thus, highly recommended for your detailed understanding.

3.1 Contact Periods

There will be contact periods when periodic facilitation and practicum may be conducted. All students of CODEL shall spend between two (2) to four (4) weeks in each semester on Campus for the laboratory activities, practicum and examinations.

3.2 Students’ Attendance

(i) A two (2) to four (4) week residence time at FUT Minna, during each semester would be required.

(ii) Submission of tutored marked assignments, practical classes, field work, SWEP and SIWES shall be regarded as part of the requirements for a successful completion of a course.

(iii) A 75% participation in practicals, laboratory exercises, class assignments, SWEP, SIWES and field work shall be recorded by a student in order to qualify to sit for a semester’s examination or obtain a better grade that indicates how he or she performed in any course.
3.3 Self-Assessment Exercises (SAE)

These are exercises found within each study unit of the course materials. Although, not graded, they have been designed to help students assess their progress as they study.

3.4 Tutor-Marked Assignments (TMA)

The continuous assessments are designed to provide students an opportunity to assess their learning and progress over the duration of the course. They are automated in the form of computer marked assignments and are administered online.

Tutor-Marked Assignments (TMA) is a multiple-choice question, automatically graded upon submission and receive feedback on their performance in form of a score. It is important to note that students for whom there is no TMA score will not have a score for a course.

**Eligibility for TMA**

Students must be duly registered for each course in the semester in order to be eligible for the continuous and end-of-semester examinations.

**Opening and Closing of TMA Portal**

The TMA portal opens after course registration for the semester and it closes just before the examinations begin.

**Assignment Deadlines**

It is compulsory for students to turn in assignments by the deadlines specified in the module. Students must schedule time to complete homework, assignments, reading, or other tasks required of distance learning courses.

3.5 Mode of Examination

The following are the types of assessment that would be used to examine a student in a course:

(i) Practical
(ii) Oral Examination or Online Discussion
(iii) Written Examination (Pen-on-Paper).
The particular mode of examination or combinations chosen shall be dictated by the type of course and shall be the prerogative of the lecturer and/or the respective departments.

(a) Examination Time-Table

(i) The examination time-table shall be published on CODeL’s website and sent to student’s e-mail and all other mode of communication, at least two weeks before the commencement of semester examination.

(ii) No change should be effected in the time-table except for compelling reason such as resolving conflict between papers.

(iii) Where examination time-table will be shifted for one reason or the other, the Director of CODeL will promptly notify the students.

(b) Eligibility for Examination

In order to sit for an examination, a candidate must be duly registered for the course and subsequently for the examination in that course. In addition, a candidate must have satisfied the requirements as stipulated under the section “Attendance” in the Academic Code of Conduct.

(c) Inmate Students

Inmate students will be allowed to sit for examination in the prison custody under the close supervision of an invigilator.

(d) End-of-Semester Examinations

As the name implies, end of semester examinations assesses students on the entire courses at the end of each semester. Two types of end of semester examinations are employed at CODeL namely e-Examination and the Pen-on-Paper (PoP) examination. The examinations are conducted at the University campus or any other location as may be arranged by CODeL. For undergraduate students, the examinations account for 60% of the total score for the course.
3.6 The e-Examination

This is a computer-based examination administered by centre only. The examination comprise Multiple Choice Questions (MCQs) and Fill-in-the-Gaps Questions (FGQs) types. The number of questions per course is according to the credit units of a course. Three credit unit courses should have minimum of 60 MCQ and FGQ questions while two credit unit courses should have minimum of 40 questions.

3.7 Pen-on-Paper (POP) Examinations

Pen-On-Paper (PoP) examinations are written based examination. The number of questions per course would be in accordance with the credit units of a course. For a three-credit unit course, there are five questions of which three must be attempted while for a 2-credit unit course, there are four questions of which two must be attempted.

3.8 Opening and Closing of Examination Portal

As it is for course registration, students must also register for examinations. The portal for examination registration opens alongside the course registration portal. Students who do not register the examinations will not be allowed to write examinations in the relevant course.

3.9 External Examination and Assessment

Examinations during the first four years of the under-graduate degree programme shall be moderated entirely within the University. Thus, external examiner shall be invited to assess the work of the students at the 500 level only. Such external examiners shall be nominated by the Department and submitted to the University Senate for approval. External examiners and their alternates shall be appointed for one academic session and may be reappointed for a maximum of three terms. Only when qualified and appointable external examiners are not available from within Nigeria shall such appointment be extended to examiners from outside the Country.
3.10 Examination Procedures

Examination is a very important component of a learning process. Therefore, credibility and integrity of the processes must be maintained. Thus, there are policies, rules and regulations to guide the conduct of examinations.

Policies

Policies guiding the administration of examinations in CODEL, FUT, Minna include the following:

(a) Deferment of Examinations

In conformity with the provisions of ODL, the University has set guidelines for the deferment of examinations and the conditions that warrant deferment. These guidelines are laid out in the “Policy on Deferment of Examinations”. Students are advised to read the document and acquaint themselves with the requirements for deferring their examinations or even courses.

(b) Examination Rules and Regulations

There are laid down rules and regulations guiding the end-of-semester examinations. Students are advised to read these rules carefully before proceeding to write any examination. Examination misconduct is taken very seriously at CODEL and strict disciplinary measures have been put in place for defaulters.

(c) Examination Misconduct

Malpractice refers to any breach of the Matriculation oath. Examples of examination malpractice are: cheating, fighting, impersonation, verbal or physical attack on lecturer(s) and staff during the examination. Examination malpractice is regarded as a very serious offence by the university and so it attracts high sanctions. The penalty ranges from a warning to outright expulsion. Students are advised to desist from all forms of examination misconduct. See Appendix III for penalties for various examination misconducts.

(d) Disciplinary Measures for Examination Malpractice

The punishment for examination malpractice is premised on a decree promulgated by the Federal Government on Examination
Malpractices in 1999. The following are penalties for various offences:

(i) Except where specifically stated, materials relevant to the examination should not be brought into the examination hall.

(ii) Suspected examination malpractices shall be investigated by the CODEL panel and its report and recommendations submitted to the Examination Misconduct Committee through the Registrar for determination subject to approval by the Vice-Chancellor.

(iii) Proven cases of cheating shall be punished with dismissal from the University. Other cases will be treated on their individual merits.

(iv) The Senate shall impose penalties for any examination malpractices after thorough investigation.

(v) Graded punishments for various examination offences are indicated in Appendix III.

(e) Absence from an Examination

All students registered for a course are expected to sit for the examination in that course at the scheduled time of the examination.

Exemption from the above shall be on medical grounds and shall be granted on submission of a certificate from the Director of the University Health Services. For reasons other than medical, students’ application must be endorsed by Heads of Department concerned in consultation with their teaching staff and certified by the Dean. Otherwise, a student shall be deemed to have voluntarily absented himself/herself from the examinations. Such a student shall score ‘F’ in those examinations as agreed by the Senate. There shall be no makeup examination.

3.11 Course Numbers and Codes

The first two numbers indicate the level and the semester in which the course is offered, respectively e.g. BIO 111 represent 100 level course which is offered during 1st semester and BIO 121 represent 100 level courses which is offered during 2nd semester.
Three alphabets in the Department’s or School’s name shall precede the course code to designate which Department is offering the course. Here again, reasonable discretion can be used by Departments/Schools: For instance, the ‘BIO’ in the examples shown above with BIO 111 and BIO 121 indicate that the courses are from Biology Department.

**a) Course Credit Load**

(i) Every course in the University shall be assigned a credit load that corresponds with the number of lecture hours per week required to complete the course during a 17–week semester. A course that requires two hours of lectures per week shall be assigned two Credit Units. Any course that cannot be completed in 17-week semester shall be broken down into segment (for example, GEO 127a and GEO 127b), and each segment assigned a credit as described above.

(ii) Course unit in relation to practical in this context means three hours of practical per week in a 17-week semester.

**b) Credit Load for Students**

(i) This section deals with the maximum and minimum credit a student is allowed to register for in a semester and in one session. A maximum of 24 credit units and a minimum of 10 credit units would be allowed in any semester.

(ii) This means that the total number of credit units for all courses registered for by any student during a semester may not exceed 24 or fall below 10 units. A student who has registered a total of 10 credit units during a 17-week semester, for example, will attend 10 hours lectures per week during the semester.

**c) Examinations and Assignment of Marks**

For the purpose of assigning 100 percent mark in any course all assessments shall be grouped into two:

(i) The Continuous Assessment (CA) 30%

(ii) Examination 70%
3.12 Grading System

The Federal University of Technology, Minna operates a 5-point grading system. The following letter grades are in use under the 5-point system.

**CGPA CLASS OF DEGREE**

- **4.50 – 5.00** First Class Honours
- **3.50 – 4.49** Second Class Honours (Upper Division)
- **2.40 – 3.49** Second Class Honours (Lower Division)
- **1.50 – 2.39** Third Class Honours
- **1.00 – 1.49** Pass
- **0.00 – 0.99** Fail

The following abbreviations shall be used to describe progress/final grades in the courses:

- **W**: Withdrew from the course with permission
- **ABS**: Withdrew from the course without permission
- **INC**: Incomplete: May complete course within time specified by Instructor but not to exceed one year.
- **NR**: No Report
- **EX**: Excused
- **DE**: Deferred
- **N**: No Credit Scored
- **S/NS**: (Satisfactory)/(Not Satisfactory): To be awarded when courses are taken on audit basis.

3.13 Carryover Courses

No student is allowed to carryover any course in which he/she scored an ‘E’ grade or above.

Both the old and new grades in a carryover course shall be retained in the student’s transcript and they will also be used in computing his/her CGPA.
3.14 Dean’s List, Probation and Withdrawal

Within the session any student that registers a CGPA of 4.0 and above shall qualify to be on the Dean’s List of exceptional students. A letter shall be issued from the Directors’s Office to such student informing him or her of the same.

If a student registered a CGPA below 1.0 at any point in the academic course, he/she shall be placed on semester probation and if his/her performance on a second attempt falls below 1.0 he/she shall be placed on sessional probation.

3.15 SWEP and SIWES

At the end of second semester of 200 level, students will be required to fulfill three months Student Work Experience Programme (SWEP). Similarly, at the end of first semester, 400 level students in the programme are expected to proceed on twenty-four (24) weeks of Students’ Industrial Work Experience Scheme (SIWES), which is to be done in an establishment that can provide relevant industrial experience to the students.

3.16 Regulation for Graduation

To graduate, a student must be found worthy in character throughout the period of his/her studentship in the University and must accumulate the total units prescribed for each programme from Core, Electives and General Studies courses; and SWEP/SIWES/Teaching Practice and Project. A student must be in good standing in order to go for Industrial Attachment.

(a) Certificate

The certificate obtained through CODEL will be the same certificate obtained by those in the face-to-face university study mode. The entry requirement, the courses and the lecturers for ODL courses are the same lecturers who facilitate the same course in the face-to-face mode.

(b) Eligibility for National Youth Service Corps Mobilization
Students graduating from CODeL programme would either be mobilized for National Youth Service Corps (NYSC) scheme or be issued exemption letter based on the approved National Universities Commission (NUC) ODL policy on NYSC scheme after regularization process.

(c) Transcripts

A fee of two thousand five hundred Naira (N2,500.00) only is charged for transcripts issued to local institutions and five thousand Naira (N5, 000.00) only for transcripts issued to institutions outside Nigeria.
4.0 Introduction

Learner support refers to the facilities and services that the institution makes available to facilitate students’ learning.

4.1 Introduction to U-Learn LMS Platform

CODEL is leveraging on the advancements in Information, Communication Technology (ICT) by using e-Technology to mediate the distance between students and teachers who are tutorial facilitators in a distance learning and eLearning context.

U-Learn platform is designed to enable student learn at his or her own pace. The platform has several features to support learning.

The course materials for the programmes in the Computer Science are available on the platform in e-book format for students. The U-Learn platform is accessible on smartphones, notepads, or any system that uses Safari, iOS, Chrome or Internet Explorer.

Students are encouraged to visit the U-Learn platform and register at www.codel.futminna.edu.ng/ulearn. See Appendix IV on assessing U-Learn platform on the University website.

4.2 Tutorial Support

The facilitation feature on the platform enables facilitators and e-tutors to interact with students through several features such as online class discussions, general forum, and assessments.

(a) Facilitation procedure: Students are expected to ask questions about aspects of the course content that may not be clear, participate in online discussions initiated either by the facilitator or peers, and assess their understanding through practice quizzes provided by tutorial facilitators on the U-Learn platform.

(b) Role of Students: As distance learners, students are responsible for their learning. The course materials are designed
for interactive and self-instructional learning. Students are therefore expected to study the course materials before interacting with the tutorial facilitators and peers on the U-Learn platform.

(c) Role of Tutorial Facilitators: The tutorial facilitators comprise academic staff of the Faculty and other tutorial facilitators that have qualifications that are comparable with lecturers in face-to-face mode. These facilitators are available to guide students through the course content towards achieving learning goals. Students are encouraged to interact with the facilitators on the platform.

(d) Student Counsellors: Academic advising services are available at the Centre. This is a direct responsibility of Counsellors and the Centre’s Director. Students can also benefit from the Centre’s counselling services anywhere, anytime through the CODeL online Counselling Management System (CMS).

Note: ODL students have the right to use all facilities available in other Units in the University like their counterparts in face-to-face learning setting. The Units are:

4.3 Library Services

Federal University of Technology, Minna has standard and well-equipped libraries at both campuses in Minna, as well as an online e-Library known as “e-library” to support teaching, learning, and research activities of the university. Its major aim is to facilitate access to scholarly resources that will enrich in students’ learning. The CODeL Library has both print and electronic resources.

The electronic resources from the e-library of CODeL will help you in your studies, research in pursuit of scholarship. Each resource provides very helpful tools to assist you navigate through the contents.

Apart from the resources available at the main library and Codel library, the department also operates its own physical and e-Library with specialized collection to cater for the research and teaching needs of lecturers and students. This is presently located
in the school’s faculty library in the School of Information and Communication Technology (SICT) complex.

All registered students must normally carry their identity cards with them each time they wish to use the library and they must be prepared to produce the cards on demand by any library staff. Students can only borrow two books at a time from the library and the normal period of loan is two weeks.

**Accessing Online Resources**

Students must have a valid University ID Card in order to use the Library’s electronic resources. Students unable to come into the Library can call the Circulation Desk to validate their ID cards.

Library’s electronic resources are available to the students and can be directly accessed online.

**4.4 Information Technology Services (ITS)**

The Directorate of Information Technology Services of the University is a unit that demonstrates the significant role that ICT plays in the institution’s operations. The Directorate is responsible for providing IT services and infrastructure to facilitate electronic handling of data and activities relating to admissions, registration, examinations and student identity cards.

**Channels of Communication**

The Learner Support Unit (LSU) is the first point of contact with the Centre for enquiries. The LSU is open for 24 hours every day for contact/visits. Students and visitors can make enquiries through the LSU email.

**4.5 Information Service Unit**

The unit is under the Office of the Vice-Chancellor and deals with University publications, preparation and publication of calendars, prospectus, gazettes, and information documents, University Newsletter, News Bulletins, placements and publication of advertisements. The Unit is also responsible for public relations and ceremonies.
4.6 Computer Laboratory
Apart from the Centre’s e-learning laboratory, the Computer Science Department, has three well equipped and functional computer laboratories for students’ practical as well as for teaching. Apart from this, there are other general laboratories for the School of ICT with necessary and adequate software and hardware.

4.7 University Health Services (UHS)
The University Health Services (UHS) offers a whole range of services including general outpatient care, maternal and child welfare services, family planning, dental and laboratory services as well as environmental sanitation of the University campuses. All the registered students are entitled to free medical treatment at the University Health Centre.

4.8 The Security Division
The division is headed by a Chief Security Officer (CSO). This Unit provides 24 hours security services on both campuses, and in the Vice Chancellor’s lodge, University guest houses and other Principal Officers’ residences. The unit also coordinates its activities with other security agents, like the Nigerian Police Force, the State Security Service (SSS), the Military, Immigration Services, Customs, Nigeria Prisons Services etc.

The students are at liberty to report any incident promptly to security unit at any time. Where they have doubts on security issues generally, they can contact the Chief Security Officer or any of his officers for advice. Students’ must provide their ID cards to any security agent who may demand it.

4.9 Hostel Accommodation
The Centre will make efforts in providing accommodations for its students whenever required for the mandatory on-campus period. Priority would however be given to physically challenged students, sports men and women.
i. **Pregnant Students:** The hostel managers shall not accept liability for the arrangement of ante-natal and delivery services of pregnant students. A pregnant student will report her condition early to the Director Health Services and the Director of the Centre. A pregnant student will be allowed in the hall of residence not longer than two months before her expected date of delivery as may be determined by the Director, Health Services.

ii. **Feeding:** The University has engaged the services of private Caterers to provide meals to the students on PAY AS YOU EAT basis in the University’s Cafeteria.

iii. **Commercial Activities:** All activities related to the sale of goods and provisions of services on the two campuses of the University are under the Commercial Activities Committee. There are butteries and shops attached to or close to the halls.

### 4.10 Student Affairs Division

The Students’ Affairs Division is a division under the office of the Vice-Chancellor and headed by the Dean of Students who is a senior member of academic staff. The Division provides non-academic services such as student welfare matters, career guidance and behaviour, NYSC mobilization, recreation and sporting activities as well as student disciplinary matters. It is also the responsibility of the Division to regulate and control Student Union activities for the purpose of safeguarding national security, public order and public morality.

### 4.11 Guidance and Counselling Services

The Guidance and Counselling Unit offers a wide range of behaviour and psychological services aimed at helping students and staff to acquire and develop attitudes and skills, insights and understanding about themselves and their environment.

The following services are available:

(a) Individual and group behaviour
(b) Academic/educational behaviour
(c) Career behaviour/information
(d) Personal/social behavior
(e) Crisis intervention including: Roommate problems; Courtship /marital problems; Feeling of isolation and depression; Lack of concentration and interest; Relaxation/shyness problems; Anxiety about examinations; Ineffective study habits; Victimization and intimidation problems; Sexual harassment; Indigent students part-time work; Referral services etc.

All fresh students are required to register and complete the Students Information File and Student Cumulative Records folder at the Guidance and Counselling Office.

4.12 Information, Advice and Guidance (IA&G) Unit

This unit is to provide a range of support services and resources to help learners succeed in their studies. The roles of IA&G include the following:

(i) Provision of accessible, up-to-date and usable information to learners, potential learners and others who may require such information
(ii) Providing feedback from employers of labour in assisting learners in managing their challenges and achieving success during course of study.
(iii) Helping learners manage isolation that is typical of open and distance learners
(iv) Assisting learners in adopting effective study skills and habits that would enable them achieve success in their study,
(v) Provision of interpersonal counseling devoid of coercion and subjective biases
(vi) Guiding learners in making informed decisions concerning their studies and academic pursuit.
(vii) IA&G services are available at the Centre.

Note: Information, Advice and Guidance officer provides solution to students’ academic challenges while Counsellor provides solution to emotional problems.
4.13 Recreation and Sports

A variety of recreational and sporting facilities have been made available in Bosso and Gidan Kwano campuses of the University. The new ultra-modern gymnasium at Gidan Kwano equally has provision for basketball, badminton, a fitness Centre and other indoor sports while the gulf club is available for use by both the students and staff.

4.14 Search FM 92.3 Campus Radio

This is the campus-community radio of the Federal University of Technology, Minna. It is to provide information to the university and its immediate community through high energy infotainment, educationally appealing programming and controlled broadcast contents.
Chapter Five

Computer Science Programme

5.0 Introduction
This section contains information on program structure, course content specification, course synopsis, requirement for graduation, etc. The student should take note of all the information, and also learn how to calculate his/her semesterial and final grades.

5.1 Programme Structure
The program structure for Computer Science from 100 Level to 500 Level is as follows:

100 Level – Students are expected to take relevant courses in basic science such as Mathematics, Physics, Chemistry, and General Studies, which will serve as foundation upon which the courses at subsequent levels are to be based. Also introductory courses in Computer, Environmental Science and Biology are included.

200 Level – Students at this level take Computer Science courses as well as courses in Mathematics, Statistics and Physics.

300 Level – Students at this level take more Computer Science courses with a General Studies course.

400 Level – Detailed and specific courses in Computer Science are taken by the students at this level with practical. In the second semester, the students undertake Industrial Work Experience Scheme (SIWES) for six months.

500 Level – At this level, the students take more detailed and specific courses in Computer Science, with seminar presentation and research project. The students are equally passed through oral defense and examination by the Department’s external examiner.
5.2 Course Content Specification

100 Level First Semester

L = Lecture, P = Practical, and T = Tutorial

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>UNIT</th>
<th>STRUCTURE</th>
<th>PRE-REQUISITE</th>
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<tbody>
<tr>
<td>MAT111</td>
<td>Algebra and Number Theory</td>
<td>3</td>
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<tr>
<td>MAT112</td>
<td>Geometry and Trigonometry</td>
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<tr>
<td>STA127</td>
<td>Introduction to Statistics I</td>
<td>2</td>
<td>2 -</td>
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<td>CPT111</td>
<td>Introduction to Computer Science</td>
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<td>2 -</td>
<td></td>
</tr>
<tr>
<td>PHY113</td>
<td>General Physics I</td>
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<td>3 -</td>
<td></td>
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<tr>
<td>CHM111</td>
<td>Physical Chemistry I</td>
<td>3</td>
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<tr>
<td>GST110</td>
<td>Use of English I and Library</td>
<td>3</td>
<td>3 -</td>
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<tr>
<td>CIT111</td>
<td>Introduction to Information Theory and Application</td>
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ELECTIVE (2 Units NOT Compulsory)

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<td>BIO111</td>
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TOTAL 22 17 1 3

100 Level Second Semester

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<td>STA127</td>
<td>Probability I</td>
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<tr>
<td>CPT121</td>
<td>Introduction to Programming</td>
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<tr>
<td>GST121</td>
<td>Use of English II</td>
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<td>GST103</td>
<td>Nigerian Peoples and Culture</td>
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<td>CHM121</td>
<td>Organic Chemistry I</td>
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<tr>
<td>MAT212</td>
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<td>MAT216</td>
<td>Mathematical Methods</td>
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<td>STA217</td>
<td>Probability II</td>
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<td>CPT211</td>
<td>Object-Oriented Programming I</td>
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<td>CPT213</td>
<td>Computer Organization and Assembly Language</td>
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<td>CPT214</td>
<td>Computer Architecture</td>
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<td>GST211</td>
<td>Logic and Philosophy</td>
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**ELECTIVE (3 Units Compulsory)**

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<td>Electric Circuits and Electronics</td>
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<td>CSS216</td>
<td>Cryptography Theory 1</td>
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**200 Level Second Semester**

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<td>MAT222</td>
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<td>MAT225</td>
<td>Introduction to Numerical Analysis</td>
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<td>CPT221</td>
<td>Object-Oriented Programming II</td>
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<td>Data Structures</td>
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<td>CPT223</td>
<td>Introduction to Algorithms</td>
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<td>CPT224</td>
<td>Introduction to Web Design</td>
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<td>CIT224</td>
<td>Discrete Mathematical Structure</td>
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<tr>
<td>CPT226</td>
<td>Hardware Systems and Maintenance</td>
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300 Level First Semester

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<td>Operating Systems</td>
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<td>CPT314</td>
<td>Computer Ethics</td>
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<td>CPT316</td>
<td>Systems Analysis and Design</td>
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<td>Data Communications and Networks</td>
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**ELECTIVES (3 Units Compulsory)**

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<td>CSS311</td>
<td>Cybercrime and Countermeasures</td>
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<td>Cryptography Theory II</td>
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<td>CIT315</td>
<td>Internet Security</td>
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### 300 Level Second Semester

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<td>Computer Graphics</td>
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<tr>
<td>CPT322</td>
<td>Introduction to Digital Design and Microprocessors</td>
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<td>CPT323</td>
<td>Automata, Computability and Complexity</td>
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<td>CPT325</td>
<td>Database Design and Management</td>
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**ELECTIVES (2 Units Compulsory)**

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### 400 Level First Semester

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500 Level First Semester

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**ELECTIVES (2 units NOT Compulsory)**

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### 500 Level Second Semester

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**ELECTIVES (2 Units NOT Compulsory)**

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**Total 17**

### 5.3 Course Synopsis

**CPT111: Introduction to Computer**

2 Units

**History of computing:** Definition; Generation of computers, Components of a computer system; Computer Hardware;
Input/output devices, Computer Software; Operating system. **Machine level representation of data:** Bits, bytes, and words; numeric data representation and number bases; fixed and floating-point systems; signed and twos complement representations; fundamental operations on bits; representation of nonnumeric data (character codes, graphical data); representation of records and arrays. **Digital logic:** Switching circuits; gates; memory. **Von Neumann model of computation:** The fetch/decode/execute cycle; basic machine organization. **Operating Systems and Virtual Machines:** Historical evolution of operating systems, types and some basics functions of operating systems. **Computing Applications:** Word processing, spreadsheets, editors, files and directories. **Overview of programming languages:** History of programming languages; brief survey of programming paradigms; the role of language translation in the programming Process (assembler, interpreter and compilers), Basic concept of algorithms; emphasis on flowcharts and pseudo-code. **Introduction to the Internet:** Background and history of networking and the Internet; Web technologies; the HTML protocol; the format of a web page; support tools for web site creation.

**MAT111: Algebra and Number Theory** 3 Units

Elementary set theory, subsets, union, intersection, complements, and Venn diagrams. Number systems, real number system, complex number system, real line, inequality, surds, indices and logarithms, mathematical induction, sequence and series, partial fraction. Equations, polynomials, remainder theorem, completing the square, change of variable, reciprocal equation, method of rationalization, simultaneous equation, theory of quadratic equations, Binomial theorem, Matrices and Determinants, circular measure, trigonometric functions of angles of any magnitude, addition and factor formulae.

**MAT112: Geometry and Trigonometry** 3 Units

Geometric representation of vector in 1-3 dimensions components direction cosines, scalars and vector with respect to a scalar variable. Coordinate geometry, distance between two points,
equation of straight line, equation of a line in normal form, equation of tangent, equation of ellipse, equation of parabola, equation of hyperbola, equation of conic section, and equation of a circle. Tangents, normal, kinematics of a particle. Component of velocity and acceleration of a particle moving in a plane. Force, momentum, laws of motion under gravity, projectiles, resisted vertical motion, elastic string, simple pendulum impulse impact of two smooth spheres, and of a sphere on a sphere.

**STA117: Introduction to Statistics**  
2 Units
Statistical data, their sources, collection and preliminary analysis by tables and graphs, measure of location and dispersion (for grouped and ungrouped data), skewness and kurtosis; simple regression and correlation analysis, index numbers.

**PHY 113: General Physics I**  
3 Units
Space and Time, Frames of References. Units and Dimensions: Fundamental and Derived Units in S. I. Unit. Dimensional Analysis of Equations. **Motion and Forces:** Velocity and acceleration – relationships for uniformly accelerated motion. Scalars, vectors, vector addition and subtraction, relative velocity, Newton’s laws of motion: Conversation of energy and momentum, collisions: elastic collisions, work, energy and power. **Circular motion:** centripetal force, barking of tracks, motion along horizontal and vertical circles, Galilean invariance; Gravitational force; Inverse square law, gravitational constant, gravitational potential and field. Velocity – synchronous orbit; escape velocity, weightlessness. **Rotation of rigid bodies:** Moment of inertia; theorems of moment of inertia. Conservation of angular momentum, rolling bodies. **Statics:** Composition and resolution of forces, concurrent and parallel forces, conditions for equilibrium, Centre of gravity for component bodies and bodies from which part is removed.

**CHM 111: Physical Chemistry I**  
3 Units
States of matter, changes of state. Colligative properties, crystal lattice, chemical equilibrium and kinetics. Thermochemistry and introductory thermodynamics. Electrochemistry.

GST 110: Use of English I and Library 3 Units


CIT 111: Introduction to Information Theory and Applications 3 Units

Information– Definition, Characteristics & Interpretation, Data &it’s logical & physical concepts. Computers: History of Computers and their classification, Basic Organization, Memory: - Primary RAM, ROM, EPROM etc. Secondary: - Magnetic-Floppy and Hard disks. Optical: - CDROM, WORM etc. Concept of Virtual Memory and Cache Memory and why are the needed, Computer
Operation: - Instruction Cycle, Program flow of control with and without interrupts, Computer Arithmetic:- Number systems binary, Octal, Hexadecimal, Binary Addition, Subtraction and Multiplication, Flotation point representation and arithmetic, Arithmetic through stacks, Computer Language: Introduction to computer language, Definition of assembler Compiler and Interpreter, Basic concept of Data Base Management Systems. Communication:- Concept of Analog and Digital Signal, Channel Capacity (Shannon’s Theorem), Transmission Impairments (Attenuation, Dispersion, etc.), Concept of Signal to Noise ratio, Encoding/ Decoding (Concept of Parity bit, Hamming Code), Transmission Media (Twisted Pair, Coaxial Cables, Micro Wave, Optical Fibre and Satellite), A/D and D/A conversion, Definition and Concept of Modulation, Communication technique- circuit switching, message switching and packet switching – their advantages and disadvantages. Networks: Type of Networks (LAN, MAN, WAN, etc.), Network configuration: Basic ISO – OSI, Protocols: - What is Protocol? Why it is needed?, Token ring, Internet: -Introduction to Internet terminologies and concept of WWW, HTTP, e-mail, GIAS, Search engine, Domain name etc.

**BIO 111: Cell Biology**

2 Units

Types & use of microscopes, cell cycle, and cellular basis of life structure of plant and animal cells. Prokaryotic & eukaryotic cells, bacteriophages. Functions of cells & cellular organelles cell division e.g. Mitosis & meiosis, heredity.

**CPT 121: Introduction to Programming**

2 Units

**Brief survey of programming paradigms:** Classification; procedural, object-oriented, functional. **Introduction to Visual Basic (VB):** History, versions. **Fundamental programming constructs in VB:** Syntax and semantics; variables, types, expressions, and assignment; simple I/O; conditional and iterative control structures, testing and debugging strategies.

**MAT 121: Differential and Integral Calculus**

3 Units

Function of a real variable, graphs, limits and idea of continuity. The derivative as limit of change, techniques of differentiation.
Extreme curve sketching; Integration as an inverse of differentiation, method of integration, definite integrals, application to area, volume.

**STA 127: Probability I**  
2 Units

Generation of statistical events from set theory and combinatorial methods; elementary principle of probability: addition, multiplication and conditional probability, Bayes’ rule, one dimensional random variables (discrete and continuous); Types and distribution of random variables (discrete and continuous), their expectations and moments, Application to the Bernoulli, binomial, poison, geometric, hyper-geometric, normal and exponential distributions.

**GST 121: Use of English II**  
2 Units

Reading Techniques and Study Skills and Reading Comprehension: Definition/Concept of Reading. Reading purposes. Reading strategies. Reading techniques, skimming, scanning SQ3R, main ideas in a passage and others. Summary writing. Vocabulary development – How to enrich your vocabulary, Registers/Lexis, American and British vocabulary differences. Oracy skills.

**GST 103: Nigerian Peoples and Culture**  
2 Units

Study of Nigerian history; Culture and arts in pre-colonial times; Nigerian’s perception of his world; Culture areas of Nigeria and their characteristics; Evolution of Nigeria as a political Unit; Indigene/settler phenomenon; Concepts of trade; Economic self-reliance; Social justice; Individual and national development; Norms and values; Negative attitudes and conducts (cultism and related vices); Re-orientation of moral and national values; Moral obligations of citizens; Environmental problems.

**CHM 121: Organic Chemistry**  
3 Units

Historical survey of the development and importance of organic chemistry. Isolation and purification of organic compounds. Qualitative and quantitative organic chemistry. Nomenclature and chemistry of the functional groups.
**GRY 124: Introduction to Environment Science**  
3 Units

Energy system in the atmosphere; biosphere, hydrosphere and lithosphere; Current environmental problems (deforestation, pollution, desertification, soil erosion, flood and other natural disasters etc.); Biogeochemical cycles; Ecosystems balance and its description; Population explosion and issues of world food and water supply; Effect of agriculture on environment; Global energy problems and alternate energy sources, the problems of waste management etc.

**PHY 123: General Physics II**  
3 Units

Atomic Viewpoint, interatomic forces, melting and evaporation in molecular terms. SVP in terms of dynamic equilibrium. The Zeroth law of thermodynamics: Kinetic theory of gases, assumptions, pressure formulae, energy and temperature, Gas constant and Boltzmann’s constant, various forms of gas equation. Work done by expanding gases Cp and by Cv., Isothermal and adiabatic changes, Real gases, critical temperature, van der Waal change of state, laws of thermodynamics. Elasticity, strain, stress, moduli of elasticity, Young’s sending moments, Hydrostatics, pressure, buoyancy, Archimedes’ principles, surface energy, excess pressure, formula, measurement of surface tension by various methods, coefficients, Hydrodynamics: streamlines, Bernoulli and continuity equations, turbulence, Reynolds numbers. Viscosity: Laminar flow: Pineville’s formula, measure of coefficient of viscosity, variation with temperature.

**PHY 126: General Physics III**  
2 Units

Electric Field and Electric Potential, Field of force, Electric Field. Electric charge, magnetic Field nuclear field, Electrostatics, Coulomb’s law, electric field, Potential energy relations, Gauss theorem, Equipotential, capacitance, parallel plate and practical forms of capacitors, capacitors in series and parallel, energy stored, dielectrics, action of dielectric charging and discharging a capacitor.

**MAT 212: Linear Algebra I**  
3 Units
Vector space over the real field, subspaces, linear independence, basis and dimension, linear transformation and their representation, matrices, range, null space rank, singular and non-singular transformation and matrices, algebra of matrices.

**MAT 216: Mathematical Methods**  
2 Units

Taylor’s series, real valued function of two or three variables, partial derivatives, chain rule, extremes, LaGrange multipliers, increments, differentials and linear approximations, evaluation of line integrals, multiple integrals.

**STA 217: Probability II**  
3 Units


**CPT 211: Object-Oriented Programming I**  
3 Units

**Brief survey of programming paradigms:** Classification; procedural, object-oriented, functional). **Introduction to object-oriented programming:** Introduction to a typical object-oriented language C++; Fundamental design concept and principles, introduction to design patterns; object-oriented analysis and design; design for reuse. **Data declaration:** Variables, types, and expressions; assignment, classes and objects; syntax of class definitions; methods, members. **Message passing:** Simple methods; parameter passing; Sub-classing and inheritance. **Control Structures:** iteration, conditionals. **Simple Data structure:** Arrays; strings.

**Suggested Lab work:** Programming assignments involving hands-on practice in the design and implementation of simple algorithms such as finding the average, standard deviation, searching and sorting.
CPT 213: Computer Organisation and Assembly Language 2 Units

Basic organization of the von Neumann machine: control unit; instruction fetch, decode, and execution; instruction sets and types (data manipulation, control, I/O); assembly/machine language programming; instruction format, addressing modes; subroutine call and return mechanisms; I/O and Interrupt. Input and Output: simple I/O; files. Assembly language programming: instruction format and types, memory and I/O instructions, dataflow, arithmetic, and flow control instructions, addressing modes, stack operations, and interrupts. Datapath and control unit design: RTL, microprogramming, and hardwired control. Practice of assembly language programming.

Suggested Lab work: Programming assignments to practice MS-DOS batch programming, Assembly Process, Debugging, Procedures, Keyboard input, Video Output, File and Disk I/O and Data Structure.

CPT 214: Computer Architecture 3 Units

Overview of computer organization: Register transfer sequences; micro-operations, instruction codes, control units and timing; microprogramming; bus organization. Memory systems: Storage systems and their technology; coding, data compression, and data integrity; memory hierarchy; main memory organization and operations; latency, cycle time, bandwidth, and interleaving; cache memories (address mapping, block size, replacement and store policy); virtual memory (page table, TLB); fault handling and reliability. Interfacing and communication: I/O fundamentals; handshaking, buffering, programmed I/O, interrupt-driven I/O; interrupt structures; vectored and prioritized interrupt acknowledgement; external storage, physical organizations, and drives. Buses: bus protocols, arbitration, direct-memory access (DMA); introduction to networks, multimedia support RAID architectures. Functional organization: implementation of simple data paths. Control unit: hard wired realization vs micro-programmed realization; instruction pipelining; introduction to instruction-level parallelism (ILP). Multiprocessor and alternative architectures: Introduction to SIMD, MIMD, VLIW,
EPIC; systolic architecture; interconnection networks; shared memory systems; cache coherence; memory models and memory consistency. **Performance enhancement:** RISC architecture; branch prediction; prefetching; Scalability. **Contemporary architectures:** Hand held devices; embedded systems; trends in processor architecture.

**GST 211: Logic and Philosophy**  
2 Units

This course covers Philosophical foundations of human existence; main branches of philosophical problems; philosophy and human institutions; science, technology, politics, religions and morality; types and sources of knowledge; facts; Truth, Belief and Opinion; theories of knowledge and philosophy; social and political philosophy; Man-origin, nature and environment; and implication of science, Technology and Education to life.

**CSS 216: Cryptography Theory I**  
3 Units

**Introduction to simple Cryptosystems:** Shift Cipher, Substitution Cipher, Affine Cipher, Vigenere Cipher, Hill Cipher, Permutation Cipher, Streams Cipher. **Cryptanalysis:** Cryptanalysis of Affine, Cryptanalysis of Substitution Cipher, Cryptanalysis of Vigenere Cipher, Cryptanalysis of Hill Cipher, Cryptanalysis of substitution Cipher, Cryptanalysis of streams Ciphers. **Shannon’s Theory:** Introduction, Elementary probability theory, Perfect Secrecy; **Entropy:** Huffman Encoding, Properties of Entropy, Spurious Keys and Unicity distance, product cryptography.

**CPT 221: Object-Oriented Programming II**  
3 Units

**Java fundamentals:** introduction to Java programming language and general syntax; Data types, identifiers, variables, operators, comment, String and reserved words. **Classes, interface, enumeration and objects:** Concrete class, abstract class and inner class; declare, implement and use of `enum`; declare object, methods, field and local variable; Constructor as special method; Overload and override a method; Instantiate an object of a class; Implement abstract class and interface; Control access to members; Static class members; Final instance variable; Using
this reference and garbage collector. **Control statements:** logical operators, relational operators, selection/decision statement (if and else, switch), loops statements (do, while and for), branching statements (break, return and continue). **Exception handling:** Java throwable’s inheritance hierarchy, check and unchecked exceptions, catch exception with try/catch/finally blocks, using throws and throw keyword. Creating and using user defined checked exception.

**Suggested Lab work:** Programming assignments involving hands-on practice in the design and implementation of simple algorithms such as finding the average, standard deviation, searching and sorting. Practice in developing and tracing simple recursive algorithms. Practice in developing programs involving inheritance and exceptional handling cases.

**CPT 222: Data Structures** 3 Units

**Review of object-oriented design:** Fundamental data structures; Primitive types; records; the idea of type abstraction; pointers and references; linked structures; implementation strategies for stacks, queues, and hash tables; implementation strategies for graphs and trees; strategies for choosing the right data structure. **Fundamental issues in language design:** General principles of language design, design goals, typing regimes, data structures models, control structure models, abstraction mechanisms.

**Suggested Lab work:** Programming assignments leading to extensive practice in problem solving and program development involving the use of the various data structures implemented in the course with emphasis on object-orientation.

**CPT 223: Introduction to Algorithms** 3 Units

**Algorithms and problem-solving:** The role of algorithms in the problem-solving process; the concept and properties of algorithms. **Basic algorithm design techniques:** Techniques for algorithm design and implementation and their place in an object-oriented design. **Recursion:** the concept of recursion; implementation of recursion and its relation; recursive specialization of mathematical
functions (such as factorial and Fibonacci); simple recursive procedures (Towers of Hanoi, permutations, fractal patterns); divide-and-conquer strategies; recursive backtracking.

**Fundamental computing algorithms:** i.e. Numerical algorithms, sequential and binary search algorithms; sorting algorithms etc. Application of algorithm design techniques to a medium-sized project. **Introduction to basic algorithmic analysis:** formal methods of testing.

**Suggested Lab work:** Programming assignments leading to extensive practice in problem solving and program development involving the use of the various algorithmic techniques implemented in the course.

**CPT 224: Introduction to Web Design**  
**2 Units**

**Introduction to the internet and web servers; the web environment, authoring tool:** HTML overview, structural HTML tags, formatting text, creating links, adding images and other page elements, tables, frames, forms, specifying colour in HTML, cascading style sheets, server side include; graphics GIF, JPEG, PNG formats, designing graphics with palette, animated GIFs, multimedia and interactivity, introduction to JavaScript, DHTML, XML, XHTML, WAP and WML. The HTML protocol; the format of a web page; support tools for web site creation. **Multimedia data technologies:** sound and audio, image and graphics, animation and video, input and output devices; tools to support multimedia development. **Interactivity on the web:** scripting languages; the role of applets. **Software tools and environments:** web—page development tools. **Intellectual property:** foundations of intellectual property; copyrights, patents, and trade secrets; issues regarding the use of intellectual property on the web. **Privacy and civil liberties:** ethical and legal basis for privacy protection; freedom of expression in cyberspace; international and intercultural implications.

**CIT 224: Discrete Mathematical Structures**  
**3 Units**

**Logic:** Propositions and truth values, logical connectives and truth tables, tautologies and contradictions, logical equivalence and logical implication, the algebra of propositions, arguments,
predicate logic, arguments in predicate logic; **Mathematical Proof:** the nature of proof, axioms and axiom systems, methods of proof, mathematical induction; **Sets:** sets and membership, operations on sets, counting techniques, the algebra of sets, families of sets, the Cartesian product, types and typed set theory, **Relations:** relations and their representations, properties of relations, intersections and unions of relations, equivalence relations and partitions, order relations, Hasse diagrams, relational; databases. **Functions:** definitions and example, composite functions, injections and surjections, bijections and inverse functions, cardinality, functional dependence and normal forms; **Algebraic Structures:** binary operations and their properties, algebraic structures, groups, substructures, morphisms, group codes; **Boolean algebra:** introduction, properties of Boolean algebras, Boolean functions, switching circuits, logic networks, minimization of Boolean expressions; **Graph Theory:** definitions and examples, paths and cycles, isomorphism of graphs, tree, planar graphs, directed graphs; **Applications of graph Theory:** rooted trees, sorting, searching strategies, weighted graphs, the shortest path and travelling salesman problems, networks and flows.

**CPT 226: Hardware System and Maintenance**  1 Unit

**Introduction to computer systems:** Computer systems parts. **Maintenance techniques:** approaches and tools; diagnostics techniques. **System assembly and installation:** troubleshooting and repair of computer systems and accessories; portable etc.

**PHY 216: Electric Circuits and Electronics**  3 Units

**DC Circuits:** circuit analysis; Kirchhoff’s laws; Potentiometer circuit; the venin’s r.m.s and peak-to-peak values, reactance, transient currents. Fourier analysis of complex waveforms, series RLC circuit, Q factor, resonance. **Review of semiconductors:** Qualitative treatment of band theory, doping, intrinsic and extrinsic semiconductors, p-type and n-type semiconductors, minority and majority carries. **Diode circuits:** ideal rectifiers, rectifiers, filters, detectors.
MAT 222: Linear Algebra II  
2 Units
System of linear equations, change of basis, equivalence and similarity, Eigenvalues and Eigen vectors, minimum and characteristic polynomials of a linear transformation (matrix) Caley-Hamilton theorems, bilinear and quadratic forms, orthogonal diagonalisation, canonical forms.

MAT 225: Introduction to Numerical Analysis  
3 Units

CPT 311: Object-Oriented Programming III  
2 Units
**Advance features of Java:** Collections framework and generic; overview of Java collections framework, declaring, creating and accessing an array, passing array to method and returning array from method. Introduction to array list, map and set, generic class and method declarations, use of generic Java collections framework. **Inheritance and composition:** explain inheritance as a relationship, implementing inheritance, super keyword, final keyword, instantiation process, invoking a parent class constructor, explain composition a relationship. **Polymorphism:** using parent class references to child objects, casting references, polymorphic parameters. **Threading:** life cycle of a thread, extending thread class, methods of thread class, multithreading issues. **Input/output classes:** overview of java.io package, input streams classes, output streams classes, chaining streams together, random access file class, java.io file class, object serialization and deserialization. **Java networking:** using sockets, server socket class, socket class, communicating between sockets, datagram packets, sending and receiving datagram packets. **Swing:** Java application development following swing components;
Japplet, icons and labels, text fields, button, JButton class, check box, radio buttons, the container, panel, window and frame classes, combo box, tabbed panes, scroll panes, trees, tables and customer rendering of JList cells.

**Suggested Lab work:** Programming assignments leading to extensive practice in problem solving and program development with emphasis on object-orientation. Practice in developing programs involving inheritance and polymorphism. Practice in GUI programming using advance features.

**CPT 313: Operating Systems**

Role and purpose of operating systems; history of operating system development; functionality of a typical operating system; design issues (efficiency, robustness, flexibility, portability, security, compatibility). **Basic principles:** structuring methods; abstractions, processes, and resources; design of application programming interfaces (APIs); device organizations; interrupts; user/system state transitions. **Concurrency:** the idea of concurrent execution; states and state diagrams; implementation structures (ready lists, process control blocks, etc.); dispatching and context switching; interrupt handling in a concurrent environment. **Mutual exclusion:** definition of the “mutual exclusion” problem; deadlock detection and prevention; solution strategies; models and mechanisms (semaphores, monitors, condition variables, rendezvous); producer-consumer problems; synchronization, multiprocessor issues. **Scheduling:** preemptive and non-preemptive scheduling policies; processes and threads; real-time issues. **Memory management:** review of physical memory and memory management hardware; overlays, swapping, and partitions; paging and segmentation; page placement and replacement policies; working sets and thrashing; caching. **Device management:** characteristics of serial and parallel devices; abstracting device differences; buffering strategies; direct memory access; recovery from failures. **File systems:** fundamental concepts (data, metadata, operations, organization, buffering, sequential vs. non-sequential files); content and structure of directories; file system techniques (partitioning, mounting and unmounting, virtual file systems); memory-mapped files; special-
purpose file systems; naming, searching and access; backup strategies. **Security and protection:** overview of system security; policy/mechanism separation; security methods and devices; protection; encryption; recovery management.

**Suggested Lab work:** Implementation of user-defined utilities/commands for UNIX by writing systems programs using different types of system calls including those for file/directory management, process management, signal management, and client/server management. Also involve practice on various aspects of shell environment and shell programming.

**CPT 314: Computer Ethics**  
**2 Units**

**Social context of computing:** introduction to the social implications of computing; social implications of networked communication; growth of, control of, and access to the Internet; gender-related issues; international issues. **Methods and tools of analysis:** making and evaluating ethical arguments; identifying and evaluating ethical choices; understanding the social contest of design; identifying assumptions and values. **Professional and ethical responsibilities:** community values and the laws by which we live; the nature of professionalism; various forms of professional credentialing and the advantages and disadvantages; the role of the professional in public policy; maintaining awareness of consequences; ethical dissent and whistle-blowing; codes of ethics, conduct and practice; dealing with harassment and discrimination; “acceptable use” policies for computing in the workplace. **Risks and liabilities of computer-based systems:** historical examples of software risks; implications of software complexity; risk assessment and management.

**CPT 316: Systems Analysis and Design**  
**3 Units**

**The software development life cycle:** conception, business case, business context, system requirements, requirements analysis, systems analysis, design, implementation, testing, deployment, maintenance. **The Unified Modeling Language (UML):** models, use case diagrams, activity diagrams and state chart diagrams, sequence and collaboration diagrams, class diagrams, component diagrams. **Managing the process:**
customers, organization types, project management, teams and team dynamics, computer assisted software engineering (CASE) tools, documentation.

Suggested Lab Work: Analysis and design assignments leading to extensive practice in the use of UML and CASE tools.

CPT 317: Data Communications and Networks 3 Units

Introduction to Digital and Analogue representations and channels: bandwidth and noise; channel capacity; Nyquist, Shannon; telecommunication history; circuit switching and packet switching; multiplexing; FDM, TDM, statistical multiplexing; virtual circuits and datagrams; Aloha, CSMA, CSMA-CD, token passing, CDMA, wireless LANs and simple performance analysis; errors, coding and redundancy; hammering theory and codes; CRCs, selective retransmission and flow control. Architecture for networks and distributed systems: introduction to LANs and WANs; layered protocol design, ISO/OSI, IEEE 802; impact of architectural issues on distributed algorithms; network computing; distributed multimedia. Concurrency: states and state diagrams; structures; dispatching and context switching; the role of interrupts; concurrent execution; the “mutual exclusion” problem and some solutions; deadlock; models and mechanisms; producer-consumer problems and synchronization; multiprocessor issues. Introduction to Computer Networks: The OSI and TCP/IP models; transmission media; network services and protocols; routing protocol and algorithms; network layers and topologies; applications and security; internetworking and the internet congestion and intrusion bandwidth allocation; construction and installation of networks.

Suggested Lab work: The lab involves several projects to gain hands-on experience with network devices, programming and tools. More specifically, it provides students with the opportunity to: Setup various servers such as DNS, DHCP, Web Servers on Windows/Linux platforms; Develop simple client/server network applications using sockets; Create simple web pages; Simulate network; Analyze various protocols by capturing packets; Measure network utilization under varied situations; Use various network-related commands; Configure switches and routers.
CPT 318: Human Computer Interaction 2 Units
Foundations of human-computer interaction: human-centered development and evaluation; principles of good design (GUI) and good designers; GUI (Graphical user interface) toolkits, engineering trade-offs. Introduction to usability testing: tools; processes; requirements; design for reuse. Software engineering issues: risks and liabilities of computer-based systems.

CSS 311: Cybercrime and Countermeasures 3 Units
This provides detail discussion and possible solutions on various type of cybercrime such as: cyber terrorism, cyber pornography, defamation, stalking, online gambling, e-mail spoofing, electronic transaction forgery, etc.

CSS 312: Cryptography Theory II 3 Units

CIT315: Internet Security 3 Units
Introduction: Why require a security? Picking a security policy, strategies for a secure network, the ethics of computer security, security threats and levels, security plan (RFC2196). Classes of attacks: stealing passwords, social engineering, bugs and backdoors, authentication failures, protocol failures, information leakage, exponential attacks, viruses and worms, denial-of-service attacks, botnets. Active attacks: Computer security; what are viruses, Trojan horse and worms? How to protect the computer against virus? What is the structure of viruses? Firewalls and proxy servers, kinds of firewalls, packet filters, application-level filtering, circuit-level gateways, dynamic packet filters, distributed
firewalls, what firewalls cannot do, filtering services, reasonable services to filter, digging for worms, packet filtering. Implementing policies (Default allow, default deny) on proxy.

**Cryptography:** introduction to basic encryption and decryption, Diffie-Hellman key exchange, concept of Public key and Private Key, digital signatures.

**CPT321: Computer Graphics**

**Graphic systems:** Raster and vector graphics systems; video display devices; physical and logical input devices; issues facing the developer of graphical systems. **Fundamental techniques in graphics:** hierarchy of graphics software; using a graphics API; simple colour models; homogeneous coordinates; affine transformations; viewing transformation; clipping. **Graphical algorithms:** line generation algorithms; structure and use of fonts; parametric polynomial curves and surfaces; polygonal representation of 3D objects; parametric polynomial curves and surfaces; introduction to ray tracing; image synthesis, sampling techniques, and anti-aliasing; image enhancement. **Graphical user-interface design:** choosing interaction styles and interaction techniques; HCI aspects of interface design; dynamics of colour; structuring a view for effective understanding. **Graphical user-interface programming:** graphical widgets; event management and user interaction; GUI builders and programming environments. **Computer animation:** key-frame animation, camera animation; scripting system; animation of articulated structures; motion capture; procedural animation; deformation. **Multimedia techniques:** sound, video, and graphics; design of multimedia systems; tools for multimedia development; virtual reality.

**Suggested Lab work:** Programming assignments leading to extensive practice in generation of various algorithms and animations covered in this course.

**CPT322: Introduction to Digital Design and Microprocessors**

**Background:** history of digital computers; description of a typical integrated circuit. **Fundamental Logic Gates:** overview of logic
circuits and truth tables; the AND gate; the OR gate; the NOT gate. **Logic circuit design:** addition of logic expressions; truth table representation; diagrammatic representation of logic circuits. **Further logic gates:** NAND gate, NOR gate; XOR gate. Boolean algebra: switching algebra; basic laws of Boolean algebra; simplifying Boolean expressions, use of truth tables. **Karnaugh maps:** use of Karnaugh maps; how to use Karnaugh maps; rules of symmetry for Karnaugh maps; three and two variable Karnaugh maps. **Further electronic logic:** decoders and encoders. Further computer arithmetic: the full adder; parallel addition of binary numbers; serial addition of binary numbers. **Flip flop circuits:** The S-R flip flop; the J-K flip flop; shift registers. Binary counters.

**CPT 323: Automata, Computability and Complexity 2 Units**

**Finite automata, Regular languages, Regular expressions:** deterministic finite automata; nondeterministic finite automata; regular expressions and FA-recognisable languages; non-regular languages; algorithms that answer questions about FAS and regular expressions. **Computability theory:** Turin machines, nondeterministic Turin machines; undecidability, PCP; counter and stack machines; reducibility; recursion theorem. **Complexity Theory:** time complexity; nondeterministic time complexity; P and NP; NP-completeness III; poly-time reductions; Cook-Levin theorem; NP-completeness II; space complexity III; probabilistic complexity; probabilistic complexity and interactive proofs.

**CPT 325: Database Design and Management 3 Units**

**Information models and systems:** history and motivation for information systems; information storage and retrieval; information management applications; information capture and representation; analysis and indexing; search, retrieval, linking, navigation; information privacy, integrity, security and preservation; scalability, efficiency and effectiveness. **Database systems:** history and motivation for database systems; components of database systems; DBMS functions; database architecture and data independence. **Data modeling:** data modeling; conceptual models; object-oriented model; relational data model. **Relational databases:** mapping conceptual schema
to a relational schema; entity and referential integrity; relational algebra and relational calculus. **Database query languages:** overview of database languages; SQL; query optimization; 4th generation environments; embedding non-procedural queries in a procedural language; introduction to Object Query Language. **Relational database design:** database design; functional dependency; normal forms; multivalued dependency; joint dependency; representation theory. **Transaction processing:** transactions; failure and recovery; concurrency control. **Distributed databases:** distributed data storage; distributed query storage; distributed query processing; distributed transaction model; concurrency control homogeneous and heterogeneous solutions; client-server. **Physical database design:** storage and file structure; indexed files; hashed files; signature files; b-trees; files with dense index; files with variable length records; database efficiency and tuning.

**Suggested Lab work:** Programming assignments to learn database design using CASE tools. Introduction to back-end/Server-based Relational Database Management System (RDBMS). Learning Standard SQL (interactive/embedded). Introduction and programming assignments on Front-End tools. Programming team projects to design and develop real life database systems using the learned tools.

**CPT 326: Computer and Network Security**  
2 Units
Introduction, threats, risks and vulnerabilities, data security, policies/administration, security procedural control, security models, designing secure systems, effects of hardware on security, operating systems security, network security, database security, programming language security, cryptography, distributed systems security and information systems security.

**CPT 327: Internet Programming**  
3 Units
Overview of Internet, websites and web server; Basic network infrastructure, choosing a web server and service providers – Understanding the difference between internet and intranet; HTML and CSS. Introduction to Client-Side Scripting Language: JavaScript. **Introduction to Server-side programming**
Languages: ASP.Net, JSP, PHP. **Introduction to PHP:** PHP Language; Using PHP; Variables; Program control; Built-in functions; code organization and reuse; Object-oriented programming, moving beyond libraries and Object-Oriented programming, extending objects, working with arrays, strings and characters. Character set and Unicode, interacting with server, redirecting the user; Database basics using MySQL, data access, PHP and data access, planning and implementing web applications: cookies and sessions, user authentication, advanced output and output buffering, data validation with regular expression, files and directories; strategies for successful web applications. XML: Basic XML - Document Type Definition - XML Schema DOM and Presenting XML

**CPT 328: Programming Language Translation** 3 Units

**Introduction:** the role of language translation in the programming process. **Fundamental issues in language design:** general principles of language design; design goals; typing regimes; data structure models; control structure models; abstraction mechanisms. **Virtual machines:** the concept of a virtual machine; hierarchy of virtual machines; intermediate languages. **Introduction to language translation:** comparison of interpreters and compilers; language translation phases; machine-dependent and machine-independent aspects of translation; language translation as a software engineering activity. **Lexical analysis:** application of regular expressions in lexical scanners; hand-coded vs. automatically-generated scanners; formal definition of tokens; implementation of finite-state automata. **Syntactic analysis:** Formal definition of grammars; BNF and EBNF; bottom-up vs. top-down parsing; tabular vs. recursive-descent parses; error handling; automatic generation of tabular parsers; symbol table management; the use of tools in support of the translation process.

**Models of Execution Control:** order of evaluation of sub expressions; exceptions and exception handling; runtime systems. **Declaration, modularity, and storage management:** declaration models; parameterization mechanisms; type parameterization; mechanisms for sharing and restricting visibility
of declarations; garbage collection. **Type systems**: data type as set of values with set of operations; data types; type checking models; semantic models of user-defined types; parametric polymorphism; subtype polymorphism; type-checking algorithms. **Interpretation**: iterative vs. recursive interpretation; iterative interpretation of intermediate code; intermediate representations; implementation of code generators; code generation by tree walking; context-analysis; loop optimizations; machine-dependent optimization

**CPT 324: Information Management**

**Overview of information management**: history and motivation for information systems; common problems of information management; the business perspective. **Social issues in information technology**: Intellectual property; computer crime; privacy; security and civil liberties; the need for a legal and ethical framework; guidelines for computer use. **Introduction to database systems**: History and motivation for database systems; components of database systems; DBMS functions; database architecture and data interdependence; use of a database query language; the relational model. **Building databases**: Underlying methodology; database query languages; particular database issues. **Information systems to serve particular purposes**: Intranets and extranets; the information retrieval problem. **Design and development of information systems**: database design; relational database design; life-cycle issues. **Security and control issues**: overview of problems and standard solutions; database integrity; transactions; the role of encryption. Evaluation of information systems.

**CSS 323: Cyber Crime Law**

Cybercrimes, including computer crimes, Internet fraud, e-commerce, and threats to the national infrastructure. Policies, legal issues, and investigative techniques and strategies, and implications for investigation and enforcement on a global scale. Introduction to cyber law; Studies in cyber law application at the international and national levels with examples from European, North
American, South American and Asian Countries; the cyber law framework in Nigeria; challenges and opportunities for enforcement in Nigeria.

CPT 411: Net-Centric Computing 2 Units

Communication and networking: network standards and standardization bodies; the ISO 7-layer reference model in general and its instantiation in TCP/IP; circuit switching and packet switching; streams and datagrams; physical layer networking concepts; data link layer concepts; internetworking and routing; transport layer services. The web as an example of client-server computing: web technologies; characteristics of web servers; role of client computers; nature of the client-server relationship; web protocols; support tools for web-site creation and web management; developing Internet formation servers; publishing information and applications. Building web applications: protocols at the application layer; principles of web engineering; database-driven web sites; remote procedure calls; lightweight distributed objects; the role of middleware; support tools; security issues in distributed object systems; enterprise-wide web-based applications.

CPT 413: Systems Operations Research 3 Units

The nature of operation research; the theory of linear programming, computational methods for solving linear programs, and an introduction to nonlinear and integer programming. Basic optimality conditions, convexity, duality, sensitivity analysis, cutting planes, and Karush-Kuhn-Tucker conditions. Provan allocation problems; inventory problems; Replacement; maintenance and reliability problems. Dynamic programming; sequencing and co-ordination. Introduction to the techniques of constructing and analysing mathematical models of inventory system.

CPT 414: Design and Analysis of Algorithms 2 Units

Review on the concept of algorithms: areas of computing problems. Algorithm design techniques (i.e. brute force, divide-and-conquer, dynamic programming etc.). Fundamental
computing algorithms: i.e. Numerical algorithms, sequential and binary search algorithms; sorting algorithms; pattern matching and string/text algorithms, Graph and tree algorithms. Algorithm design and analysis process. Fundamentals of the analysis of algorithm efficiency; Analysis framework.

**CPT 415: Compiler Construction** 3 Units

**Introduction:** Definition of a compiler, compiler applications, phases of a compiler, challenges in compiler construction, compilation process; **Lexical Analysis:** Role of Lexical Analyzer, Specification of Tokens, Token Recognition, RE to NFA, Lexical Analysis Tool – Lex/Flex/Jflex; **Syntax Analysis:** Roles of Parser, Error Handling, Grammar, Top-Down Parsing, Bottom-Up Parsing, LR Parsing; **Type Checking:** Static vs. Dynamic Checking, Type Expressions, Type Checking, Type Equivalence, Type Conversion; **Symbol Tables:** Information in Symbol Table, Features of Symbol Tables, Simple Symbol Table; **Intermediate Code Generation:** Intermediate Languages, Intermediate Language Design Issues, Intermediate Representation Techniques; **Target Code Generation:** Factors Affecting Code Generation, Basic Block, Code Generation for Trees, Register Allocation; **Code Optimization:** Need for Optimization, Problems in Optimizing compiler Design, Classification of Optimization, Factors Influencing Optimization.

**CPT416: Software Engineering** 3 Units

**Software processes:** software life-cycle and process models; process assessment models; software process metrics. **Software requirements and specifications:** requirements elicitation; requirements analysis modeling techniques; functional and nonfunctional requirements; prototyping; basic concepts of formal specification techniques. **Software design:** fundamental design concepts and principles; design patterns; software architecture; structured design; object-oriented analysis and design; component level design; design for reuse. **Software validation:** Validation planning; testing fundamentals, including test plan creation and test case generation; black-box and white-box testing techniques; unit, integration, validation, and system testing; object-oriented testing; inspections. **Software evolution:**
software maintenance; characteristics of maintainable software; reengineering; legacy systems; software reuse. **Software project management:** team management; project scheduling; software measurement and estimation techniques; risk analysis; software quality assurance; software configuration management; project management tools.

**CPT417: Advanced Visual Basic Programming** 2 Units

**Developing multiplier applications:** dividing logical layers into multiple components; implementing components with Visual Basic 2010; reusing components with different Uis; persisting component data into databases. **The .NET framework:** common language runtime (CLR); framework class library (FCL). **Visual Basic 2010 Productivity features:** user interface design; VB 2010 enhancements. **Object-oriented programming:** encapsulation, inheritance; polymorphism. **Exceptions and Events:** designing and consuming events; structured exception handling. **Data manipulation with ADO.NET:** the ADO.NET model; programming ADO.NET objects; programming Data Sets and Table Adapters. **Deploying Visual Basic. Applications:** preparing the release build; comparing X Copy and setup projects; publishing Windows applications with Click Once; harnessing Visual Studio support for Web application deployment.

**Suggested Lab work:** Programming assignments leading to extensive practice in implementing various components of GUI and database application covered in this course.

**CIT415: Introduction to Scientific Report Writing and Methodology** 2 Units

**Introduction to Research Methods:** criteria for good scientific practice, Literature review, critical use of existing knowledge, generalize and define limits of new findings, scientific publishing, creating document in Latex format, classification of conferences and journals, judging what material is publishable, publishing, referencing process. **Theory of science:** theory of science and computational science, viz. innovation, systemizing and classifying, hypothesis development and testing, establishing laws and models, criticizing own and others works. **Ethics:** computer ethics in
research. Ethical and plagiarism, development of research plan.

**CPT 418: Electronic Commerce Technology**  
*2 Units*

**The Concepts and tools of electronic commerce:** technology of the Internet, core network protocols, agents, commerce client technology; survey of technologies used to support all aspects of electronic commerce; structural design of electronic commerce systems; client-server architecture, characteristics, properties and processing of electronic payment; security; design and implementation issues related to web application for electronic commerce.

**CPT410: User Centred Design**  
*2 Units*

Overview of User Experience (UX), its importance, meaning of User centred design, UX design process, design challenges, fundamentals of user interface design; models on human computer interaction, software psychology, input devices, usability, cognitive and perceptual aspects of human-computer interaction, advance interface.

**CIT 411 Green IT**  
*3 Units*

**Gearing Up to Go Green.** This part explores what motivates us to go green, and what IT’s role is in that change. **Cleaning Up IT.** Next, focus should be on how IT itself can go greener; balancing benefits and costs, considering the life cycle of IT products. **Using IT to Green the rest of the Organization.** It is not just about cleaning up IT, but also how IT can help the rest of an organisation clean up its act; reducing the need for travel, reusing energy. **Changing Attitudes and Taking Action.** In this part practical green inspirational steps that can be taken towards a more sustainable future are considered.

**CPT 511: Advanced Computer Networks**  
*3 Units*

**Network management:** review of the issues of network management; issues for Internet service providers; security issues and firewalls; quality of service issues. **Compression and**
decompression: review of basic data compression; audio compression and decompression; image compression and decompression; video compression and decompression; performance issues. Multimedia data technologies: review of multimedia technologies; multimedia standards; capacity planning and performance issues; input and output devices; MIDI keyboards, synthesizers; storage standards; multimedia servers and file systems; tools to support multimedia development.

CPT512: Current Trends in Computer Science 2 Units
This course entails active participation on current trends that focus on several topical issues in the different areas of the Computer Science Applications. It will cut across latest trends in key areas of computer sciences in Networking, software engineering, web programming, mobile computing, human computer interaction, computational intelligence, database systems, artificial intelligence, expert system, data storage visualization and so on.

CPT513: System Simulation and Modeling 2 Units
The concept and techniques used in modeling and simulation methodology and a suitable simulation language, modeling, generation of random variables, transformation of random numbers, parameter estimation design experiment, factorial optimization.

CPT515: Artificial Intelligence 3Units
Fundamental issues in intelligent systems: history of artificial intelligence; philosophical questions; fundamental brute-force search; best-first search; two-layer games; constraint satisfaction. Knowledge representation and reasoning: review of propositional and predicate logic; resolution and theorem proving; non-monotonic inference; probabilistic reasoning; Bayes theorem. Advanced search: genetic algorithms; simulated annealing; local search. Advanced knowledge representation and reasoning: structured representation; non-monotonic reasoning; reasoning on action and change; temporal and spatial reasoning; uncertainty; knowledge representation for diagnosis; qualitative representation. Agents: definition of agents; successful application and state-of-
the-art agent-based systems; software agents, personal assistants, and information access; multi-agent systems. **Machine learning and neural networks:** definition and examples of machine learning; supervised learning; unsupervised learning; reinforcement learning; introduction to neural networks. **AI planning systems:** definition and examples of planning systems; planning as search; operator-based planning; propositional planning.

**CPT 516: Advanced Database Systems** 2 Units

**Relational data models:** relational constraints and relational algebra. Structured query language relational database standard. **Case studies:** ORACLE/SQL server/Microsoft Access. **Data Warehousing:** Introduction, what is Data Warehousing, Data Warehousing concepts, Methodology for Data Warehousing, Issues in Data Warehousing, Benefits of Data Warehousing. **Data Warehouse Building Blocks:** Defining features, Data Warehouse and Data Mart, Overview of the components. **Metadata:** abstraction, Use of metadata in Data Warehouse, Tools for metadata. **DATA DESIGN AND DATA PREPARATION; ETL Overview:** Data Extraction, Data Transformation, and Data Loading. **Data Quality:** Why is data quality critical, Challenges, Tools OLAP in the Data Warehouse: Demand for OLAP – Major features and Functions (Drill-down, Rollup, Slice, and Dice), OLAP Models – OLAP Tools – Web OLAP approaches – OLAP Engine Design.

**CPT 517: Entrepreneurship II** 2 Units

Start your digital business: your money-making strategies, branding, getting an internet presence, registering your company; the business; market research, preparing your business plan, types of companies, advertising and marketing: the internet; putting the internet to work for you. Setting up your website, advertising on the Internet; finance for start-ups; venture capital, understanding financial statements, planning and forecasting, taxation accountancy software; the law: company law; software law, confidential information, copyright, trademarks, patents. Successful proposal strategies for small business using knowledge management
CPT 519: Computer Installation and Maintenance  2 Units

The role of ICT/Computer unit in computer-driven organization, Computer Hardware Installation and Management (CPU, RAM, Hard Drive, Motherboard, DVD/Burner, Ethernet Card, Sound and Video Card), Computer Software Installation, Software Configuration Management,

CPT 510: Real Time Systems  2 Units

Examples of real time computing systems; real time scheduling and resource management algorithms; analytical and efficient validation methods; example of real time operating systems; temporal consistency of real time data; formal methods for specification of and reasoning about timing constraints.

CIT 513: Geographic Information Systems  2 Units

Building Blocks of Geographic Information: Measurement basics, measurement frameworks, representation. Transformations and operations: Attribute-based operations, overlay integration of disparate sources, distance transformation, surface and near neighbors, comprehensive operations, transformations. The broader context: evaluation and implementation, social and institutional context.

CPT 521: Organisation of Programming Languages  3 Units

Brief survey of programming paradigms (distinguishing characteristics, trade-offs between different paradigms, safety and power of expression and particular language supporting each paradigm) Procedural languages, Object-oriented languages, Functional languages, Declarative, non-algorithmic languages, Scripting languages. The effects of scale on programming methodology. General principles of language design. Design goals. Typing regimes (Data type as set of values with set of operations, Data types, Elementary types, user-defined types, Abstract data types). Data structure models, Abstraction mechanisms (Procedures, functions), Control structure models, specifications and their implementations.

CPT 522: Data Mining  3 Units
Data Mining; Data Mining Functionalities; Classification of Data Mining Systems; Data Mining Task Primitives; Integration of a Data Mining System with a Database or Data Warehouse System; Major Issues in Data Mining; Data Preprocessing; Descriptive Data Summarization; Data Cleaning; Data Integration and Transformation; Data Reduction; Data Discretization and Concept Hierarchy Generation. Data Preparation- Overview, cleaning the data, Removing variables, Data transformation, segmentation; Table and Graphs- Tables, Data tables, Contingency tables; Graphs- frequency Polygram and histograms, scatter plots, box plots, multiple graphs, prediction- classification, Regression, Building a prediction model, applying a prediction model, simple regression models –simple linear regression, simple nonlinear regression, K-nearest neighbours-learning, prediction, classification and regression trees- predicting using decision trees, neural net; Naive Bayes estimation and Bayesian networks, - Bayesian Approach, Maximum a posterior classification. Posterior odds ratio, Balancing the data, Naive Bayes classification- numeric predictors analysis using Naive Bayes; Bayesian belief networks, clothe purchase example, using the Bayesian Network to find probabilities, Genetic Algorithm Introduction, Basic framework of a GA, simple example of a genetic Algorithm, cross over, multipoint crossover, uniform crossover, Analysis using Genetic algorithm. ASSOCIATION RULES AND CLUSTER ANALYSIS: Basic Concepts; Efficient and Scalable Frequent Item-set Mining Methods; Mining; Various Kinds of Association Rules; Cluster Analysis; Types of Data In Cluster Analysis; A Categorization Of Major Clustering Methods; Different Clustering Methods. CLASSIFICATION AND PREDICTION: Classification; Issues Regarding Classification and Prediction; Different Classifications; Classification by Decision Tree Induction; Bayesian Classification; Rule Based Classification; Classification by Back propagation; Prediction; Accuracy and Error Measures; Evaluating the Accuracy of a Classifier or Predictor-Ensemble Methods; Model Selection. VARIOUS MININGS: Mining Data Streams; Mining Time; Series Data; Mining Sequence Patterns in Transactional Databases; Mining Sequence Patterns in Biological Data Graph Mining-Social Network Analysis; Multi-Relational Data Mining. MULTIMEDIA MINING AND APPLICATIONS: Multidimensional Analysis and Descriptive Mining of Complex Data
Objects; Spatial Data Mining; Multimedia Data Mining; Text Mining; Mining the WWW-Applications and Trends in Data Mining.


**CPT 523: Introduction to Mobile Computing** 2 Units

Overview of the history, evolution, and compatibility of wireless standards; the special problems of wireless and mobile computing; wireless local area networks and satellite-based networks; wireless local loops; mobile Internet protocol; mobile aware adaptation; extending the client-server model to accommodate mobility; mobile data access; the software packages to support mobile and wireless computing; the role of middleware and support tools; performance issues; emerging technologies.

**CPT 524: Expert Systems** 3 Units


**CPT 525: Systems Performance Evaluation** 2 Units

Introduction and overview, performance modeling; measurement techniques, on-chip performance monitoring, off-chip hardware monitoring, software monitoring, micro-coded instruction. Aggregating performance metrics over a benchmark suite, statistical techniques for computer performance analysis, statistical for processor and cache simulation, statistical simulation, benchmark simulation.
CPT526: Fault-Tolerant System 2 Units

Introduction and overview of fault tolerant schemes; fault and error modeling; test generation and fault simulation; concepts in fault-tolerance; reliability/availability modeling; system level diagnosis; low level fault-tolerance coding techniques (basic principles, parity bit codes, hamming codes, error detection and retransmission codes, burst error correction codes, Reed-Solomon codes etc.); high-level fault tolerant techniques in systems; rollback, check pointing ,reconfiguration; software fault-tolerance; fault-tolerant routing; integrated hardware/software fault-tolerance; redundancy, spares and repairs apportionment, system versus component redundancy, parallel redundancy, RAID system reliability, N-modular redundancy; software reliability and recovery techniques, network system reliability, reliability optimization.

CPT 529: Project 6 Units

Project carries 100 Marks. A project is carried out individually or by a group with a maximum number of 3 students in one group. The project can be an in-house project (Project done within one’s institution) or it can be done in the industry. If the project is to be done in an industry, the group will be guided by an External Project guide (from the industry) and an Internal Project Guide (from the institution). If the project is to be done in-house, the group will be guided by the Internal Project guide only.

5.4 Distribution of Marks

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<thead>
<tr>
<th>ITEM</th>
<th>MARKS</th>
<th>HOW TO CONDUCT EXAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project report</td>
<td>50</td>
<td>Assessed jointly by Internal and External examiners.</td>
</tr>
<tr>
<td>Oral Presentation</td>
<td>50</td>
<td>Assessed jointly by Internal and External examiners.</td>
</tr>
</tbody>
</table>
### 5.5 Award of Degree

<table>
<thead>
<tr>
<th>Requirements for Graduation</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Sciences</td>
<td>40</td>
</tr>
<tr>
<td>Core ICT Courses</td>
<td>118</td>
</tr>
<tr>
<td>General Studies</td>
<td>11</td>
</tr>
<tr>
<td>SIWES</td>
<td>02</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>171</strong></td>
</tr>
</tbody>
</table>

To be eligible for the award of B.Tech. (Computer Science), a student must have:

a. Passed all core (compulsory) courses and electives recommended for the programme;
b. Accumulated at least 171 credit units; and
c. Completed successfully all class works, industrial attachments, seminars and projects.

Furthermore, a student must be found worthy in character throughout the period of his/her studentship in the University and must have accumulated the total units prescribed by the School from Core, Electives, General Studies courses, Industrial Attachment (SIWES) and Project. A student must be in good standing in order to go for Industrial Attachment.

### 5.6 Degree Awarded

The nomenclature of the first degree awarded by the Centre is Bachelor of Technology (Computer Science).

### 5.7 Class of Degree

The class of degree obtained at the end of the undergraduate programme is classified as shown in Table 1:
### Table 1: Class of degree

<table>
<thead>
<tr>
<th>CLASS OF DEGREE</th>
<th>CGPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Class</td>
<td>4.50 – 5.00</td>
</tr>
<tr>
<td>2\textsuperscript{nd} Class Upper</td>
<td>3.50 – 4.49</td>
</tr>
<tr>
<td>2\textsuperscript{nd} Class Lower</td>
<td>2.40 – 3.49</td>
</tr>
<tr>
<td>Third Class</td>
<td>1.50 – 2.39</td>
</tr>
<tr>
<td>Pass</td>
<td>1.00 – 1.49</td>
</tr>
<tr>
<td>Fail</td>
<td>0.00 – 0.99</td>
</tr>
</tbody>
</table>

### Weighting Courses

The assessment of a student’s performance in all courses shall be as follows:

a. Continuous Assessment = 30%

b. Examination = 70%

100%

### 5.8 Grading System

CODeL operates a 5-point grading system. Table 2 shows the letter grades as in use under the grading system.

### Table 2: Grading System

<table>
<thead>
<tr>
<th>LETTER</th>
<th>GRADE</th>
<th>SCORE (MARKS)</th>
<th>GRADE POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>70 – 100</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>Very Good</td>
<td>60 – 69</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>Good</td>
<td>50 – 59</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>Intermediate</td>
<td>45 – 49</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td>Fair</td>
<td>40 – 44</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0 – 39</td>
<td>0</td>
</tr>
</tbody>
</table>
**CALCULATION OF SEMESTERIAL GRADE POINT AVERAGE (SGPA)**

**Table 3: Student’s First Semester Results**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>GRADE OBTAINED</th>
<th>CREDIT UNIT (X1)</th>
<th>POINT OBTAINED (Y1)</th>
<th>GRADE POINT (X1*Y1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT 311</td>
<td>B</td>
<td>3</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>CPT 312</td>
<td>A</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>CPT 313</td>
<td>D</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CPT 314</td>
<td>C</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>10</strong></td>
<td></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>

\[
SGP = \sum (X1*Y1) = 33
\]

\[
SGPA = \frac{SGP}{\sum X1} = \frac{33}{10} = 3.3
\]

**CALCULATION OF CUMULATIVE GRADE POINT AVERAGE (CGPA)**

**Table 4: Student’s Second Semester Results**

<table>
<thead>
<tr>
<th>COURSE</th>
<th>GRADE OBTAINED</th>
<th>CREDIT UNITS (X2)</th>
<th>POINT OBTAINED (Y2)</th>
<th>GRADE POINT (X2*Y2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT 321</td>
<td>A</td>
<td>3</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>CPT 322</td>
<td>C</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>CPT 323</td>
<td>B</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>CPT 324</td>
<td>E</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>11</strong></td>
<td></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

\[
CGP = \sum (SGP (First semester) + SGP (Second semester)) = 33 + 35 = 68
\]

\[
CGPA = \frac{CGP}{\sum X1 + \sum X2} = \frac{68}{10+11} = \frac{68}{21} = 3.24
\]
Chapter Six

Students Issues

6.0 Introduction

This section informs you of your rights and responsibilities as a student of Centre for Open Distance and e-Learning (CODeL), Federal University of Technology.

Your obligation is to abide by the code of conduct of the Centre and the University. It is the University’s responsibility to provide high quality services and channels through which students’ complaints can be addressed and resolved.

6.1 Code of Conduct

As a student, you are expected to observe all the rules and regulations of the University which include but not limited to the following:

(i) Students at CODeL are required to be self-disciplined and responsible.

(ii) Students are strongly advised to desist from cultism and other acts that may lead to indiscipline.

(iii) Students are expected to conduct themselves in an orderly and peaceful manner whenever at CODeL and/or campus.

6.2 Studying Tips

Studying at the CODeL gives you the unique opportunity to study while you are engaged in work or other activities. It is therefore important for you to note that this new mode of learning requires a different approach to studying:

(i) Excellent time management skills will be needed to keep up with the pace of work.

(ii) It is necessary to study consistently as it is easier to spread out work than to do so much within a short space of time especially if you are engaged in an employment.

(iii) You need to develop a weekly study plan – timetable.
(iv) Review your work at the end of each week and modify your plan accordingly.
(v) Attempt all activities recommended in your course materials.
(vi) Use memory enhancing aids such as mnemonics, visualisation, revision.
(vii) Form self-help study groups with other CODEL students within your locality. This will help in achieving your goals as you will not want to let yourself down.

6.3 Students’ Complaints

Students are expected to conduct themselves well at all times. The relationship with co-students and University staff should be cordial at all times.

The Centre will not accept any act of misconduct such as:
(i) Physical assaults, whether or not such leads to injuries.
(ii) Vandalization of University property and perpetration of acts that prevent the University from carrying out its statutory functions.
(iii) Membership of cults, drug cartels or organizations whose aim is to deprive others of their fundamental human rights.

6.4 Students’ Grievances against Staff

Students may feel aggrieved by the actions of some staff members in the course of their day to day interaction. Such grievances are inevitable and may arise in areas such as:
(i) Academic matters involving grading, evaluation or status.
(ii) Denial of student access to data or misappropriation of student’s data/research.
(iii) Professional misconduct towards students.
(iv) Unfair discriminatory or intimidating treatment of students including sexual harassment.
(v) Unfavourable actions taken as a result of allegations involving cheating, plagiarism, fabrications, falsification of record or altered documents; and
(vi) Aiding and abetting the perpetration of above acts.

See Appendix V for the procedure for handling grievances

6.5 Misunderstanding between Students

All forms of misunderstanding between fellow students should be first reported to the University authority through appropriate channels.

The University does not encourage any student reporting a fellow student or any member of the University community directly to the law enforcement agencies. Any grievance against any member of the University community must first be reported to the University authorities.

6.6 Dress Code

During the time of facilitation, tutorial, practical activities and end of semester examination, students’ dressing should reflect a high sense of morality and decency and show respect for the sensibilities of other members of the community. For prohibited dressing on campus, see Appendix VI.

6.7 Punishment for Offenders

The punishment for violating the dress code shall range from warning to suspension from the University and without prejudice to stiffer penalties; Lecturers, Technologists, Security and Staff of the Student Affairs Division (Guidance and Counselling Officers) will monitor and ensure strict compliance. Worst-case offenders will have to face the Students’ Disciplinary Committee for appropriate disciplinary measures.

6.8 Use of University Facilities

(i) Hall supervisors are responsible for the proper use of common rooms and notice boards, chairs and other items of furniture in the halls.

(ii) If University property is lost or damaged while in a student’s care, the student will be responsible for the cost of
replacement or repair. The regulation applies to all University property including sports equipment.

(iii) University property may be used only on the campus. Proper clearance must be obtained from the Dean of Students for the removal of any University property to any place outside the campus. There will be a deposit to cover the cost of replacement and/or damage to property so affected.

(iv) Use of facilities like the Lecture Theatre, Cafeteria, University Buses, Bitrus SawaSquare requires submission of formal application through appropriate channels. All applications must be properly certified by the Patron/Adviser or Head of Department of the applicants.

(v) Prohibition on use of academic facilities by religious organization. Request must be made for such facilities at least 14 days before the event for it to receive adequate attention and approval.

6.9 Cultism

Cultism in the university is strictly prohibited, students of any behaviour found practicing activities similar to or same as those practiced by cultists will be expelled from the university.

6.10 Breach of Regulations

Any breach of University regulations stated herein will be dealt with accordingly. Punishment ranging from immediate suspension or summary dismissal from the University by the Vice-Chancellor on the recommendations of the Students’ Disciplinary Committee or other advisory bodies shall be enforced.

6.11 Religious Activities on the Campus

The University authority recognizes three main religious groups. These are the:

(i) Catholic Christian group operating under the umbrella of the Nigerian Federation of Catholic Students (NFCS),

(ii) Protestant Christian group operating under the umbrella of the Fellowship of Christian Students (FCS),
(iii) Muslim group operating under the umbrella of the Muslim Students Society of Nigeria (MSSN).

Each of the groups has a patron. All communications to the Dean of Students from the religious groups must therefore be channeled through their respective patrons. Religious worships are restricted to designated areas.

All students and members of the University community are hereby informed that presently the only recognized/designated places of worships on the Campus on Sundays for the Christians and Fridays for the Muslims are the Chapel of Grace (FCS), the Cafeteria (NFCS) and the Mosque (MSSN) all in the Gidan Kwano and Bosso Campus of the University.
Appendix I

CODeL Organogram
Appendix II

Students Examination Guidelines and Regulations

Examination constitutes a very important aspect of the University’s activities. The Centre wishes to state categorically that the conduct of its examinations is taken seriously. Therefore, the Centre will not condone any form of examination misconduct.

Students are advised to abide by the following rules and guidelines:

1. A student’s matriculation number serves as his/her examination number. Only Matriculates students will be allowed to sit for examinations. A student must write his/her matriculation number on his/her answer booklet before commencing answering the questions.

2. Students should normally write examinations at designated venues.

3. Students must bring to the examination hall their writing materials and any other material, which may be permitted by the Centre for a particular examination. These materials must have been listed as essential for certain question(s).

4. Students arriving an hour after the commencement of an examination shall be allowed to sit for the examination only at the discretion of the Supervisor. Such a student will not be allowed any extra time.

5. Once a student is admitted into the examination hall, he/she may not leave the hall until he/she has finished with the examination. If for any cogent reason, the student must leave the venue, he/she must do so with the permission of the Supervisor.

6. A student must be accompanied by an invigilator if permitted to leave the examination hall temporarily (e.g. Visiting the restroom, etc.).

7. No answer booklets other than those supplied by the Centre are allowed in the examination hall. All rough works must be done in the supplied answer booklets and crossed out neatly.
All supplementary answer sheets/booklets must be tied/attached to the main answer booklet.

8. Silence must be observed in the examination hall. Any student requiring the attention of the invigilator should raise his/her hand.

9. Any activity or behaviour which may be construed as examination misconduct or malpractice shall be liable to discipline in accordance with the university’s rules and regulations governing examination.

10. Communication between students is strictly forbidden during examinations. Any student found receiving or giving assistance would be sanctioned. Such a student may be required to withdraw from the examination and subsequently made to face the university examination malpractice panel.

11. Students are not permitted to smoke or sing or pray aloud or engage in any activity that may distract others in the examination halls.

12. Bags and briefcases are not allowed in examination halls. The Centre will not be liable for any loss or damage of a student’s personal effects/property.

13. Unauthorised materials such as textbooks, course materials, notebooks, sheets/scraps of papers in printed or electronic form are not allowed in examination halls.

14. Pagers and mobile phones are not permitted in examination halls.

15. Students must observe the Supervisor’s instructions regarding the commencement and end of an examination. Students who start writing before being told to do so, or who continue to write after being asked to stop would be sanctioned.
## Appendix III

### Examination Offences and Penalties

<table>
<thead>
<tr>
<th>S/No</th>
<th>OFFENCES</th>
<th>PENALTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Writing before the official commencement of the examination</td>
<td>Delay for, 10 minutes during the course of the examination</td>
</tr>
<tr>
<td>2</td>
<td>Forging any document relevant to the examination e.g. 1.D. Card, School fees payment receipt etc.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>3</td>
<td>Anyone who refused to be identified and/or searched at the entrance of the examination hall</td>
<td>Exclusion from that particular paper</td>
</tr>
<tr>
<td>4</td>
<td>Staff harassment or intimidation for leakage of examination Questions</td>
<td>Expulsion</td>
</tr>
<tr>
<td>5</td>
<td>Smuggling in and out of the examination hall blank answer booklet or continuation sheet.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>6</td>
<td>Involvement in an examination leakage</td>
<td>Expulsion</td>
</tr>
<tr>
<td>7</td>
<td>Writing beyond the official termination of the examination</td>
<td>Deduction of 5 marks on the spot by the Chief Invigilator. This will be communicated to the Committee of Examines for compliance</td>
</tr>
<tr>
<td>8</td>
<td>Talking to another student during the examination</td>
<td>Deduction of 5 marks on the spot by the Chief Invigilator after report from the invigilator.</td>
</tr>
<tr>
<td>9</td>
<td>Writing on Question paper.</td>
<td>Deduction of 10 marks on the spot by the Chief Invigilator after report from the invigilator.</td>
</tr>
<tr>
<td>10</td>
<td>Being caught with extraneous</td>
<td>Expulsion</td>
</tr>
<tr>
<td></td>
<td>Action</td>
<td>Consequence</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>11</td>
<td>Anyone caught using foreign materials inside the examination hall, that are relevant to the examination/course</td>
<td>Expulsion</td>
</tr>
<tr>
<td>12</td>
<td>Anyone who also brought relevant materials into the hall but was not caught using it.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>13</td>
<td>Violating the sitting arrangement of the examination e.g. changing position without permission etc.</td>
<td>Cancellation of the paper</td>
</tr>
<tr>
<td>14</td>
<td>Anyone who brought into the examination hall already written answer script or continuation sheet.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>15</td>
<td>Aiding and abetting examination misconduct e.g. transfer of materials, deliberate exposure of answer booklet for others to copy</td>
<td>Suspension for two semesters</td>
</tr>
<tr>
<td>16</td>
<td>Giving false information during the examination and or investigation.</td>
<td>Suspension for 2 semesters</td>
</tr>
<tr>
<td>17</td>
<td>Found guilty of examination misconduct for the 2\textsuperscript{nd} time (after a previous conviction)</td>
<td>Expulsion</td>
</tr>
<tr>
<td>18</td>
<td>Assauling/fighting an invigilator or any officer of the University</td>
<td>Expulsion</td>
</tr>
<tr>
<td>19</td>
<td>Impersonation, both the impersonator and the collaborator e.g. Sitting for an examination for someone with the latter's knowledge.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>20</td>
<td>Failure to submit answer scripts at the end of the</td>
<td>Suspension for 2 semesters and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>examination.</strong></td>
<td><strong>cancellation of the paper</strong></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Failure to sign out at the end of the examination.</td>
<td>Cancellation of the paper.</td>
</tr>
<tr>
<td>22</td>
<td>Refusal to surrender incriminating evidence or chewing and destruction of materials.</td>
<td>Expulsion.</td>
</tr>
<tr>
<td>23</td>
<td>Refusal to write statement in respect of alleged examination misconduct.</td>
<td>Expulsion.</td>
</tr>
<tr>
<td>24</td>
<td>Anyone caught transferring or receiving any materials to or from another student during the conduct of examination without permission.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>25</td>
<td>Anyone who takes mobile phone into the examination hall.</td>
<td>Expulsion.</td>
</tr>
<tr>
<td>26</td>
<td>Those who exchange calculators in the examination hall without permission.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>27</td>
<td>Exchange of answer booklets in the examination hall.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>28</td>
<td>Being in possession of dangerous weapon in and around the examination hall.</td>
<td>Expulsion.</td>
</tr>
<tr>
<td>29</td>
<td>Writing on any part of the body or clothes whether relevant or not.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>30</td>
<td>Being caught with relevant writing or material at the back of calculator including placing material inside the maths-set.</td>
<td>Expulsion</td>
</tr>
<tr>
<td>31</td>
<td>Refusal to give evidence before the Examination Misconduct Committee as a confirmed witness.</td>
<td>Expulsion.</td>
</tr>
<tr>
<td>32</td>
<td>Refusal to appear before the Examination Misconduct</td>
<td>Expulsion.</td>
</tr>
<tr>
<td>Committee having been invited 3 times and were confirmed to have been delivered to the student through authentic channel.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix IV

Guidelines for Using U-Learn LMS Platform

1.0 Introduction

The CODEL U-learn platform is an online resource that presents learning content over the internet and accessible over mobile and desktop/laptop computers where students may access learning content in the form of text and audio-visual materials.

The portal is accessible on the https://codel.futminna.edu.ng/ulearn/

To access these resources, students must login to the platform using username and password combinations supplied to them by the learner support unit of the center.

1.1 Accessing u-Learn Platform

Each duly admitted and registered student of the center will be assigned a username and password combination that grants him/her access to the online learning platform for accessing learning materials. Using the assigned username and password,
students can login to the portal and view courses and other learning resources.

**Figure 2:** U-Learn Login Page

### 1.2 Editing Your Student Profile

U-Learn provides you with a personal profile that applies to all the U-Learn subjects you are enrolled in at the Centre for Open Distance and e-Learning FUT Minna. You may edit your profile information at any time and choose to hide or display your email address, include a photo or an avatar, or add a link to your website. This could be achieved by adhering to the following steps

i. Click on My profile to display a dropdown menu on your logged in homepage as shown on Figure 3

ii. Click on Profile as shown on Figure 4

iii. Edit sections of your profile
Figure 3: Students Profile Menu

Figure 4: Student Profile Page
Students may add a profile picture by Scrolling down to User picture section and select ‘Add’.

A file picker window will appear.

Select and press the button to locate and upload an image.

Scroll down to the bottom of the screen and press ‘Update profile’ to finish updating your profile.

1.3 Engaging with U-Learn Resources/Activities

All activities and resources on the U-Learn portal can be accessed under the courses/Topics to which they belong may have small
icon next to their title which can aid visual identification of the type of resource being presented. Table 1 presents a list of icons and the resource type they represent.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Resource Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Folder icon]</td>
<td>Resources can be prepared files uploaded to the course, pages edited directly in U-Learn, or links to external web pages.</td>
</tr>
<tr>
<td>![Book icon]</td>
<td>Books containing multiple pages in a book-like format with chapters and subchapters</td>
</tr>
<tr>
<td>![Forum icon]</td>
<td>Forums where discussions take place. They may also be used for announcements</td>
</tr>
<tr>
<td>![Assignment icon]</td>
<td>Assignment – specify a task and where students submit their assigned tasks</td>
</tr>
<tr>
<td>![Folder icon]</td>
<td>Folders help organize files. A folder may contain other folders</td>
</tr>
</tbody>
</table>

### 1.4 Engaging with Courses

Students will be enrolled to courses they register for and can access them after login into the e-portal and clicking on the appropriate course to access the course content.

Instructions on how each course is laid out will be supplied on each course page. Students are hereby advised to read instructions and on their various course pages to get started.
Appendix V

Procedure for Handling Grievances

The following procedures should be adhered to in handling grievances:

Step 1: The discussion of the grievance by the student and staff concerned. It is anticipated that majority of cases could be resolved at that personal level without recourse to other steps.

Step 2: If that proves unsatisfactory to either party, the student shall discuss the matter informally with the Programme Coordinator who should attempt to mediate and resolve the dispute.

Step 3: If step 2 fails, the concerned student shall present a written appeal to the Programme Coordinator. In the event that the Programme Coordinator is personally involved, the written request shall be addressed to the Director, CODel.

In the likely event that the Director is subject of the complaint, the written appeal shall be addressed to the Vice-Chancellor, through the Centre Secretary, CODel.

Step 4: Upon receipt of a written grievance, the Programme Coordinator should appoint an Ad-hoc appeal committee to review the case. The ad-hoc appeal committee shall conduct hearing including testimonies from witnesses for parties involved. The Appeal Committee shall, on completing its assignment prepare written recommendations to the Programme Coordinator who shall inform the concerned parties of the recommendations of the committee.

Step 5: If the decision is still not acceptable to any of the concerned parties, the matter shall be presented to the Director who make a final determination.

Step 6: If the matter borders on staff discipline, the case will be treated in line with the provisions of the University
statute and as contained in Senior Staff Appointment Conditions of Service.

It should be noted that:

(i) Every effort should be made to resolve issues at the lowest possible step in the procedure.

(ii) Grievances should be filed promptly following the actions from which appeal derives; and

(iii) Written grievances should include all pertinent facts and information to substantiate the grievances.
Appendix VI

Prohibited Dressing in the Campus

The following types of dressings and physical appearances are prohibited on the University campus during the compulsory two (2) to four (4) weeks period on campus:

(i) Short and skimpy dresses e.g. body hugs, show-me-your chest/back/stomach; spaghetti wears and dresses exposing sensitive parts.

(ii) Tight shorts and skirts that are above the knees (except for sporting purposes).

(iii) Tattered jeans with holes and/or patches.

(iv) Transparent and see-through dresses.

(v) Tight fitting e.g. jeans, shirts, hip star, patra, lactra, cross-no-gutter, mini-micro and others that reveal the contour of the body.

(vi) Under clothing, such as singlets worn publicly.

(vii) Unkempt and haggard appearance, including bushy hair and rough beards.

(viii) Dresses that make it impossible to wear laboratory coat during practicals or participate actively in practicals.

(ix) Long and tight-skirts, with long slits that reveals sensitive parts.

(x) Wearing of T-shirts with offensive captions.

(xi) Shirts without buttons or not properly buttoned leaving the wearer bare chested.

(xii) Wearing of earrings by male students.

(xiii) Plaiting or weaving of hair by male students.

(xiv) Wearing of coloured eye glasses, except on medical grounds in the classrooms/lecture halls/library/offices.

(xv) Wearing bathroom slippers to class/library/offices (except on medical grounds).