

FEDERAL UNIVERSITY OYE-EKITI,

EKITI STATE, NIGERIA



FACULTY OF SCIENCE

DEPARTMENT OF BIOCHEMISTRY

UNDERGRADUATE ACADEMIC PROSPECTUS

2017 – 2020

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FOREWORD

This handbook updates information, which includes aim and objectives, Course structure, Course description and extracts from the University Regulations governing First Degree Programme in the Department of Biochemistry. It should be of great value to Students and staffs of the department as well as to other persons who may wish to obtain information on the undergraduate academic programme of the Department of Biochemistry.

Dr. O. IBRAHEEM

Ag. Head of Department

TABLE OF CONTENT

| | |
|---|----|
| Foreword | v |
| Table of Content | vi |
| History of the Department | 1 |
| Programme | 2 |
| Programme philosophy | 2 |
| Aims and Objectives of the Programme | 2 |
| Entry Requirements | 3 |
| General Academic Regulations | 4 |
| Programme Structure | 7 |
| Examination Regulation and Guidelines | 9 |
| Quality Assurance | 17 |
| Admission and Registration Procedure | 21 |
| Instructional Methods and Delivery | 21 |
| Course Outline | 22 |
| 100 Level Outline | 22 |
| 200 Level Outline | 23 |
| 300 Level Outline | 24 |
| 400 Level Outline | 25 |
| Course Overview | 26 |
| Staff Profile | 38 |
| Academic Staff Profile | 38 |
| Administrative and Technical Staff list | 47 |

HISTORY OF THE DEPARTMENT

NAME OF THE PROGRAMME:

Bachelor of Science (B. Sc) in Biochemistry

HISTORY

The B.Sc Biochemistry programme was established on November 5, 2013 by the Senate of Federal University Oye-Ekiti.

The programme sprang from the former department of Biotechnology which was one of the foundation departments of the university at inception on Friday 11, 2011 and had academic staff members in specific areas of Animal & Environmental Biology, Biochemistry and Plant science & Biotechnology.

In August 2013, the idea to split the former department of Biotechnology into the three new departments of Animal & Environmental Biology, Biochemistry and Plant science & Biotechnology was conceived by the university management and at this time Mr. C.T. Eze and Mrs. O.S. Adedeji were the only academic staff members of the former department of Biotechnology in the specific area of Biochemistry with Mrs. O.A. Afuye as the Technologist.

Following the appointment of Professor S.V.A Uzochukwu as the Head of the former department of Biotechnology in September 2013 as well as the employment of other new academic staff members such as Mr. A.O. Adeoye, Mr. T.O. Jeje and Mr. S. Chukwuejim among others, the conceived idea to split the defunct department of Biotechnology into the three new departments of Animal & Environmental Biology, Biochemistry and Plant science & Biotechnology was actualized and Students of the former department of Biotechnology were split into these three newly formed departments.

Academic activities in the department of Biochemistry started in the 2013/2014 session with only three (3) undergraduate students and were overseen by Prof. S.V.A Uzochukwu who at this time was the dean of

the faculty of science and assisted by Mr. A.O. Adeoye, Mr. C.T. Eze, Mrs. O.S. Adedeji, , Mr. T.O. Jeje and Mr S. Chukwuejim. However, in March 2014, Prof. G. Oboh, who was on sabbatical Leave from the Federal university of Technology Akure (FUTA) became the first head of department.

PROGRAMME PHILOSOPHY

The Department of Biochemistry runs courses to produce graduates in Biochemistry. The courses are designed to make the students practically proficient and also theoretically clued-up. This is to ensure that our graduates fit into the employment market flawlessly, whether in the industries, government, parastatals or they are self employed.

PROGRAMME OBJECTIVES

The main objectives of the degree programme in biochemistry are:

- a. To provide students with a broad and balanced foundation of biochemical knowledge and practical skills
- b. To develop in students the ability to apply knowledge and skills to solving theoretical and practical problems in biochemistry
- c. To develop in students, a range of transferable skills that are of value in biochemical and non-biochemical employment
- d. To provide students with knowledge and skills base from which they can proceed to further studies in specialized areas of biochemistry or multi-disciplinary areas involving biochemistry
- e. To provide, through training and orientation, an appreciation of the solutory rewards of inter- and multi-disciplinary approach to the solution of complex life problems

- f. To generate in students an appreciation of the importance of biochemistry in industrial, economic, environmental, technological and social development
- g. To instill in students a sense enthusiasm for biochemistry, an appreciation of its application in different contexts and to involve them in an intellectually stimulating and satisfying experience of learning and studying.
- h. To develop a research culture in the department in consonance with current trends in the biochemical world as well as having direct relevance to the needs of Nigeria.
- i. To inculcate broad scientific discipline in undergraduate students (independent work, resourcefulness, honesty; broad scientific outlook and team-work in scientific researches).
- . To generate in students an appreciation of the importance of biochemistry in industrial, economic, environmental, technological and social development .

ADMISSION AND GRADUATION REQUIREMENTS

UTME Admission: Admission into the first year (100L) of the programme is either through UTME or the Pre-degree programme of the University. The entry requirements shall be at least 'O' level credit passes at no more than two sittings in five subjects including English Language, Mathematics, to form the core subjects with credit in three other relevant science courses Biology, Chemistry and Physics at the Senior Secondary School Certificate or its equivalent. In addition, an acceptable pass in the University Matriculation Examination (UTME) into 100-level is required.

DIRECT ENTRY: Students may be admitted into the second year (200L) of the programme through direct entry if they have a good National Diploma from recognized Polytechnics and Colleges of Technology in relevant disciplines. A minimum of Upper Credit is required along with the SSCE/NECO requirements for UTME admission. Candidates with two A level passes (graded A-E) at the Advanced Level in one or more relevant subjects (Biology, Chemistry, Mathematics and Physics) may undertake the three-year degree programme from 200-level.

GENERAL ACADEMIC REGULATIONS

Student Work Load/ Contact Hours

In compliance with the stipulations in the NUC “Course system and Grade point Average” document, every full-time student of Federal University Oye Ekiti shall be required to register for a minimum of 15 Credit Units per semester and a maximum of 24 credit units.

The Credit Unit is used as a measure of course weighting as well as an indicator of student’s workload. The number of credit hours for the award of a degree shall be approved by senate on the recommendation of the appropriate Faculty Board.

Academic Year and Scheduling

The University shall operate a two semester year (First and secondsemesters) for regular courses and a long vacation period for vacation courses. The first and second semester shall last for 17 to 18 weeks, (including registration, teaching and examination period). Not less than13 weeks shall be devoted to actual teaching with about 2-3 weeks for examinations.

Instructional Method

The University shall take full advantage of the leverage and versatility provided by advances in Information & Communication Technologies (ICT) in its teaching and learning activities within a learner-centred pedagogic framework.

Academic staff of the University is being specifically trained on a continuous basis, in the use of ICT which shall be fully integrated into all facets of the academic activities in the University. Furthermore, lectures shall be actively encouraged to adopt appropriate combinations of Instructional methods (lectures, tutorials, seminars, laboratory/workshop/studio practice) in the implementation and delivery of the various curricular in different academic disciplines to be taught in the University.

Assessment, Scoring And Grading System: student performance in the various courses shall be assessed as follows:

Assessment and scoring for Class work and Practical courses

- i. Final theory Examination 60%
- ii. Continuous assessment test (Quizzes, assignments, Term paper etc) 40%

Grading System

The University shall ensure the use of common assessment scale and grading system for all courses taught throughout the University. The grading system shall be as indicated in the table below:

| Percentage Score | Letter Grade | Quality Point | Level of Achievement |
|-------------------------|---------------------|----------------------|-----------------------------|
| 70-100 | A | 5 | Excellent |
| 60-69 | B | 4 | Very Good |
| 50-59 | C | 3 | Good |
| 45-49 | D | 2 | Satisfactory |
| 40-44 | E | 1 | Fair |
| 0-39 | F | 0 | Fail |

Cumulative Grade Point Average (CGPA) which is an important assessment parameter is used to determine the level of the final pass grade obtained by a student in all programmes in the university as follows:

| Cumulative Grade Point Average (CGPA) | Class of Degree |
|--|--|
| 4.50-5.00 | 1 st Class Honour |
| 3.50-4.49 | 2 nd Class Honours Upper Division |
| 2.40-3.49 | 2 nd Class Honours Lower Division |
| 1.50-2.39 | Third Class |
| 0.00-1.49 | Fail |

Academic Standing

Good Academic Standing

To be in good standing, a student must maintain a cumulative grade-point average (CGPA) of not less than 1.50 at the end of any session during his/her study in the University.

Probation

A student whose CGPA is below 1.50 at the end of a particular semester of study, goes on probation the following semester.

Withdrawal

A student would be required to withdraw from the University if:

- I. He/she maintain a Cumulative Grade Point Average (CGPA) that is **below** 1.50 for three consecutive semesters
- II. He/she has spent the maximum period of study allowed for his/her programme of study and still has one or more courses outstanding.

Termination of Studentship

A student may have his/her studentship terminated and be required to withdraw from the University if he/she fails to register for the required minimum number of courses/units of instruction for two consecutive semesters without due approval.

Semester Examination

Each course shall normally be completed and examined at the end of each semester in which it is offered. The examination shall be conducted as prescribed by senate.

Dissatisfaction with Examination Result

- I. A student who is dissatisfied with the result of an examination affecting him/her may request for a review by submission of an application to the Senate through the appropriate academic board of studies of the University within three (3) weeks of release of the result.
- II. The senate of the University has the full prerogative to, or not to, effect any amendment of the result after the cross examination of it.
- III. Any student with frivolous, ill motivated or speculative complaint(s) on result(s) shall be sanctioned.

Transfer

Any student who seeks transfer from the university to another is free to do so. Request for transcript for this and any other relevant purpose should be directed to the Admission Officer on fulfilment of every necessary requirements.

PROGRAM STRUCTURE

OUTLINE OF COURSE STRUCTURE

The duration for the B.Sc (Biochemistry) programme shall be four academic sessions for students that entered the University by UTME admission and three academic sessions for those by direct entry admission. To be awarded a Bachelor of Science (B.Sc) Degree in Biochemistry, the student must pass a minimum of 162 Credit units (for UTME candidates) and 118 Credit units (for Direct Entry candidates), distributed as follows:

OUTLINE OF COURSE STRUCTURE

| Level | Semester | General courses | | Compulsory courses | | Electives | | Total | |
|--------------|----------|-----------------|---------------------|--------------------|---------------------|----------------|---------------------|----------------|--------------------|
| | | No. of courses | No. of credit units | No. of courses | No. of credit units | No. of courses | No. of credit units | No. of courses | No. of credit unit |
| 100 | 1 | 4 | 7 | 7 | 15 | - | - | 11 | 22 |
| 100 | 2 | 4 | 7 | 7 | 15 | - | - | 11 | 22 |
| 200 | 3 | 2 | 3 | 8 | 16 | 1 | 2 | 11 | 24 |
| 200 | 4 | 2 | 3 | 8 | 14 | - | - | 10 | 18 |
| 300 | 5 | - | - | 7 | 15 | 1 | 2 | 8 | 22 |
| 300 | 6 | - | - | 9 | 17 | 1 | 3 | 10 | 22 |
| 400 | 7 | - | - | 7 | 21 | - | - | 7 | 20 |
| 400 | 8 | - | - | 8 | 19 | - | - | 8 | 21 |
| TOTAL | | 12 | 20 | 61 | 132 | 3 | 7 | 76 | 171 |

EXAMINATION REGULATION AND GUIDELINES

Appointment of Examiners

1. University examiners for degree programme shall be appointed by the Senate on the recommendation of the appropriate Faculty Board.
2. The Faculty board shall be responsible for the details of organisation and administrative arrangements for University examinations.
3. University examinations shall be conducted by Departmental Boards of Examiners.
4. The Head of Department, as Chief Examiner, shall make arrangement for the invigilation of examinations in the Department.
5. Each examination room shall have a minimum of two invigilators, one of whom shall be designated senior invigilator.

Eligibility to Write Examination

1. Only candidates who have registered for courses are eligible to take the Semester examination.
2. In order to qualify to sit for an examination, a student must have attended a minimum of 70-75% of the lectures.
3. To be qualified to take an examination, a student must have paid 100% of the prescribed fees at the beginning of the first semester during the registration period.

Examination Time-Table

1. The Sub-Committee on Examination Time-Table shall make available the Semester Teaching and Examinations Time-Table at the beginning of each Semester to guide students in the selection of courses.
2. The Academic Affairs Unit shall re-circulate the examination Time-Table for all courses at least 4 weeks before the examination date to avail students the opportunity of submitting complaints on clashes .All clashes shall be submitted to the Head

of Department who shall remit same to the Examination Time-Table Committee

3. The final time-table shall be displayed on all notice-boards two weeks before the examination after which there shall be no adjustments without the permission of the Registrar.
4. The time and venue for each examination shall be strictly adhered to and when it is absolutely necessary to reschedule an examination, the Head of Department will do so after due consultation with the Dean and such a change shall be published giving the affected candidates a minimum of 48 hours notice of the change.

Invigilation Arrangements

1. It is misconduct for an invigilator to arrive late to the venue of an examination. It is the responsibility of the Head of Department and Chief invigilator to ensure that all invigilators are aware of their responsibility.
2. One hour before an examination, all examination halls shall be vacated and prepared for the examination. Candidates shall be checked into examination halls by invigilators who will determine the sitting arrangement of candidates.
3. No student without an identity card will be allowed into an examination hall.
4. Checking-in of candidates into the examination hall shall commence 30 minutes before commencement of an examination.
5. Candidates who arrive late shall not be allowed extra time except in special circumstances such as instances of unresolved clashes of which the candidate had duly notified the Chief Examiner in writing.
6. In case a candidate has to leave the examination room temporary, he shall be accompanied by an invigilator.

7. Invigilators shall maintain vigilance throughout the examination period and at no time will an examination hall be without an invigilator.
8. Until the time when candidates are allowed to leave the examination hall at the end of the examination, no copy of the examination question paper shall be removed from the examination hall. If for any reason a candidate has to leave the examination hall one or two hours into the examination for a three hour paper, he shall hand over both the answer script and examination question paper to the invigilator before leaving.
9. Invigilators shall complete attendance sheets in duplicate and the signed sheets shall be considered as the final list of candidates in the examination. One copy will be forwarded to the Registrar while the other copy will be enclosed in the envelope containing the answer scripts.
10. At the end of an examination, candidates shall hand over their answer scripts to the invigilator who shall check the candidates' answer script against the attendance list to ensure that the scripts are complete. The invigilator shall then seal the envelope containing the answer scripts together with copies of the relevant question paper and a copy of the attendance sheets and deliver them to the Examination Officer.
11. Where an examination malpractice is committed, the candidate involved shall be required to make a statement by completing the required examination malpractice form. The candidates shall however be allowed to complete the examination. Under no circumstance shall an invigilator seize a candidate's answer script, tear answer script or forcibly eject a candidate from an examination hall. Where a candidate's behaviour constitutes a breach of the peace, the security official on duty shall intervene.
12. Where a candidate falls ill in an examination hall, the invigilator shall contact the medical officer on duty for immediate medical attention. Telephone numbers of the security and medical personnel shall be made available to all invigilators.

Examination malpractices

The following procedures shall apply in handling all suspected cases of examination malpractice in the university.

- 1) The attention of any other invigilator present should be drawn to the suspicious circumstance(s), if an invigilator suspect that a candidate has committed an examination malpractice offence, if another student suspects that there is misconduct he/she should alert invigilators.
- 2) The invigilators should approach the suspected candidate and inform him or her of the suspicion and give the candidate an opportunity to make a written statement.
- 3) The invigilator(s) should withdraw the candidate's script and issue a fresh script for him/her to continue the examination. If any unauthorized material is discovered it should be confiscated by the invigilators and tender in the evidence against the candidate.
- 4) Within 24hours the invigilator(s) should make a written report to the Chief Examiner, who is the Head of the Department.
- 5) Written account of the incident by the invigilator(s), suspect's script, any unauthorized materials by the invigilators, the Chief Examiner and other candidates and the student's statement must be submitted under confidential cover to the Registrar who shall forward it to the Central Student Disciplinary Committee within 24hours at the end of the course examination.
- 6) If however, during the marking, moderating or collating of examination materials, an examiner or any member of staff suspects that malpractice has taken place, the examiner or member of staff must confer with the Chief Examiner. As soon as a prima facie case has been established, the examiner or member of staff must submit written reports with the student's script and other corroborating evidence to the Dean of faculty through the Chief Examiner within 72 hours. The student so affected must be informed immediately of the allegation and made to submit a written statement.

- 7) The suspect will be invited to appear before, and be heard by the Examination Misconduct Committee.
- 8) The decision of the examination misconduct committee as approved by Senate shall be conveyed to the candidate.
- 9) All cases of examination malpractice must be disposed off within the shortest possible time but not longer than 6 months.
- 10) All materials confiscated from students in proven cases of malpractice shall be kept by the university until punishment has been served.

Absence from Examination

1. Any student who fails to register for courses during the semester without permission shall be scored zero (OF) in 15 units which is the minimum number of units required for registration for full-time students.
2. Candidates who registered for courses, attended classes, and took the required tests but failed to take the required semester examination without permission should be given grade of Zero (0) in the examination.
3. When a student falls ill before an examination, he is under obligation to send a medical report countersigned by the medical doctor of the University Health Centre not later than one week after the examination to the Chief Examiner. Cases of submission of medical reports outside this period shall be considered on their merit.
4. A candidate applying for leave of absence on medical grounds must forward his application through his Head of Department to the Faculty Board. The medical report must be countersigned by the medical doctor at the University Health Centre.
5. Absence from examination other than on medical grounds may be considered on its own merit.
6. A candidate who is permitted to discontinue with an examination by the medical officer on health grounds shall not be penalized

and shall be allowed to take the examination at the next available opportunity.

Guidelines for Processing of Results

1. Course Lecturers shall collect sealed packaged of answer script from the Examination Officers within 24 hours of completion of examination.
2. Computed grades must be submitted to the Departmental Examination Committee for consideration within two weeks after the completion of the last examination paper.
3. The Departmental Examination Committee comprising the following membership shall meet within three weeks after examination.
 - a) Head of Department- Chairman
 - b) University Examiners as approved by Senate for the Department.
4. The Faculty Board shall meet to consider recommendations from the Departmental Examination Committee four (4) weeks after examinations.
5. The grades of students from other Departments including grade for Special Electives shall be forwarded through the Head of Department within two days of the meeting of the Departmental Examination Committee.
6. The Faculty Board shall meet to consider the recommendations from the Departments which shall be presented by Heads of Departments and Departmental Examination Officers. Such meeting(s) shall be held within four weeks of the completion of the Semester Examination.
7. Matter arising shall be provided in all cases requiring explanation such as cases of students with no results in some or all courses, students with zero (OF) in some courses as well as students who registered for less than 15 Units and students on leave of absence or with no registration information.

8. All presentations of results shall include the master mark sheet, reflecting grades, pass list by name, the summary of results and key to courses.
9. Semester results shall be ready for the consideration of Senate not later than six weeks after the completion of the last paper.

Examination Related Offences and Corresponding Penalties

Misconduct Before Examination

| S/N | OFFENCES | PENALTY |
|------------|--|---|
| 1 | Involvement in and bearing responsibility for examination question leakage | Expulsion from the University. |
| 2 | Participating in or benefiting from question leakage. | Expulsion from the University. |
| 3 | Attempting to participate in or benefit from examination question leakage | Suspension for two(2) semesters. |
| 4 | Coming into the examination hall after thirty (30) minutes of the commencement of an examination | The candidate should not be allowed into the examination hall and he/she should be scored 0 (F) in the course examined. |

Misconduct During Examination

| S/N | OFFENCES | PENALTY |
|------------|---|--|
| 5 | Sitting for an examination for which a candidate did not register for or is not qualified to sit for. | The result of the candidate in the course should be nullified. He/ She should be scored 0 (F) and be issued a letter of warning. |

| | | |
|----|--|--|
| 6 | Representing/ Standing in for another in the course of an examination. | The candidates representing and the represented should be expelled from the University. |
| 7 | Conniving with another candidate/ Student/ person to represent/ stand in for another in an examination. | Expulsion from the University. |
| 8 | Destroying, defacing, mutilating, and swallowing of potentially incriminating material relating to a course of an examination. | Expulsion from the University. |
| 9 | Displaying inappropriate or antisocial behaviour (e.g smoking, singing, cat calls etc) capable of causing delay and/or disrupting of an examination process. | Suspension for one (1) semester. |
| 10 | Displaying of inappropriate or antisocial behaviour leading to disrupting and suspension of an examination. | Suspension for two(2) semesters. |
| 11 | Giving, receiving, or in any way benefitting from information relating to a course in an examination through electronic, personal dress material, part of the body in any manner or form whatsoever. | Suspension for two(2) semesters |
| 12 | Leaving the examination hall without the permission of the invigilator. | Letter of warning. In addition, the candidate should be scored 0 (F) in the course examined. |

| | | |
|----|--|---|
| 13 | Leaving the examination hall with examination paper before the end of the examination without the permission of the invigilator. | Suspension for two(2) semester |
| 14 | Substitution or exchanging the answer script given to a candidate in whatever manner or form during the examination. | Expulsion of all the students involved from the University |
| 15 | Exhibiting insulting, rude, impolite behaviour to another student during course of an examination without the permission of the invigilator. | Suspension for two(2) semesters |
| 16 | Exhibiting insulting, rude, impolite behaviour to another student during course of an examination. | Expulsion of all the students involved from the University. |
| 17 | Physical assault or battery on staff during the course of an examination. | Expulsion from the University. |
| 18 | Physical assault on another student during the course of an examination. | Suspension for two(2) semesters. |
| 19 | Talking to or communicating with another candidate without due permission during the course of an examination. | Suspension for two(2) semesters. |
| 20 | Brining in unauthorized material(s) into the examination hall by a candidate | Suspension for two(2) semesters. The candidate should also be scored 0 (F) In the course. |
| 21 | Bringing in unauthorized material(s) into the examination hall by a candidate with proven evidence of using material(s) or any part therefore. | Suspension for two(2) semesters. The candidate should also be scored 0 (F) in the course. |

| | | |
|----|--|---|
| 22 | Failure by a candidate to submit his/ her answer script after taking part in an examination. | Suspension for two (2) academic semesters. In addition, the candidate should be scored 0 (F) in the course. |
| 23 | Giving / receiving irregular assistance, cheating or aiding and abetting by a candidate/ student in an examination. | Suspend for two (2) semesters. |
| 24 | Refusal to sign the Attendance Register | Letter of Warning. |
| 25 | Involvement in an attempt to substitute or change or remove or effect changes in Examination script(s), record sheet(s), attendance register or any examination related material/ document | Expulsion from the University. |
| 26 | Exertion of influence with a view to obtaining undue advantage in the grading of scripts or award of marks by an internal or external examiner | Expulsion from the University. |

QUALITY ASSURANCE:

To bring about Quality student-centered learning and teaching policy and to ensure alignment of courses taught to international standards, the following goals would be

- ❖ Pursued:
- ❖ Course and Programme review processes
- ❖ Annual Academic evaluation
- ❖ Staff/Student Liaison
- ❖ Course and teaching feedback Questionnaires
- ❖ External examiners' report
- ❖ Industry input to Course design

The rating of grades obtained in a course in terms of credit points per load unit is as approved by the NUC and University Senate:

The Grading system adopted is as stipulated by the National Universities Commission. Under this system, continuous assessment (including assignments, quizzes and mid-semester tests) accounts for 40% and Examinations 60%

| DESCRIPTION | GRADE |
|-----------------------|-------|
| Continuous Assessment | 40% |
| Examination | 60% |
| TOTAL | 100% |

The Grading format is as follows:

Measurement of Performance: Performance in a Course is measured in terms of:

- a. The result of prescribed theory and practical examination and/or
- b. Assessment of such essays, practical exercises and reports prescribed for each Course. The rating of Grades obtained in a course in terms of credit points per load unit is as follows:

| MARK RANGE | LETTER GRADE | GRADE POINT | CUMMULATIVE GRADE POINT AVERAGE | CLASS OF DEGREE |
|------------|--------------|-------------|---------------------------------|-----------------------------|
| 70- 100% | A | 5.0 | 4.50-5.00 | FIRST CLASS |
| 60- 69% | B | 4.0 | 3.50-4.49 | 2 ND CLASS UPPER |
| 50- 59% | C | 3.0 | 2.40-3.49 | 2 ND CLASS LOWER |
| 45- 49% | D | 2.0 | 1.50-2.39 | THIRD CLASS |
| 0- 44% | F | 0.0 | - | - |

ACADEMIC STAFF LIST

| S/N | NAMES | Rank/Designation | Qualification & Area Of Specialization |
|------------|---------------------|-------------------------|--|
| 1. | Prof. Afolayan A. | Professor | B.Sc, Ph.D Protein Science and Enzymology |
| 2. | Prof. Agboola F. K. | Professor | B.Sc, Ph.D Protein Science and Enzymology. |
| 3. | Prof. Oboh G. | Professor | B.Tech, M.Tech, Ph.D. Food Biochemistry & Toxicology. |
| 4. | Dr. Ibraheem O. | Senior Lecturer | B.Sc., M.Sc., Ph.D. Molecular Biology, Enzymology, Protein Chemistry and Biotechnology. |
| 5. | Dr. Brai B. I.C. | Lecturer I | B.Sc, M.Sc, Ph.D. Nutritional Biochemistry and Biomembrane. |
| 6. | Dr. Ojo. O.O. | Lecturer I | B.Sc., M.Sc., Ph.D., Biochemistry |
| 7. | Dr. Komolafe K. C. | Lecturer II | B.Sc, M.Sc, Ph.D. Drug Metabolism & Toxicology |
| 8. | Mr. C. T. Eze | Lecturer II | B.Sc, M.Sc. Biochemistry. |
| 9. | Mr. Adeoye. A. O | Assistant Lecturer | B.Sc., M.Sc., Biochemistry |

ADMISSION AND REGISTRATION PROCEDURE:

After due process of the screening at the Faculty and Departmental offices, the candidate shall be provided with the list of courses for the semester for registration purposes. If it is discovered at anytime that a candidate does not possess any qualification which he/she claims to have obtained, he/she would be expelled from the University.

INSTRUCTIONAL METHODS AND DELIVERY:

The method of delivery would be student-centered, learning, research and teaching approach would be adopted.

COURSE OUTLINE

FIRST SEMESTER 100 LEVEL

| Code | Title | Status | Unit |
|---------|--|--------|-----------|
| BIO 101 | General Biology I | R | 3 |
| BIO 107 | Introduction to Experimental Biology I | R | 1 |
| CHM 101 | General Chemistry I | R | 3 |
| CHM 107 | Practical Chemistry I | R | 1 |
| MTH 101 | Elementary Mathematics I | R | 3 |
| PHY 101 | General Physics I | R | 3 |
| PHY 107 | Experimental Physics I | R | 1 |
| CSC 101 | Introduction to Computing I | R | 2 |
| GST 101 | Communication in English I | C | 2 |
| GST 103 | Use of Library and ICT | R | 2 |
| GST 105 | Introduction to Entrepreneurship | R | 1 |
| | TOTAL | | 22 |

C- Compulsory, E- Elective, R-Required, L-Lectures, P- Practical, T-Tutorials.

SECOND SEMESTER 100 LEVEL

| Code | Title | Status | Unit |
|---------|---|--------|-----------|
| BIO 102 | General Biology II | C | 3 |
| BIO 108 | Introduction to Experimental Biology II | C | 1 |
| CHM 102 | General Chemistry II | C | 3 |
| CHM 108 | Practical Chemistry II | C | 1 |
| MTH 102 | Elementary Mathematics II | C | 3 |
| PHY 102 | General Physics II | C | 3 |
| PHY 108 | Experimental Physics II | C | 1 |
| GST 102 | Communication in English II | C | 2 |
| GST 106 | Evaluating Opportunities and Business Concept | R | 1 |
| GST 108 | Government, Society and Economy | R | 2 |
| GST 110 | African Culture and Civilization | R | 2 |
| | TOTAL | | 22 |

C- Compulsory, E- Elective, R-Required, L-Lectures, P- Practical, T-Tutorials.

*Students can take either GST 108 or 110.

FIRST SEMESTER 200 LEVEL

| Code | Title | Status | Unit |
|---------|---|--------|-----------|
| BCH 201 | General Biochemistry I | C | 3 |
| BCH 203 | Intro to Molecular Biology and Biotechnology I | C | 2 |
| BCH 299 | Industrial Attachment (12 Weeks) | C | 3 |
| BIO 201 | Introduction to Genetics | R | 2 |
| MCB 201 | General Microbiology I | R | 3 |
| CHM 201 | Inorganic Chemistry I | R | 3 |
| CHM 203 | Physical Chemistry I | C | 3 |
| GST 203 | Feasibility Plan and Investment Decision making | R | 1 |
| GST 205 | Introduction to Philosophy, Logic and Human Existence | R | 2 |
| MCB 203 | Microbiological Technique | E | 2 |
| BIO 203 | General Physiology | E | 2 |
| | TOTAL | | 24 |

SECOND SEMESTER 200 LEVEL

| Code | Title | Status | Unit |
|---------|---|--------|-----------|
| BCH 202 | General Biochemistry II | C | 3 |
| BCH 204 | General Biochemistry Practical I | C | 1 |
| BCH 206 | Intro to Molecular Biology and Biotechnology II | C | 2 |
| BCH 208 | Molecular Biology Techniques | C | 1 |
| BIO 204 | Biological Techniques | R | 2 |
| CHM 202 | Organic Chemistry I | C | 3 |
| MTH 234 | Statistics for Biological and Agricultural Sciences | C | 3 |
| GST 202 | Peace and Conflict Resolution | R | 2 |
| GST 204 | Resource Management and Organizational Behaviour | R | 1 |
| | TOTAL | | 18 |

C- Compulsory, E- Elective, R-Required, L-Lectures, P- Practical, T-Tutorials.

FIRST SEMESTER 300 LEVEL

| Code | Title | Status | Unit |
|---------|--|--------|-----------|
| BCH 301 | Enzymology | C | 3 |
| BCH 303 | Chemistry and Metabolism of Lipids | R | 2 |
| BCH 305 | Chemistry and Metabolism of Carbohydrates | R | 2 |
| BCH 307 | Chemistry and Metabolism of Amino Acids and Proteins | C | 2 |
| BCH 309 | Toxicology I | R | 2 |
| BCH 311 | Analytical Methods in Biochemistry | C | 3 |
| BCH399 | Industrial Attachment II (12 Weeks) | C | 3 |
| CHM 301 | Physical Chemistry II | R | 3 |
| AEB 303 | Biology of Tropical Parasites | E | 3 |
| PSB 311 | Medicinal Plants | E | 2 |
| | TOTAL | | 22 |

C- Compulsory, E- Elective, R-Required, L-Lectures, P- Practical, T-Tutorials.

SECOND SEMESTER 300 LEVEL

| Code | Title | Status | Unit |
|---------|--|--------|-----------|
| BCH 302 | Chemistry & Metabolism of Nucleic Acids | C | 2 |
| BCH 304 | Membrane Biochemistry | R | 1 |
| BCH 306 | General Biochemistry Practical II | C | 2 |
| BCH 308 | Principles of Immunology | R | 2 |
| BCH 310 | Bioenergetics | R | 1 |
| BCH 312 | Food and Nutritional Biochemistry | R | 2 |
| BCH 314 | Protein Structure and Function | R | 3 |
| BCH 316 | Principles of Endocrinology | R | 2 |
| CHM 302 | Organic Chemistry II | R | 3 |
| MCB 302 | Microbial Genetics/Molecular Biology | E | 3 |
| MCB 304 | Principles of Epidemiology & Public Health | E | 3 |
| MCB 308 | Food Microbiology | E | 3 |
| | TOTAL | | 22 |

C- Compulsory, E- Elective, R-Required, L-Lectures, P- Practical, T-Tutorials.

FIRST SEMESTER 400 LEVEL

| Code | Title | Status | Unit |
|---------|---|--------|-----------|
| BCH 401 | Advanced Enzymology | C | 2 |
| BCH 403 | Tissue Biochemistry | R | 1 |
| BCH 405 | Genetic Engineering and Molecular Biology | C | 3 |
| BCH 407 | Plant Biochemistry | C | 2 |
| BCH 409 | Pharmacological Biochemistry | R | 2 |
| BCH 411 | Bioinformatics | C | 2 |
| BCH 413 | Forensic Biochemistry | R | 3 |
| BCH 415 | Toxicology II | R | 2 |
| BCH 417 | Biochemical Reasoning | R | 1 |
| BCH 419 | Fundamentals of Biosignaling & Oncology | R | 2 |
| | TOTAL | | 20 |

C- Compulsory, E- Elective, R-Required, L-Lectures, P- Practical, T-Tutorials.

SECOND SEMESTER 400 LEVEL

| Code | Title | Status | Unit |
|---------|--|--------|-----------|
| BCH 402 | Biosynthesis of Macromolecules | R | 1 |
| BCH 404 | Bioinorganic Chemistry | R | 1 |
| BCH 406 | Metabolic Regulation | C | 2 |
| BCH 408 | Special Topics/Seminar in Biochemistry | R | 2 |
| BCH 410 | Industrial Biochemistry | R | 3 |
| BCH 412 | Advanced Biochemical Methods | R | 2 |
| BCH 414 | Endocrinology | R | 2 |
| BCH 416 | Molecular Aspects of Immunology | R | 2 |
| BCH 499 | Research Project | C | 6 |
| | TOTAL | | 21 |

C- Compulsory, E- Elective, R-Required, L-Lectures, P- Practical, T-Tutorials.

COURSE DESCRIPTIONS

BCH 201: GENERAL BIOCHEMISTRY I (3 Units)

Introductory chemistry of amino acids; their properties, reactions and biological functions. Classification of amino acids: neutral, basic and acidic; polar and non-polar; essential and non-essential amino acids. Introductory chemistry of proteins; methods of their isolation, purification and identification. Primary, secondary, tertiary and quaternary structures of proteins. Basic principles of tests for proteins and amino acids. Biological functions of proteins. Introductory chemistry of carbohydrates, lipids and nucleic acids. Nomenclature of nucleosides, and nucleotides; effects of acid and alkali on hydrolysis of nucleic acids.

BCH 202: GENERAL BIOCHEMISTRY II: (3 Units)

The cell theory. Structures and functions of major cell components. Cell types, constancy and diversity. Cell organelles of prokaryotes and eukaryotes. Chemical composition of cells. Centrifugation; Methods of cell fractionation. Structure, function and fractionation of extra-cellular organelles. Enzymes. Water and bio-molecules: protein, carbohydrates, lipids etc.

BCH 203: INTRODUCTION TO MOLECULAR BIOLOGY & BIOTECHNOLOGY I (2 Units)

Historical development of molecular biology and biotechnology; universality of the genetic code; the central dogma of molecular biology; DNA replication; transcription and translation in relation to gene expression. The gene cloning technology; relevant tools and steps in cloning, restriction enzymes and ligases, gel electrophoresis for separating DNA fragments, plasmid and viral vectors as vehicles for DNA transfer and cell transformation. The Polymerase Chain Reaction (PCR).

BCH 204: GENERAL BIOCHEMISTRY PRACTICAL I (1 Unit)

Laboratory experiments designed to reflect the topics covered in BCH 201 and BCH 202. Introduction to laboratory methods and procedures employed in studying biochemical processes.

BCH 206 INTRODUCTION TO MOLECULAR BIOLOGY & BIOTECHNOLOGY II (2 Units)

Applications of molecular biology and biotechnology; implications of molecular biology and biotechnology including ethical issues; biosafety levels, intellectual property rights, and social controversies.

BCH 208: MOLECULAR BIOLOGY TECHNIQUES (1 Units) (L 0: P2: T0)

Laboratory safety procedures; book and note keeping; preservation and storage of samples; disposal of biological and chemical wastes; maintenance of equipment and use of operational manuals; general laboratory methods - preparation of solutions, uses of micropipettes, pH meter, autoclave operations, and use of spectrophotometer. Working with biological molecules (DNA, RNA, proteins, and metabolites) under sterile conditions. Molecular biology methods including genomic DNA/RNA extractions, preparation methods, DNA amplification using thermocycler; restriction enzyme digestion and ligation; agarose gel electrophoresis; polyacrylamide gel electrophoresis. transformation of cells by electroporation and chemically, methods for purifying DNA on gel, purification of biomolecules using commercial kits; or traditionally using lipases, proteases, and RNases; transfection of mammalian cells, southern, northern, and western blotting; preparation of sequencing gels. Cell culture methods – various kinds of cell culture; tissue culture methods, and determination of cell number (cell counts). **(Pre-requisite: BCH 203)**

BCH 299: INDUSTRIAL ATTACHMENT I (3 Units)

Students should be attached to some industrial organizations for 12 Weeks at the 200 Level preferably during the long vacation for real-time

relevant industrial experience. Students to be assessed based on seminar presentation, their reports and assessment by supervisors.

BCH 301 ENZYMOLOGY: (3 Units)

Discovery, classification and nomenclature of enzymes. Vitamins and co-enzymes; minerals in enzyme biochemistry. Fat and water soluble vitamins. Structures and functions of vitamins and co-enzymes. Genetics of enzymes. Enzyme inhibition. Mechanisms of enzyme-catalysed reactions. Effects of temperature, pH, ions and inhibitors on enzyme catalysed reactions. Derivation and significance of Michaelis-Menten equation. Allosteric/Regulatory enzymes. Active sites of enzymes. Estimation of kinetic parameters of enzyme activities. Zymogen activation, digestive enzymes etc. Production, isolation, purification and characterization of enzymes. Recent advances in enzymology.

BCH 302 CHEMISTRY AND METABOLISM OF NUCLEIC ACIDS: (2 Units)

Structure and function of nucleic acids. DNA replication and protein synthesis. DNA repairs. The genetic code and protein synthesis. Metabolism of purines and pyrimidines, nucleosides and nucleotides. Degradation of purine and pyrimidine nucleotides. Abnormalities in nucleic acid metabolism-xeroderma pigmentation and skin cancer.

BCH 303 CHEMISTRY AND METABOLISM OF LIPIDS: (2 Units)

Classification of lipids - fatty acids, triglycerides, glycosylglycerols, phospholipids, waxes, prostaglandins. Lipid micelles, monolayers, bilayers. Lipoprotein systems, transport protein of blood plasma. Oxidation of fatty acids. Microsomal peroxidation of polyunsaturated fatty acids. Metabolism of unsaturated fatty acids; essential and nonessential. Metabolism of acylglycerols. Degradation and turnover of phospholipids. Cholesterol biosynthesis and breakdown. Formation of ketone bodies. Integration of lipid metabolism. Acetic acid as a central precursor for biosynthesis of lipids.

BCH 304 MEMBRANE BIOCHEMISTRY: (1 Unit)

Structure, composition and functions of biological membranes. Isolation, characterization and classification of membranes; chemistry and biosynthesis of membranes. Molecular organization of membrane components. Natural and artificial membrane bilayers - the unit membrane hypothesis. Membrane transport system - active versus passive transport systems. Transport of sugars and amino acids.

BCH 305 CHEMISTRY AND METABOLISM OF CARBOHYDRATES: (2 Units)

Chemistry and function, isolation and purification of polysaccharides. Molecular weight determination and analytical methods for structural determination of polysaccharides. Biochemistry of important oligosaccharides and polysaccharides Degradation and digestion of carbohydrates - sugars, storage polysaccharides and cell walls. Glycolysis, the tricarboxylic acid cycle, the phosphogluconate pathway, the glyoxylate pathway; the pentose phosphate pathway and the Cori cycle: the Calvin pathway. Gluconeogenesis and glyconeogenesis. Regulation of carbohydrate metabolism. Disorders of carbohydrate metabolism.

BCH 306 GENERAL BIOCHEMISTRY PRACTICAL II: (2 Units)

Laboratory methods and procedures employed in studying biochemical processes cutting across a wide spectrum of general biochemistry.

BCH 307 CHEMISTRY AND METABOLISM OF AMINO ACIDS AND PROTEINS: (2 Units)

Amino acids as building blocks of proteins; the peptide bond as covalent backbone of proteins. Forces involved in the stabilization of protein structure. Protein isolation, fractionation, purification and characterization. Amino acid analysis of peptides and proteins. Methods for the determination of the sequence of amino acids in proteins.

Molecular weight determination of proteins. Techniques in protein biochemistry. Oxidative degradation of amino acids and metabolism of one carbon units. Ammonia toxicity and urea formation. Biosynthesis of amino acids and some derivatives; the urea cycle; metabolism of inorganic nitrogen. Disorders of amino acid metabolism. **(Pre-requisite: BCH 202)**

BCH 308 PRINCIPLES OF IMMUNOLOGY: (2 Units)

Blood chemistry and composition. Preparation of serum and plasma. Protein components of plasma. Innate and acquired immunity. Antigens, antibodies, cellular immunity. Antigen-antibody interactions. Immunological tolerance and suppression. Immunological anomalies, diagnostic immunology, vaccines. Structure of immunoglobulins. Combining sites of antibodies. Myeloma and hybridoma immunoglobulins. The antigen binding site. Domains of antibody molecules-gene duplication and diversification. Generation of diverse antibody specificities, clonal selection theory of antibody formation. Biological significance of clonal selection.

BCH 309 TOXICOLOGY I: (2 Units)

Basic principles of toxicology, definition and scope; absorption and distribution of toxicants; toxicokinetics, metabolism of toxicants; comparative toxicology; elimination of toxicants and their metabolites, toxicant-receptor interactions, genetic poisons, chemical carcinogenesis; trace element toxicity, hepatotoxicity.

BCH 310 BIOENERGETICS: (1 Unit)

High-energy compounds; Chemical potentials, Electrochemical potentials, Electron transport system and oxidative phosphorylation; Regulation of ATP production. Chemical thermodynamics; Oxidations and reductions.

BCH 311 ANALYTICAL METHODS IN BIOCHEMISTRY: (Units)

Tissue and cell culture techniques, immunoassays, blotting, and isotopic techniques. Principles, methodologies, instrumentation and applications of electrophoresis, manometry and centrifugation techniques. Chromatographic techniques including paper, thin layer, column, gas, and high performance chromatographic techniques. . Spectroscopic techniques including uv-visible, infra-red, nuclear magnetic resonance and mass spectrometry. Fluorimetry, polarographic including potentiometric and electrometric measurements. This course includes laboratory practical classes which will provide students opportunity to practice the various techniques and familiarise themselves with the types of equipment used for the techniques.

BCH 312 FOOD AND NUTRITIONAL BIOCHEMISTRY: (2 Units)

An introduction to the theory and application of physical and chemical methods for determining the constituents of food. Food processing, preservation and storage of traditional foods – root and stem tubers, fruits and fruit drinks, seeds and grains, greens and vegetables. Food poisoning and intoxication; prevention and cure. Food nutrients; Energy values of foods and energy expenditure by mammals. Nutritive value of foods - carbohydrates, fats, proteins, vitamins, mineral elements and water. Nutritional disorders, prevention and therapy. Nutritional status and nutritional requirements. Recommended dietary allowances. Assessment of nutritional status. Nutrient requirements in relation to physical activity and ageing, diet and disease, obesity and under nutrition.

BCH 314 PROTEIN STRUCTURE AND FUNCTION: (3 Units)

Classification of proteins with examples from important groups. Isolation and characterization of proteins. Criteria for purity. Determination of shape and size of the protein molecule primary structure. Reaction of amino side chains, evolutionary aspects of amino acid sequences.

Secondary, tertiary and quaternary structures of proteins. Protein-protein interaction correlation of structure with function.

BCH 316 PRINCIPLES OF ENDOCRINOLOGY: (Units)

Organization of the mammalian endocrine system. Chemistry and functions of hormones, mechanism of hormone action. Storage and secretion of hormones. Steroid hormones, thyroid hormones, parathyroid hormones. Role of intercellular receptors, hormone responsive elements, enhancer elements, fusion genes, Peptide hormones. Role of cyclic AMP as a second messenger. Adenylate cyclase system, protein kinase C, phosphoproteins, phosphodiesterase, phosphatases, guanylate cyclase, G. proteins. Hormones acting through calcium and phosphoinositides, calmodulin-calcium system as a mediator of hormones. Structure and synthesis of insulin. Prostaglandins.

BCH 399 INDUSTRIAL ATTACHMENT II (12 WEEKS) (3 Units)

Students should be attached to some industrial organizations for additional 12 Weeks at the 300 Level preferably during the long vacation. Assessment to be based on seminar presentation, report and assessment by supervisor.

BCH 401: ADVANCED ENZYMOLOGY: (2 Units).

Chemistry of enzyme catalysis. Steady state enzyme kinetics. Transport kinetic methods. Ligand binding and its application to enzymology. Kinetics of multiple binding sites. Mechanisms of two substrate systems. Molecular models of allosterism. Enzyme models of allosterism. Multi-enzyme complexes. Enzyme assays and techniques in enzymology. Criteria for determining purity of enzymes. Enzyme reconstitution. Regulation of enzyme activity and synthesis. **(Pre-Requisite BCH 301).**

BCH 402 BIOSYNTHESIS OF MACROMOLECULES: (1 Unit)

Structures and functions of macromolecules. Biosynthesis and storage of polysaccharides, mucopolysaccharides, glycoproteins. Bacterial cell wall synthesis of complex lipids, lipoproteins and nucleic acids.

BCH 403 TISSUE BIOCHEMISTRY: (1 Unit)

Biochemistry of muscles, kidney, liver, and adipose tissues. General metabolism of the brain and neuronal biochemistry. Biochemistry of reproductive tissues. Detoxification and excretion in tissues.

BCH 404 BIOINORGANIC CHEMISTRY: (1 Unit)

Relationship between the physicochemical properties and biological functions of inorganic ions. Ligand complexes and their biochemical significance. Electrolyte metabolism. Nitrogen fixation and sulphur cycle.

BCH 405 GENETIC ENGINEERING AND MOLECULAR BIOLOGY: (3 Units)

Gene structure and function. Nucleic acid function and biological function. DNA sequencing and restriction endonucleases. DNA repair mechanisms. Nucleic acid replication. Regulation of nucleic acid synthesis. Genetic code and gene-protein relationship. Eukaryotic transcription. Control of gene expression. Functional analysis of the replicator structure of bacteriophage DNA. Drug-nucleic acid interactions. Initiation factor for viral DNA replication. Genetic control of viral replication. Model systems used for studying embryology at the molecular level. Model systems in differentiation studies. Control of cell proliferation. Genetic engineering and recombinant gene technology.

BCH 406 METABOLIC REGULATIONS: (2 Units)

The relationship of Krebs' Cycle to protein, carbohydrate, lipid and nucleic acid metabolism. Integration of metabolic pathways. Turn-over rates and metabolic pools. 27 Regulation of enzymes of metabolic pathways-feed back inhibition versus enzyme synthesis. Catabolite

repression, end product repression. Identification of different regulatory mechanisms in metabolic pathways.

BCH 407 PLANT BIOCHEMISTRY: (2 Units) (L1:P0:T1)

Organization of plant cells. The biochemistry of important plant processes and metabolic pathways. Photosynthesis; alkaloids, flavonoids and plant hormones. Biosynthesis of carotenoid pigments. Biochemistry of plant development. The plant cell wall structure, formation and growth. Lignin formation. Free amino acids, pyrimidines, purines and nucleosides in plants. Metabolism of auxins, gibberellins and cytokinins. Synthetic growth regulators and herbicides. Structure - activity relationship of plant hormones.

BCH 408 SPECIAL TOPICS/SEMINAR IN BIOCHEMISTRY: (2 Units)

Hormones, immunochemistry, oncology, brain biochemistry, monoclonal antibodies. These may be taught or seminars may be given by students.

BCH 409 PHARMACOLOGICAL BIOCHEMISTRY: (2 Units)

Cellular metabolism in infected cells. Biochemical aspects of host-parasite relationships. Metabolic factors affecting chemotherapeutic agents. Theories of the mechanism of drug action. Drug resistances and other factors affecting drug efficacy. The physiological and biochemical action of some selected drugs. Nigerian traditional medicinal plants in the management and therapy of common ailments in Nigeria - malaria, sickle cell anaemia, common cold, hepatitis etc.

BCH 410 INDUSTRIAL BIOCHEMISTRY: (3 Units)

A short review of microbial physiology and genetics. A review of general metabolic pathways and application in industrial processes. Continuous culture methods, principles and applications. The chemostat and its application in industrial fermentations. Primary and secondary metabolism. Process evaluation and development. Over production of

metabolites - amino acids, taste enhancers, vitamins, toxin etc. Methods for screening and selecting micro-organisms of industrial importance. Induction of mutation in microorganism and plants for the purpose of over production; Strain selection/development and enhancement. Gene dosage and its application in industrial processes.

BCH 411 BIOINFORMATICS: (2 Units)

Information to bioinformatics. Introduction to linux. Gene finding/sequencing, database and introduction to emboss. Sequence alignment, emboss water and needle. Blast and sequence alignment, blast 101. Sequence signature and motifs/sequence. Signature data bases/interpro. Protein function prediction and protein interaction/string etc. phylogenetics/phylogenetics MSA, MAFFT lab. Variation and molecular level, natural/HIO, KA/KS. Structural bioinformatics, chimera, PyMOI, NCBI's Entrez, BLAST, PSI-BLAST, clustal W, Pfam, PRINTS, BLOCKS, Prosite and PDB.

BCH 412 ADVANCED BIOCHEMICAL METHODS: (2 Units)

The purpose of this course is to familiarise students with operations of latest biochemical equipment and with methods of research, assimilation and dissemination of information. Students will therefore go round lecturers and laboratories housing specialized equipment with the aim of exposing them to such equipment under the supervision of lecturers. Part of the course will also cover the effective use of the library, preparation of dissertations or theses, papers for journal publications and journal reviews. Special assignments and essays will be given to students.

BCH 413 FORENSIC BIOCHEMISTRY: (3 Units).

Procedure for the extraction of contaminants of forensic interest from tissues. Collection and preservation techniques for materials of forensic interest. Analytical procedures in forensic science. Law, science and medicine in forensic practices.

BCH 414 ENDOCRINOLOGY: (2 Units).

Hormones: Biochemistry and molecular mechanism of action, cyclic AMP. Hormone receptors: isolation and properties. Diabetes mellitus and hypoglycemia. Biochemistry and functions of insulin and other hormones controlling carbohydrate metabolism. The thyroid hormones: biochemistry and functions. The steroid hormones; mineralocorticoids and glucocorticoids.

BCH 415 TOXICOLOGY II: (2 Units).

Biological effects of toxic substances in living organisms. Metabolism, cellular and tissue targets, mechanisms of action, and pathological effects. Resistance and tolerance of toxicants, natural toxicants, chronic testing in animals; tests for mutagenicity in toxicological evaluation of chemicals; isolation and structural elucidation of toxicants; enzymatic detoxification.

BCH 416 MOLECULAR ASPECT OF IMMUNOLOGY II: (2 Units).

Immune type and manifestation. Basis of immune response. Autoimmunity; cancer and immune response. Immunoanalytical techniques. The immunosuppressive drugs/agents.

BCH 417 BIOCHEMICAL REASONING: (1 Unit).

Evaluation and design of experimental biochemistry from available information and data. Analysis, interpretation and inference - drawing from biochemical research data.

BCH 419 FUNDAMENTALS OF BIOSIGNALLING AND ONCOLOGY: (2 Units).

Structure and function of signal pathways; signaling of nuclear receptors. G-protein coupled signal transmission pathway, Intracellular messengers/second messengers, serine/threonine specific protein kinases, tyrosine-specific protein phosphatases, ras protein-protein kinase, MAP kinases, membrane receptors with associated tyrosine

kinase activity (JANUS kinase), other receptor classes. Regulation of cell cycle. Malfunction of signaling pathways and tumorigenesis. Oncogenes and tumor suppressor genes. Apoptosis.

BCH 499 RESEARCH PROJECTS: (6 Units)

Independent research findings into selected areas/topics of interest to the supervising academic staff. Students will be required to carry out literature survey on the topics, perform experiments and produce reports (preferably at the end of second semester). Students will be subjected to both seminar and oral examination on the projects undertaken.

LANGUAGE OF INSTRUCTION:

English Language is the language of instruction

FINAL YEAR PROJECT/LONG ESSAY:

During the last semester of the final year of study, project proposal would be submitted to the department the semester before the last semester for approval and vetting after which implementation would be carried out by the students. The supervisor/examiner designate would undertake scoring and supervision.

COLLATION OF EXAMINATION MARKS

Examinations are conducted and within two weeks the results must be out, submitted to the department.

AWARD OF DEGREE

A student shall qualify for the award of a degree when he/she shall have:

- Passed all required courses and any elective recommended for specialization.
- Obtained a CGPA of not less than 1.0
- Successfully completed industrial attachments and projects.

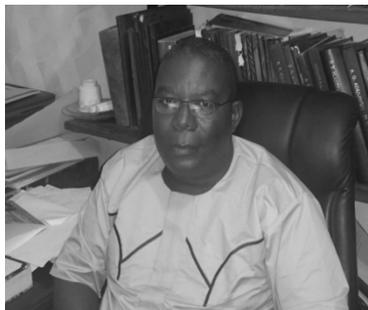
STAFF PROFILE



Name: PROFESSOR ADEYINKA AFOLAYAN

Rank: PROFESSOR

Professor Adeyinka Afolayan attended the University of Ibadan where he obtained his Ph.D in 1969. He was a lecturer at the Department of Biochemistry, Obafemi Awolowo University (OAU) where he became a professor in 1984 until retirement in 2006. His area of interest is Enzymology and Protein chemistry. He has also worked in the Federal University of Technology, Akure (Dean, School of Pure and Applied Science, 1985-1986), Ekiti State University, Ado-Ekiti (Dean, Basic Medical Sciences, 2011-2015). He was the Dean (1990-1991) and Provost (1992-1993), Postgraduate college, OAU, Ile-Ife. He attended Universities in USA as a visiting Professor/Investigator and Research Fellow. He has many published articles to his credit. He is a Fellow of Nigeria Society of Biochemistry and Molecular Biology and the Nigeria Academy of Science.



Name: PROFESSOR FEMI KAYODE AGBOOLA

Rank: PROFESSOR

Professor Agboola is a graduate of Biochemistry, Obafemi Awolowo University, Ile Ife where he obtained his Ph.D in 1998 and professorship in 2011. His area of research interest is Enzymology and Protein Science. He has attended many scientific conferences and workshops in Nigeria and abroad. He has more than fifty research articles in both local and International journals.

Name: PROFESSOR GANIYU OBOH

Rank: PROFESSOR

E-mail: goboh2001@yahoo.com

Prof. Ganiyu Oboh is a Professor of Biochemistry at the Federal University of Technology (FUT) Akure, Nigeria. He is presently utilizing his one year sabbatical leave at the Department of Biochemistry, Federal University of Oye Ekiti (FUOYE), Ekiti State, and he is the pioneering Head of Biochemistry Department, FUOYE. His Ph.D degree was obtained in 2002 in Applied Biochemistry from the Federal University of Technology (FUT), Akure, Nigeria. He had his post-doctoral training in Biochemical Toxicology at the Universidade Federal de Santa Maria in Brazil in 2005 under TWAS-CNPq post-doctoral fellowship. Professor Oboh has won several fellowships and awards that have given him additional postdoctoral experience in Food Biochemistry & Toxicology, at the Institute of Food Chemistry, Technical University of Dresden,

Germany [Alexander von Humboldt (AvH) Foundation] and the Institute of Nutritional Sciences, Chinese Academy of Sciences (CAS), Shanghai, China. He was a recipient of several research grants from international bodies such as International Foundation of Sciences (IFS), African Academy of Sciences (AAS), Academy of Sciences for Developing World (TWAS). He was awarded the "Best Researcher of the Year" award in 2009 and 2012 respectively of the Federal University of Technology Akure as well as 'Distinguish Alumnus' award of the School of Sciences, FUTA. Prof. Oboh is an old friend of the International Centre of Theoretical Physics (ICTP) Trieste, Italy. His first contact with the ICTP was as a Young Collaborator in 1999. He was then promoted to Junior Associate for the period 1999 – 2006. He is now a Regular Associate of the Centre.

During his contacts with the Centre, he developed a research collaboration with Prof. Sabina Passamonti of University of Trieste, Italy that enabled academic exchange of students from his home University to the University of Trieste, Italy.



Name: DR. O. IBRAHEEM

Rank: SENIOR LECTURER

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He was born in Lagos, Nigeria and obtained BSc. (Hons) and MSc. Biochemistry degrees from Obafemi Awolowo University, Ile-Ife, Nigeria in 1999 and 2004 respectively; specializing in Protein Chemistry and Enzymology. Through PhD GMRDC Scholarship from University of Fort Hare (UFH) South Africa he obtained his PhD Biochemistry in

2011; specializing in Plant Molecular Biology, Anatomy and Eco-physiology. In furtherance of his academic pursue, he did Post Doctoral trainings at Institute for Microbial Biotechnology and Metagenomics (IMBM), University of Western Cape, Cape Town, South Africa; Plant Anatomy and Eco-physiology Lab. Botany Department, Rhodes University, Grahamstown, South Africa, and Agricultural Research Council (ARC), Infruitec, Stellenbosch / National Agricultural Proteomics Research and Services Unit, Biotechnology Department, University Of Western Cape, Cape Town, South Africa. He is also a recipient of Third World Academy of Science/Chinese Academy of Science (TWAS/CAS) Postdoctoral Fellowship (2011) and the prestigious Coimbra Group Scholarships Programme for Young Professors and Researchers from Sub-Saharan Africa (2016). He is a member of many academic and professional societies among which are Royal Society of South Africa, South Africa Society for Microbiology, American Society for Biochemistry & Molecular Biology, International Society for Computational Biology, Biochemistry Society Network, Biotechnology Society of Nigeria and Young Professional for African Development. His research interests are enzymes biotechnology, phytomedicine, plant stress and signalling responses, bioplastic; polyhydroxyalkanoates production (using renewable agricultural, municipal and industrial wastes), biofuel (from grains and natural sources), and screening of essential polysaccharides from aquatic bodies for industrial applications. He has to his credit several published academic articles in both International and National Journals and have also presented his research work at many International Conferences. He teaches several biochemistry modules of notable are protein, carbohydrate and nucleic acids biosynthesis/metabolism, advanced enzymology, industrial biochemistry, molecular biology genetic engineering and biotechnology, plant biochemistry, biochemical toxicology and forensic biochemistry, advance theory of techniques and bioinformatics applications. The has trained and supervised many students at BSc.(Hons), MSc. and PhD levels and reviews research articles for many journals and publishing outfit.



Name: Dr. Bartholomew I. C. Brai

Rank: Lecturer I

Email: Bartholomew.brai@fuoye.edu.ng

Dr Brai holds a doctorate degree in Biochemistry from the University of Ibadan, Ibadan specializing in Nutritional Biochemistry. He was awarded a Nuffic Short-Term Fellowship for training in Food and Nutrition Security at Wageningen University and Research Centre, The Netherlands in 2007.

He worked as a Research Fellow at the Nigerian Institute of Medical Research, Lagos and served as a World Health Organization (WHO) Consultant in Project Planning and Evaluation in Biomedical Research before joining the services of Federal University Oye-Ekiti.

Dr Brai is a member of the Nigerian Society of Biochemistry and Molecular Biology, Nutrition Society of Nigeria, Nutrition Society, United Kingdom and American Society for Nutrition.

He has several scientific publications in both national and international peer-review journals.

Dr. Brai is a Fellow of the Nutrition Society of Nigeria and currently serves as its National President.

Current research interest: Role of antioxidants in health and diseases.



Name: DR. (MRS) OLAJUMOKE OMOLARA OJO

Rank: LECTURER I

Olajumoke Omolara Ojo had her B.Sc Biochemistry and M.Tech Applied Biochemistry from Ondo State University and Federal University of Technology Akure respectively. She completed her PhD from Jawaharlal Nehru University New Delhi India in 2014 under TWAS-CSIR Postgraduate Fellowship at Central Drug Research Institute Lucknow India. She presented her work in several scientific meetings and also received best poster award at International meeting of Society of Toxicology of India in 2012 held at Indian Institute of Technology Lucknow Research India. Some of her findings were published in PLoS One Journal while some are in communication stage in peer reviewed journals.



Name: DR. KAYODE KOMOLAFE

Rank: LECTURER II

E-mail: komokay93@gmail.com

Dr. Kayode Komolafe is an Assistant Lecturer in the Department of Biochemistry. He obtained his B.Sc and M.Sc degrees in Biochemistry from Adekunle Ajasin University, Akungba and University of Ibadan, Ibadan respectively. He was a fellow of The Academy of Sciences for the Developing World (TWAS) and bagged his doctorate degree in Biochemistry (Toxicology & Phytomedicine) from the Federal University of Technology, Akure in 2014. He is a member of the Nigerian Society of Biochemistry and Molecular Biology.



Name: MR. EZE CHUKWUEBUKA T. F

Rank: LECTURER II

E-mail: chukwuebukaeze@ymail.com; thankgod.eze@fuoye.edu.ng.

Mr. Eze ThankGod Chukwuebuka holds a Bachelor of Science in Biochemistry and Master of Science in Environmental Toxicology from the Ebonyi State University Abakaliki and University of Nigeria Nsukka respectively. He is currently a PhD fellow of the Economic Community of West African States (ECOWAS) at the University of Lagos, Nigeria. His research interests focuses on how living organisms responds to changes in the environment. He has few publications to his credit.



Name: MR. AKINWUNMI O. ADEOYE

Rank: ASSISTANT LECTURER

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He obtained his B.Sc degree in Biochemistry from Olabisi Onabanjo University, Ago-Iwoye in 2008 and his M.Sc degree also in Biochemistry from University of Ibadan, Ibadan in 2012 with specific option in Biomembrane and Biotechnology. His research interest is in bioactive agents/naturally occurring substances that have the potential to induce or inhibit mitochondrial membrane permeability transition pore opening and its application in drug development useful in situations of dysregulated apoptosis such as cancer and tissue wastage. He is currently on his doctoral programme and his research focuses on malaria using mitochondria as a pharmacological target for the development of drugs from plant origin in cancer therapy.

LIST OF ACADEMIC ASSOCIATE STAFF LIST

| S/ N | NAMES | Qualification, Date Obtained & Area Of Specialization | Course/Subject Taught | Teaching Load/Lectures Hours/Week |
|-------------|------------------------------|--|---|--|
| 1 | Prof. Popoola. A. R. | <i>B.Sc. Biochemistry (1982), M.Sc. Biochemistry(1985) Ph.D Plant Microbiology & Pathology (2001).</i> | BCH 407 Plant Biochemistry | 2 |
| 2 | Dr (Mrs). Gabriel-Ajobiwe R. | <i>B.Sc. Microbiology (1998); M.Sc. Food Microbiology (2002); Ph.D Food Microbiology (2009).</i> | MCB 201 General Microbiology I | 2 |
| 3 | Dr. (Mrs) Adubiaro. H. O. | <i>B.Sc. Chemistry (1994); M.Sc. Chemistry (2005); Ph.D Food Chemistry (2010).</i> | CHM 210-Physical Chemistry, CHM 212-Inorganic Chemistry. | 6 |
| 4 | Dr. Oyedepi. S. I. | <i>B.Tech Biology (1998); M.Sc Parasitology (2003); Ph.D Parasitology (2012).</i> | BIO 201 Genetics I | 2 |

TECHNICAL STAFF

| S/N | NAMES | QUALIFICATION | POSITION |
|-----|----------------------|--------------------------------|----------------------|
| 1. | Mrs. Omotayo Odunayo | <i>HND (2009) NISLT (2012)</i> | Technologist II |
| 2. | Mrs. AKINBODE Toyin | <i>B.Tech</i> | Technologist II |
| 3. | Mr. EGWUAGU Nobert | <i>B.Eng</i> | Technologist II |
| 4. | Mrs Ojo Oluwayemisi | <i>SSCE</i> | Laboratory Assistant |

ADMINISTRATIVE STAFF

| S/N | NAMES | QUALIFICATION | POSITION |
|-----|---------------------|--|--------------------------|
| 1. | Miss. Akinboye A.F | <i>B.Sc (Health Education)</i> | Admin. Officer I |
| 2. | Mrs. Omoya C.M | <i>HND (Business Admin. And Management). MBA (Human Resources Management) PGD (Management Studies)</i> | Senior Executive Officer |
| 3. | Mrs. Olofin T.O | <i>ND (Accountancy) B.Sc (Accounting)</i> | Executive Officer |
| 4. | Mrs. Modupe Olajide | <i>NCE (Primary Education Studies, YORUBA)</i> | Clerical Officer |