DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY
FACULTY OF EDUCATION
UNIVERSITY OF BENIN, BENIN CITY, NIGERIA

HISTORY OF THE DEPARTMENT

The faculty of education, university of Benin was established in 1974. As one of the oldest faculties it had a primary objective to train the much needed graduate teachers for post primary institutions all over the country.

It started as a single department located at the Ekehuan Campus of the University. The Department of Education then had two units:

1. Educational administration and foundations
2. Educational psychology and curriculum studies

The first Dean of the Faculty was Mr. G.N. Enobakhare who acted from September 1974 to June 1975. The Department of Educational Psychology and Curriculum Studies which originally started in 1974 as a Division of Educational Psychology, Guidance and Counseling was reconstituted into Educational psychology and curriculum studies in 1979. Two departments were created out of Educational Psychology and curriculum studies in 2014; namely – curriculum and

instructional technology and educational evaluation and counseling psychology.

The department of curriculum and instructional technology prepares students in the underlisted courses as part of the requirements for the award of B.Ed., B.A. Ed. And B.Sc. (Ed.) degree in the Faculty of Education. However, the nomenclature of this degree was changed to B.A. (Ed) and B.Sc. (Ed) in 1996.

VISION OF THE DEPARTMENT

The visions in the Department are designed to contribute to National development through training of manpower as to promote and encourage scholarship and community service. The various disciplines in the Department shall promote developmental goals relevant to the nation through service delivery.

MISSION OF THE DEPARTMENT INCLUDE

i. To produce well rounded professional graduate teachers for secondary schools, colleges of education and eventually specialist graduate teachers for primary schools

ii. To assist in the professional development and improvement of all categories of teachers through certificate courses, seminars and workshops and other in-service training programmes

iii. To prepare high-level manpower for tertiary institutions through graduate degree programmes

iv. To promote research efforts by coordinating staff research activities seminars, workshops and conferences

UNDERGRADUATE ACADEMIC PROGRAMMES

a) B.Sc.(Ed) Biology
b) B.Sc.(Ed) Chemistry
c) B.Sc.(Ed) Computer Science
d) B.Sc.(Ed) Integrated Science
e) B.Sc.(Ed) Mathematics
f) B.Sc.(Ed) Physics
g) B.Sc.(Ed) Social Studies

ACADEMIC STAFF LIST

S/N	NAME	QUALIFICATIONS	AREA OF SPECIALITY	RANK
1.	Prof. E.O.S. Iyamu	B.Sc (Nsukka), M.Ed, Ph.D (Benin)	Curriculum Studies/ Social Studies	Professor
2.	Prof. (Mrs.) Lucy Eraikhuemen	B.Ed, M.Ed, Ph.D (Benin)	Mathematics Education	Professor
3.	Prof. .(Mrs.) E. O. Okobia	NCE (Agbor), B.Ed, M.Ed, Ph.D (Benin)	Curriculum /Social Studies	Professor
4.	Prof. John Egharevba	B.Ed (Ife), M.Ed, Ph.D (Benin)	Curriculum/ Social Studies	Professor
5.	Dr. F. O. Idehen	NCE(Abraka), B.Ed., M.Ed., Ph.D (Benin)	Curriculum/ Mathematics Education	Assoc. Professor
6.	Dr.(Mrs.) A. H. Oyakhirome	B. Ed, M. Ed, Ph.D(Benin)	Curriculum/ Science Education	Assoc. Professor
7.	Dr.(Mrs.) I. K. Oteze	B.Sc.(Ed), PGD, M.Ed.(Benin), Ph.D (Ekpoma)	Computer, Measurement & Evaluation Curriculum Mathematics Education	Senior Lecturer
8.	Dr. R. O. Uzamere	NCE (Igueben) B.Sc. (Ed), M.Ed, Ph.D (Benin)	Curriculum/ Social Studies	Senior Lecturer

9.	Mr. L. O. Aimiyekagbon	B.Sc, M.Ed, Ph.D (Benin)	Curriculum/ Social Studies	Senior Lecturer
10.	Dr (Mrs)I. I. Omoregbe	NCE(Benin), B.Sc. (Ed.), M.Sc(Ed), Ph.D (Benin)	Curriculum/ Social Studies	Lecturer I
11.	Dr (Mrs) P. O. Omere	NCE(Benin), B.Sc. (Ed.), M.Sc(Ed), Ph.D (Benin)	Curriculum/ Science Education (Mathematics)	Lecturer I
12.	Dr (Mrs)B. N. Aghahowa	NCE(Benin), B.Sc (Ed), M.Sc(Ed), Ph.D (Benin)	Curriculum/ Social Studies	Lecturer I
13.	Dr (Mrs). A. A. Odia	NCE(Benin), B.Sc.(Ed)(Benin), M.Sc.(Ed), Ph.D (Benin)	Curriculum/ Social Studies	Lecturer I
14.	Dr. F. O. Ahanor	NCE(Benin), B.Sc.(Ed)(Benin), M.Sc.(Ed), Ph.D (Benin)	Curriculum/ Social Studies	Lecturer I
15.	Dr.(Mrs.) N. V. David-Egbenusi	B.Sc.(Ed)(Ace), M.Sc.(Ed), Ph.D (Benin)	Science Education (Biology)	Lecturer I
16.	Dr. (Mrs.) E.O. Eromosele	NCE (Agbor), B.Sc.Ed. (Benin), M.Sc.Ed (Benin), Ph.D (Benin).	Science Education(Biology)	Lecturer I1

17.	Dr. I. J. Umoh	NCE (Uyo), B.Sc. Ed. (Hons.) (Calabar), M.Ed. (Benin), Ph.D. (Benin).	Science Education(Biology)	Lecturer I1
18.	Mrs. E. I. Essien	B.Ed. (Uyo), M.Ed. (Edu. Admin. & Planning), M.A. Law & Diploma (Jos), M.Sc.(Ed) (Benin)	Curriculum/ Social Studies	Lecturer I1
19.	Mrs. F. E. Daudu	Diploma (Benin) B.Sc.(Ed), M.Sc.(Ed) (Benin)	Curriculum/ Social Studies	Lecturer I1
20.	Mr. F. O. Idiaghe	B.Sc.(Ed), M.Sc.(Ed) (Benin)	Curriculum/ Science Education (Biology)	Lecturer I1
21.	Dr. P. E. Ikuereye	NCE(Benin), B.Sc. (Ed.), M.Sc(Ed), Ph.D (Benin)	Curriculum/ Instructional Technology	Lecturer I1
22.	Mr. F. O. Egbenoma	B.Sc.(Ed), M.Sc.(Ed) (Benin)	Education Computer Science	Lecturer I1
23.	Mrs. Ehiede C.	NCE, B.Sc.(Ed), (Benin)	Curriculum/ Social Studies	Graduate Assistant

24.	Ogbemudiare Benard	NCE, B.Sc.(Ed), (Benin)	Curriculum/ Social Studies	Graduate Assistant
25.	Iyamu H. O.	NCE, B.Sc.(Ed), (Benin)	Curriculum/ Social Studies	Graduate Assistant

NON-ACADEMIC STAFF

S/N	NAME	QUALIFICATIONS	AREA OF SPECIALITY	RANK
1.	Mr. H. O. Obaraye	LL.B	Law	Principal Executive officer I
2.	H. Oamen	B.SC	Public Administration	Principal Executive officer II
3.	Mrs. Endurance I. Efekimo	Bsc	Social works	Senior Executive officer
4.	Mrs. E. O. Okungbowa	B.sc	Political Science	Higher executive officer

Staff Profile

Prof. (Mrs.) Lucy Eraikhuemen
Professor of Mathematics Education,
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Profile

Prof. (Mrs.) Lucy Eraikhuemen hails from Emu, in Esan South east Local Government Area of Edo State, Nigeria. She started her academic career pursuit in 1998 as an Assistant Lecturer in the Department of Educational Psychology and Curriculum Studies (EPCS), now Department of Curriculum and Instructional Technology (CIT), Faculty of Education, University of Benin, Nigeria. She rose through the academic ranks to the position of Professor of Mathematics Education in 2015. She teaches Mathematics Methods, Philosophy and History of Mathematics Education, Principles of Instruction and Learning in school Mathematics, Education Research and statistics, Advance Educational Research, Integrated Curriculum, Curriculum Studies, Comparative Curriculum Studies and General Teaching Methods in the Faculty of Education, University of Benin. Prof. Eraikhuemen's research areas includes: Mathematics Education, Curriculum and Instruction, Women and Gender Studies, Science, Technology and Mathematics Education.

Prof. (Mrs.) Eraikhuemen has held several laudable academic positions in the University including Project Coordinator, EPCS Department, (2004-2009); B.Ed Part-Time Coordinator, EPCS Department (2004-2008); Programme Officer, Centre for Gender Studies (2007-2011); Faculty Rep. University

Admission Board (2008-2010); Assistant Dean Faculty of Education (2009-2014); Examination Officer, Faculty of Education (2009-2014); Time-Table Officer, Faculty of Education (2009-2014); Post-graduate Programmes Coordinator, CIT Department (February 2015 – August 2016)); Member, General Studies Board of Studies, University of Benin (2010 – 2014); Member, Optometry Clinic Management Committee, University of Benin (2010 – 2017), Head of Department Curriculum and Instructional Technology (2016-2019). She is a member of several Professional Associations including Mathematical Association of Nigeria (MAN), Curriculum Organization of Nigeria (CON), National Council of Teachers of Mathematics, (NCTM), USA; Association for Women in Mathematics (AWM), USA, Organization for Women in Science for the Developing World (OWSD) and the Nigerian Academy of Education. She is a prolific writer with over forty-eight peered reviewed articles in Local, National and International Journals. She is also a Reviewing Editor to some reputable Journals and an External Examiner to many Nigeria Universities. She has attended several Local and International Conferences.

PROF (MRS) ESTHER OBIAGELI OKOBIA
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Ph..D (Benin)

PROFILE SUMMARY

Prof. (Mrs.) Esther Obiageli Okobia is a Professor of Curriculum Social Studies and Lecturer in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin. She started her career in 1988 as Lecturer III in the College of Education Ekiadolor, Edo State, where she rose to the position of a Principal lecturer before joining the services of University of Benin in 2004 as a Lecturer II in the Department of Educational Psychology and Curriculum Studies now Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Edo State, Nigeria. She rose through the academic ranks to the position of Professor of Curriculum Social Studies in 2016.

Prof (Mrs) Okobia teaches courses at the undergraduate and postgraduatelevels. At the undergraduate level, she teaches Social Studies Methods, Integrated Curriculum, Values and Citizenship Education, Socialization and Family Life Education,

International organizations and Integration and Issues of National objectives in Nigeria. For the Post-graduate programme, she teaches Research in Social Studies, Contemporary Issues in Social Studies Education and Citizenship Education.

Her research areas focused on Curriculum Issues with emphasis on teaching and learning of Social Studies, Teachers' preparation and utilization. She has successfully supervised three Ph.D thesis, Twenty one Masters and over fifty undergraduate students. She has attended several national and international conferences. She has over forty-five peered reviewed articles in Local, National and International journals. She has served as a external examiner to Colleges of Education and Universities.

Prof (Mrs) Okobia has held several academic and administrative positions both at the College of Education and University of Benin. She was the Head of Department of Social Studies, College of Education, Ekiadolor, Benin City, Chief Examiner in Social Studies at the National Business and Technical Examination Board (NABTEB), Master trainer on Family Life and HIV Education for Secondary School teachers and also was appointed Dean, School of Arts and Social Sciences at College of Education before transferring to University of Benin. At the University of Benin, she was a Course adviser, Co-ordinator, Students Project for the department, Member of Committee of Post Unified Tertiary Matriculation Examination, (PUTME), Head of Department of Curriculum and Instructional Technology, Faculty of Education, Group Chairman of Faculty of Education Ph.D theses defense, Member of University of Benin Senate and several others.

She belongs to many professional associations including Social Studies Association of Nigeria (SOSAN), Curriculum Organization of Nigeria (CON), Social Studies and Civic

Educators Association of Nigeria (SOCEAN) and Association of Women in Education (WIE).

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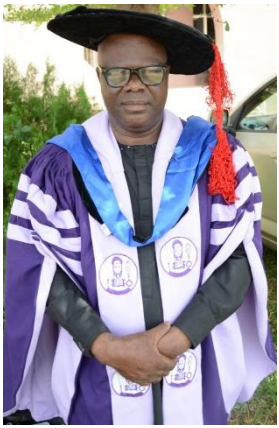

Profile of Prof. JOHN EGHAREVBA

Position: Professor
Institution: University of Benin
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Professor John Egharevba works as a lecturer at the University of Benin's Faculty of Education's Department of Curriculum and Instructional Technology. Prof. Egharevba has been a dedicated educator for a long time, impacting students at the undergraduate and graduate levels with her enthusiasm for teaching and dedication to encouraging academic success. His studies and instruction center on family life, society, and the curriculum.

Educational Background:

i. Ph.D. Social Studies/Curriculum Studies, University of Benin 2012
ii. M.Ed. Social Studies, University of Benin 2004

iii. B.Ed. Social Studies, Obafemi Awolowo University 1998

Ile-Ife

Professor Egharevba is well-known for his engaging and dynamic teaching methods, which promote critical thinking and engaged engagement from the students. Urban communities, educational institutions, and social stratification are just a few of the subjects he covers in his classes. In addition, he conducts lectures on social theory and research techniques. His studies cover a broad spectrum of social studies subjects, such as the history of social movements, social justice education, and the nexus between politics and culture. He has a long list of articles in international magazines of repute. His belief is that education has the ability to change people's lives, and he is dedicated to establishing a welcoming and encouraging learning atmosphere. To keep students interested, he uses a range of pedagogical strategies, such as group projects, case studies, and hands-on learning experiences.

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Profile Summary

Festus Osadebamwen Idehen, Ph.D., is a Senior Lecturer, Department of Curriculum and Instructional Technology,

Faculty of Education, University of Benin. He teaches Educational Statistics, Curriculum Studies, General Methods and Subject Methods (Mathematics Education) at the Faculty of Education, University of Benin. Dr. Idehen's research areas focus on curriculum issues, with particular emphasis on Mathematics teachers' preparation and utilization and teachers and students' conceptions of Mathematics ideas or concepts. He has over twenty journal articles, conference papers and textbooks on the above subjects and their implications for curriculum planning, implementation and evaluation in Mathematics Education. In addition, Dr. Idehen had over twenty years' experience in teaching Mathematics to students in Secondary School, Polytechnic and College of Education. He was for nine years the coordinator, Primary Education Studies (Mathematics) programme, College of Education, Ekiadolor – Benin, Edo State, Nigeria. He is presently the Deputy Director, Joint Universities Preliminary Examination Board (JUPEB),University of Benin, Benin City. Dr. Idehen is a member of many professional associations in Mathematics, Science and Education.

Area of Specialization: Curriculum and Mathematics Education

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A committed senior Lecturer of Science Education S with over 10 years of experience at a leading Nigeria academic institution teaching students from various social and cultural background. She has over 20 publications in Local, National and international journals. She possesses excellent verbal communication and written skills along with constructive and effective teaching methods that promote a stimulating learning environment.

Dr. (MRS) IKPONMWOSA KATE OTEZE
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B.Ed (Hons) (Benin), PGD (Computer Science), M.Ed(Benin), Ph.D(Ambrose Alli University, Ekpoma)

Profile Summary

Kate Ikponmwosa Oteze (Ph.D), is a Senior Lecturer, Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin. She teaches Curriculum Studies, General Methods, Subject Methods (Computer Science) (Mathematics Education), Instructional Technology, Application of Micro Computer and Measurement & Evaluation at the Faculty of Education, University of Benin, Benin City, Nigeria. Dr.(Mrs) Oteze's research area focus on curriculum issues, with particular emphasis on teaching effectiveness of NCE Mathematics teachers' with respect to the dimensions of effective teaching responsibilities. She has over nineteen journal articles, conference papers and chapters in books. In addition, Dr. (Mrs) Oteze had over twenty years' experience in teaching in secondary schools, NCE, PGD Distance Learning Programme and Universities. Resource Person for Mathematics and School–Based Assessment and the Improvisation of Instructional Materials. MDGs and (SDGs) Capacity Building Programme for Teachers Organized by the

National Teachers' Institute, Kaduna since 2008 till date. Mathematics Resource Person Long Man Mathematic Workshop 2008 on the Awareness and Implementation of Mathematics Curriculum in Universal Basic Education. Resource Person at the Nigerian Educational Research and Development Council (NERDC), SHEDA-ABUJA. Assessment and Recommendation of Book Review Exercise (Computer Text Books for JSS 1-3) 2010 and (Computer Text Books for lower Basic 1- 9) October 2014. Computer Resource Person for Sustainable Development Goals (SDGs) Project for Junior and Primary school Teachers Organised by FEM/National Teachers Institute Kaduna held December, 2019. She was for twelve years Centre manager, NTI/NCE Programme Edokpolor Study Centre, Benin City, Edo State, Nigeria. National Union of Benin Students University of Benin, Vice President 1989-1992. Ambassador of National Mary Award National Council Catholic Women Association of Nigeria (NCCWA) 1st August 2015. She is an External Moderator (NTI) NCE/DLS Teaching Practice Monitoring/ Project 2016- till date. Dr. (Mrs) Oteze is a member of many professional associations in Mathematics, Science and Education. Dr.(Mrs) Oteze has held several academic positions in the University including Course Adviser (2017- Date), Member Welfare Committee (2016 - Date), Faculty of Education Representative, Organization for Women Science for the Developing World (OWSD) UNIBEN CHAPTER (2017-Date) and Faculty of Education Chief Coordinator TRCN Induction Coordination Committee (2020- 2022).Coordinator Sandwich Programme (2020- 2022).

Area of Specialization: Curriculum and Instruction Mathematics Education

SELF INFORMATION ON DR. R.O UZAMERE

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Date of first appointment: 30th November, 2011.

Dr. Rasak Okunzuwa UZAMERE is a senior lecturer in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin. He holds a B.Sc (Ed) second class honours Upper Division in Social Studies Education (2004), M.Ed Social Studies Education (2009) and a P.hD Social Studies Education (2019), all from the University of Benin, Benin City. He specialized in Social Studies and Curriculum. He has published over fourteen (14) Articles in Local, National and International Journals. He has served in several capacities in the Department, Faculty and University among which are:

(a) Course adviser (2011/2012) session till date.

(b) Member representing C.I.T TRCN Committee, Faculty of Education (2019– 2022)

(c) Chairman, Students Advisory Committee (2020/2021)

(d) Member, Student Disciplinary Committee (2021-Date)

Dr. Rasak Okunzuwa UZAMERE is happily married to Mrs. Ehimwenma Uzamere and are blessed with five children.

Dr. Rasak Okunzuwa UZAMERE is a member of Teachers Registration Council of Nigeria (TRCN)

Dr. Lucky Omoede AIMIYEKAGBON

B.Sc.(Ed), Social Studies(Benin)

M.Ed. Curriculum Studies (Social Studies)

Ph.D. Social Studies(Benin) Area of Specialization: Social Studies and Education

PROFILE SUMMARY Dr. Lucky Omoede Aimiyekagbon is a Senior Lecturer in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria. He teaches courses in the following areas: general teaching method, subject methods, moral education, values, democratic values, misconceived values, legal processes and practices, Nigeria political history, issues in national development, consumer education, and curriculum studies at both undergraduate and postgraduate programmes. He has many articles published at both local, national and international journals to his pedigree. His research

areas has focused on educational quality and funding, social justice, civics, values, democratic values, misconceived values, misconceived values and corruption, examination malpractice, political education and participation. Dr. Lucky Omoede AIMIYEKAGBON is married and a minister of the Gospel of Jesus Christ, which engages his unofficial hours

PROFILE OF DR. IYORE IVY OMOREGBE
NCE (Ekiadolor Benin),B.Sc.Ed, M.Sc,Ed, Ph.D(Benin)
Profile Summary
Dr, Iyore Ivy Omoregbe is a lecturer 1, in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Nigeria. She holds a Ph.D, M.sc, and B.sc .Ed degrees in Social Studies Education from the University of Benin, Benin City, as well as an NCE in Economics and Social Studies from the College of Education Ekiadolor, Benin City, Nigeria.

She is a registered member of the Social Studies Association of Nigeria (SOSAN) and Teacher Registration Council of Nigeria (TRCN).

She has over thirteen years teaching experience at undergraduate levels in the Faculty of Education and Department of Curriculum and Instructional Technology. She has taught courses such as Curriculum Studies, General Teaching Method with special interest in Method of Teaching Social Studies, Socio Cultural environment in Nigeria, Introduction to Moral Education, and Consumer Education.

Area of Specialization: Social Studies Education

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Precious Osamede Omere
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The desire to see a successful teaching and learning process has prompted the researcher to engage in methodology of Education, whilst seeking to find answers to how do teachers teach and how do students learn?

My commissioned projects are :

Challenges to the effective teaching and learning of mathematics in senior secondary school in Egor local Government area of Edo state.

Further mathematics Teacher 's awareness of Mathematical modelling as an instructional strategy in senior secondary school in Edo south senatorial district.

Dr. (Mrs.) Bernice Nefeye AGHAHOWA
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Profile Summary

Dr. Bernice Nefeye Aghahowa is a lecturer in the Department of Curriculum and Instructional Technology at the Faculty of Education, University of Benin. She specializes in Social Studies Education and holds a Ph.D. degree in the field. Her teaching responsibilities cover various subjects such as curriculum development, teaching methods, and Social Studies education. Some of the courses she teaches include Curriculum Studies, General Teaching Methods, Integrated Curriculum (Social Studies), History and Philosophy of Social Studies, Value and Citizenship Education, and Processes and Problems of Urbanization.

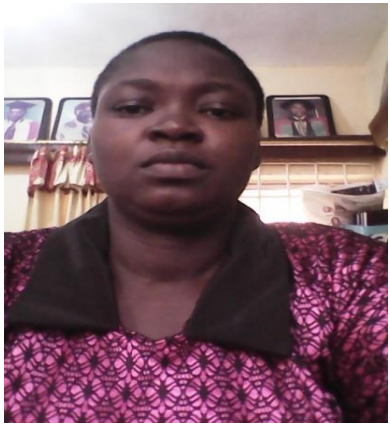
Dr. Aghahowa's research interests primarily revolve around curriculum issues, with a focus on the preparation of Social Studies teachers. She investigates areas including content knowledge, pedagogical content knowledge, motivational orientations in Social Studies teaching, curriculum development, and teacher training needs.

Her contributions to the field are evident through the publication of numerous journal articles and conference papers, highlighting the implications of her work for Social Studies teaching, curriculum development, and teacher training. With over 12 years of experience as a Social Studies lecturer, she remains dedicated to her role and actively participates in professional associations such as the Social Studies Association of Nigeria, Teachers Registration Council of Nigeria, and the Forum for African Women Educationists..

Area of Specialization: Curriculum and Social Studies Education

PROFILE OF DR. AGNES ANUOLUWAPO ODIA

NCE (Ekiadolor-Benin), B.Sc.Ed., M.Sc.Ed., Ph.D (Benin)



Profile Summary

Dr. **Agnes Anuoluwapo Odia** is a Lecturer I in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Nigeria. She holds a Ph.D and M.sc Ed. degrees in Social Studies Education and B.sc (Ed) degree in Economics and Statistics Education, from the University of Benin, Benin City as well as an NCE in Economic-Social Studies from the College of Education, Ekiadolor-Benin Nigeria.

She teaches Introduction to Social Studies, Safety and Environmental Education, Peace Education and the Socio-Economic Structure of Nigeria, at the undergraduate level. She also teaches Curriculum Studies, Subject Methods, Integrated Curriculum, and Introduction to Teaching Methods. She is interested in teaching and research.

Her areas of research include Environmental Education, Peace Education and Security Education. She is a member of Social Studies Association of Nigeria (SOSAN).

Area of Specialization

Social Studies Education

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Dr. O. F AHANOR first attempt in impartation of knowledge was in 1998 when he was a private school teacher. He is currently a Lecturer in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin. He teaches courses such as Curriculum Studies, General Teaching Method, Instructional Technology and Social Studies Concepts such as Consumer Education, Moral and Personality Development, Introduction to Legal Processes in Nigeria, Issues in National Development in Nigeria, Socialization and Family Life Education, Value Education, Moral Education, Citizenship Education and Democracy and Electoral Processes in Nigeria. He has over ten peered reviewed journal articles in Local, National and International Journals. He has served in various committees at the Departmental, Faculty and University Level. He was also an Examiner to National Teacher Institute (NTI) 2017 - 2021. He is currently the Secretary University of Benin Alumni Association (UBAA) Uniben Branch and Secretary University of Benin Senior Staff Association Multi-Purpose Cooperative Society (UNIBEN SSA MPCS). He is a registered member of Social Studies Association of Nigeria (SOSAN),

Teachers Registration Council of Nigeria (TRCN) and Social Studies and Civic Education Association of Nigeria (SOCEAN)
Area of Specialization: Curriculum and Social Studies

Academic Profile of (Mrs) Noma Vanessa David-Egbenusi Ph. D.

Lecturer I

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Area of Specialization is Biology Education

Noma Vanessa DAVID-EGBENUSI is from Ovia North-East Local Government Area of Edo State. She obtained her Ph. D. in Science Education (Biology) – in 2019, University of Benin, M. Ed. Education in Curriculum Studies (Science Education) – 2009, University of Benin, B. Ed. (Biology) – 2002, Obafemi Awolowo University, ACE, Ondo State. She started her teaching career in 2004 at Igbinedion Education Centre, where she taught biology and rose to the position of Head of the Biology Department till she joined the University of Benin in 2011.

Noma V. David-Egbenusi was employed as Higher Executive Officer from 2011-2014, she was re-designated to the Administrative Officer Cadre from 2014 to 2019 and finally became a lecturer in 2019 after she obtained her Ph. D. as

Lecturer II in the Department of Curriculum and Instructional Technology. She teaches the following courses; Introduction to Integrated Curriculum, History and Philosophy of Science (Distant Learning), General Teaching Methods, Method of Teaching Science, Instructional Technology, Curriculum Studies, and Integrated Curriculum. Some of the offices she holds currently include; Course Advising, Assistant Examination Officer, and Transcript Officer. She is also a member of the Result Checker Committee and Quality Assurance Committee to 2024. She is a member of the Science Teachers Association of Nigeria, the Nigerian Institute of Management, and the Chartered Institute of Public Management.

David-Egbenusi has several publications in reputable peer-reviewed articles both local and International.

Staff Profile

Dr. (Mrs.) Eunice Oghosa Eromosele

Doctor of Science Education(Biology)

Department of Curriculum and Instructional Technology,

Faculty of Education,

University of Benin.

NCE (Agbor), B.Sc.Ed. (Benin), M.Sc.Ed (Benin), Ph.D (Benin).

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STAFF PROFILE

Dr. Iniobong Johnnie Umoh
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NCE (Uyo), B.Sc. Ed. (Hons.) (Calabar), M.Ed. (Benin), Ph.D. (Benin).
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PROFILE SUMMARY

Iniobong Johnnie UMOH, Ph.D. is a Lecturer II in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria. He holds NCE in Integrated Science/ Biology from College of Education, Uyo, Akwa Ibom State, Nigeria, B.Sc. (Ed) degree in Biology Education from University of Calabar, Calabar, Cross River State, Nigeria, M.Ed. in Science Education and Ph.D. degree in Biology Education from the University of Benin, Benin City, Edo State, Nigeria. He teaches General Teaching Methods, Subject Methods (Biology), Integrated Curriculum, Curriculum Studies and History, Philosophy and Ethics of Integrated Science Teaching. He is interested in teaching and research. His research areas focus on curriculum issues, with emphasis on Biology teachers' pedagogy and science teachers' views of science. He has journal articles in the above subjects. In addition, Dr. Umoh is a registered and certified member of the Teachers Registration Council of Nigeria (TRCN) and had over thirty years' experience in teaching Biology and Integrated Science to students in public secondary schools across the country. He is a member of Science Teachers Association of Nigeria (STAN) and has attended several conferences organized by the professional body.

Area of Specialization: Biology Education.

Eunice Isaac, ESSIEN (Mrs.)
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Profile Summary

Mrs. Eunice Isaac ESSIEN is Lecturer II in the Department of Curriculum and Instructional Technology, Faculty of Education in the University of Benin, Benin City, Edo State, Nigeria. She is currently undergoing a PhD programme in Social Studies Education in the University of Benin.

She obtained a B(Ed) Degree in Social Studies Education from the University of Uyo in 1997, where she graduated with a Second Class Honour (Upper Division). She also has M.A in Law and Diplomacy and a Master of Education (M.Ed) in Educational n and Planning both from the University of Jos, also to Administratioher credit is M.Sc (Ed) in Social Studies Education from the University of Benin. She is currently working towards her specialization at the PhD level in Social Studies Education with her research focus on Safety knowledge, attitude and practices of safety among secondary school students.

She teaches the following Courses: Curriculum Studies, Instructional Technology, Integrated Curriculum (Social Studies), General Teaching Methods, Sexuality and Population

Education, Issues in National Objectives in Nigeria, Social and Family Life Education, Socio Economic Structure in Nigeria, International Organisation and Integration, Democracy and Electoral Process, Peace Education, Safety and Environmental Education and Introduction to Legal Institutions and Processes in undergraduate level and part-time (Sandwich) programme.
She also supervises project in both undergraduate and part-time programmes in the Faculty of Education, University of Benin.

Professional Membership

Women in Education (WIE)
Social Studies Association of Nigeria (SOSAN)
Teachers Registration Council of Nigeria (TRCN) – Reg No. PL/S/01212

Publications

She has three publications and several unpublished articles.

Area of Specialization

Social Studies Education

Faith Ehizele, DAUDU (Mrs)
Diploma (Accounting) (Uniben), B.Sc (Ed) (Uniben)
M.sc(Ed) (Uniben), PhD (In view) (UKZN)

Profile Summary

Mrs. Faith E. Daudu is a lecturer in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Edo State, Nigeria. She is currently enrolled for a PhD programme in Curriculum studies, at the University of KwaZulu-Natal, Pietermaritzburg, South Africa.

She obtained a Diploma in Accounting with Credit from the prestigious University of Benin in 2007. In 2012, she also bagged her B.Sc. (Ed) degree in Social Studies Education from the University of Benin where she graduated with Second Class Honour (Upper Division). She went further and obtained a Masters in Social Studies Curriculum in 2017, which she passed excellently well. She is currently awaiting graduation from her doctoral studies at the University of KwaZulu-Natal, South Africa. Her research focus on Teachers' Pedagogic Practice: A Case Study of the Enactment of the Nigerian Upper Basic Social Studies Curriculum.

She had undergone training in the use of Microsoft office packages, on skills such as use of Endnotes, Grammerly, Searching the catalogue and databases, and also trained in Academic writing.

She had taught History of Social Studies and Socio-Economic structure in Nigeria to first year full time students, supervised final year undergraduate students in their research project; course advised first year and second year undergraduate students before embarking on her PhD studies.

She is a member of some professional bodies including Teachers Registration Council of Nigeria, Association of Woman in Education, Social Studies Association of Nigeria.
Her area of specialization includes Research methodologies and Analysis (Quantitative and Qualitative), Curriculum reform, Implementation and Pedagogy.

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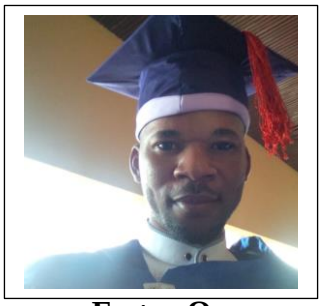

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PROFILE OF EVBAKOE PEDRO IKUEREYE (PhD)

NCE(Benin), B.Sc. (Ed.), M.Sc(Ed), Ph.D (Benin).

EVBAKOE PEDRO IKUEREYE (PhD) is a Lecturer in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, Nigeria. He is currently at the final lap of His PhD program and holds an M.sc Ed. degrees in instructional technology. He holds a B.sc (Ed) in Education Mathematics, from the University of Benin, Benin City as well as an NCE in Mathematics-Physics from the College of Education, Ekiadolor-Benin Nigeria.

He teaches courses which includes Curriculum Studies, Subject Methods, Integrated Curriculum, Introduction to Teaching Methods and Instructional technology. **Dr. IKUEREYE** has to his credit several publications which cut across international and local research areas with focus on Mobile learning, assistive technology, technology integration and digital pedagogy. He has attended many conferences, seminars and workshops. He is also a member of many professional bodies.

Area of Specialization

Instructional Technology

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Email: evbakoe.ikuereye@uniben.edu

PROFILE OF
Mr. Orobosa Frank EGBENOMA

Area of Specialization: *Computer Science & Instructional Technology*
Born: *21st January*
Marital Status*: Married*

Profile Summary

Egbenoma Frank is an Assistant Lecturer in the Department of Curriculum and Instructional Technology. He is an expert in the area of instructional designs and Creative Technology, manipulating technological tools to enhance teaching and learning in this 21st century. He is also an IT personnel who is dedicated to finding solutions to ICT problems in education. He has worked with numerous establishments. These include the likes of VisaFone Telecommunications, Peers System Development Company, Benson Idahosa University ICT Centre and served as SA to the Dean on IT in the Faculty of Education. He was recognized specially by the National Union of Education Students (NUESA) in 2018. He also participated in the Development of the new Curriculum for Universities in Nigeria, particularly in Instructional Technology and curriculum studies.

He's a member of Teacher's Registration of Nigeria Council (TRCN), International Model United Nations, Member, Society for Education and Training United Kingdom,
member, Education and Training Foundation (ETF) United Kingdom.

MRS. CLARA

PROFILE SUMMARY

EHIEDE CLARA (Mrs.) a Graduate Assistant in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City. She joined the University of Benin in 1993 as a Teacher Grade II in the University of Benin Staff School, Benin City and rose to the rank of Deputy Headmistress in 2019. She was designated to an Academic Staff of the University of Benin, Benin City in the year 2020. She holds a B.Sc. Ed. Degree in Social Studies from the University of Benin, Benin City 2003, she has a National Certificate in Education (NCE) in Social Studies/Language Art in 1993 from College of Education Ekiadolor, Benin City.

She is currently a Master's student in the Department of the Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City.

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MR. OGBEMU

PROFILE SUMMARY

Ogbemudiare Benard (Mr.) a Graduate Assistant in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City.

He joined the University of Benin in 2007 as Master III Teacher in University Staff School and rose to the rank of Senior Master II in 2019.

He was designated to an Academic Staff of the University of Benin, Benin City in the year 2020. He holds a B.Sc. Ed degree in Social Studies from University of Nigeria Nsukka in the year 2016. With a National Certificate in Education (NCE) in Social Studies from National Teacher' Institute Kaduna in the year 2001.

He is currently a Master's student in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City.

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MRS HELEN OSAS IYAMU
PROFILE SUMMARY

Iyamu Helen Osas (Mrs.) a graduate assistant in the department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City. She joined the University of Benin in the year 2011 as a teacher master III in the university of Benin Staff School, Benin City and rose to the rank of master I in 2019. She was designated to an Academic Staff of the University of Benin, Benin City in the year 2020. She holds a B.Sc. Ed. Degree in Social Studies from the University of Benin, Benin City in the year 2013. She has a National Certificate in Education (NCE) Social Studies/Economics in the year 2008 from college of Education, Ekiadolor, Benin City.
She is currently a master's student of the department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City.

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DEPARTMENT OF
CURRICULUM AND INSTRUCTIONAL TECHNOLOGY

FACULTY OF EDUCATION
UNIVERSITY OF BENIN, BENIN CITY, NIGERIA

PROSPECTUS

Of
UNDERGRADUATE PROGRAMMES
2017/2018 ACADEMIC SESSION

TABLE OF CONTENTS

HISTORY OF THE DEPARTMENT

The Faculty of Education, University of Benin was established in 1974. As one of the oldest Faculties it had a primary objective to train the much needed graduate teachers for post primary institutions all over the country.

It started as a single department located at the Ekehuan Campus of the University. The Department of Education then had two units – (1) Educational Administration and Foundations (2) Educational Psychology and Curriculum Studies. The first Dean of the Faculty was Mr. G. N. Enobakhare who acted from September 1974 to June 1975.

The Department of Educational Psychology and Curriculum Studies which originally started in 1974 as a Division of Educational Psychology, Guidance and Counseling was reconstituted into Educational Psychology and Curriculum Studies in 1979. Two departments were created out of Educational Psychology and Curriculum Studies in 2014, namely: Curriculum and Instructional Technology and Educational Evaluation and Counselling Psychology.

The Department of Curriculum and Instructional Technology prepares students in the underlisted courses as part of the requirements for the award of B.Ed, B.A Ed. and B.Sc.(Ed.) degree in the Faculty of Education. However, the nomenclature of this degree was changed to B.A (Ed) and B.Sc (Ed) in 1996.

PHILOSOPHY, AIMS AND OBJECTIVES OF THE DEPARTMENT

The programmes in the department are designed to contribute to National development through training of manpower as to promote and encourage scholarship and community service. The various disciplines in the department shall promote

developmental goals relevant to the nation through service delivery.

The objectives of the Department include among others:

a) To produce well rounded professional graduate teachers for Secondary Schools, Colleges of Education and eventually specialist graduate teachers for primary schools.
b) To assist in the professional development and improvement of all categories of teachers through certificate courses, seminars and workshops and other in-service training programmes.
c) To prepare high-level manpower for tertiary institutions through graduate degree programmes.
d) To promote research efforts by coordinating staff research activities through seminars, workshops and conferences.

The Professional Objectives

Graduates of our programmes are expected to have achieved all of the following:

1) A well rounded education to meet the rigorous academic demands of the classroom. In particular, they should be able to teach academic courses in their areas of specialization throughout the range of secondary schools, colleges of education and other educational institutions.
2) An understanding of the rationale for the methods and skills employed in teaching.
3) An effective application of methods and skills in their areas of academic specialization for the purpose of teaching.
4) Formulation and development of their own reasonable academic programmes and courses of instruction.

5) Use of their knowledge of educational theories in dealing with classroom problems as they arise.
6) Assessment of scientific effectiveness of the courses offered in Secondary Schools/Colleges of Education.
7) Be able to teach courses in Education in Teacher Education Institutions.

ACTIVITIES

a) Decision Making Process

The department has various decision making processes which are organized through Committees. These committees include Departmental Board of Studies, Postgraduate Committee, Welfare Committee, Seminar Committee and Appointment and Promotion Committee. Through these various committees vital decisions are taken to move the department forward.

b) Staff Professional Development

Members of staff in the department are given ample opportunity to update their knowledge and improve on their academic qualification, especially academic staff with Doctorate degree. Academic staff without Ph.D are sponsored by the University based on recommendation of the department. Members of staff are encouraged to attend seminars/workshops and academic conferences at both local and international levels.

c) Staff Promotion

Members of staff are promoted regularly, at least once in three years, so far they meet the University criteria for promotion to the next higher position.

d) Students' Welfare

The department takes the welfare of its students seriously through the following processes:

i) Handling of Academic and Non-academic Grievance

Usually students have one complaint or the other to attend to from time to time. Students are encouraged to write to the head of the department stating the nature of their complaints or grievances and the kind of intervention needed. The head of department either handles the complaints himself/herself or refer them to appropriate committee for appropriate solution.

ii) Academic Advising

students in the department are assigned to lectures for course advising. Course advisers deal with issues bordering on course registration, results compilation, and other issues related to students' courses. Course advisers are encourage to also attend to students' personal problems that may affect their study.

e) Examination

Examinations are conducted according to the University laid down procedures at the end of every semester. The Head of Department is the Chief Examiner, while individual lecturers are the examiners in the course taught by them. The examination officer in the department coordinates all activities relating to examination and reports directly to head of department. All results complied in line with the University's Senate approved formats are submitted to the Departmental Board of Studies for appropriate action. The Dean of the faculty subsequently presents the results to senate for approval. It is only after the Senate approval that results are posted on the notice board for the notification of students. The final results are usually made up of the end of semester examinations and continuous assessment administered by lecturers.

f) Students' Union

The students in the department are encouraged to join any students' union approved by the University to enable them to develop social and communication skills. These unions/associations are rallying points through which students

express their extra-curricular activities and pursue other wholesome pursuits which may serve their overall interests.

UNDERGRADUATE ACADEMIC PROGRAMMES

a) B.Sc.(Ed) Biology
b) B.Sc.(Ed) Chemistry
c) B.Sc.(Ed) Computer Science
d) B.Sc.(Ed) Integrated Science
e) B.Sc.(Ed) Mathematics
f) B.Sc.(Ed) Physics
g) B.Sc.(Ed) Social Studies

ACADEMIC STAFF LIST

S/N	NAME	QUALIFICATIONS	AREA OF SPECIALITY	RANK
26.	Prof. E.O.S. Iyamu	B.Sc (Nsukka), M.Ed, Ph.D (Benin)	Curriculum Studies/ Social Studies	Professor
27.	Prof. (Mrs.) Lucy Eraikhuemen	B.Ed, M.Ed, Ph.D (Benin)	Mathematics Education	Professor
28.	Prof. .(Mrs.) E. O. Okobia	NCE (Agbor), B.Ed, M.Ed, Ph.D (Benin)	Curriculum /Social Studies	Professor
29.	Prof. John Egharevba	B.Ed (Ife), M.Ed, Ph.D (Benin)	Curriculum / Social Studies	Professor
30.	Dr.(Mrs.) A. H. Oyakhirome	B. Ed, M. Ed, Ph.D(Benin)	Curriculum / Science Education	Assoc. Professor

31.	Dr. F. O. Idehen	NCE(Abraka), B.Ed., M.Ed., Ph.D (Benin)	Curriculum / Mathematics Education	Assoc. Professor
32.	Dr.(Mrs.) I. K. Oteze	B.Sc.(Ed), PGD, M.Ed.(Benin), Ph.D (Ekpoma)	Computer, Measurement & Evaluation Curriculum Mathematics Education	Senior Lecturer
33.	Dr. R. O. Uzamere	B.Sc. (Ed), M.Ed, Ph.D (Benin)	Curriculum / Social Studies	Senior Lecturer
34.	Mr. L. O. Aimiyekagbon	B.Sc, M.Ed, Ph.D (Benin)	Curriculum / Social Studies	Senior Lecturer
35.	Dr (Mrs)I. I. Omoregbe	NCE(Benin), B.Sc. (Ed.), M.Sc(Ed), Ph.D (Benin)	Curriculum / Social Studies	Lecturer I
36.	Dr (Mrs) P. O. Omere	NCE(Benin), B.Sc. (Ed.), M.Sc(Ed), Ph.D (Benin)	Curriculum / Science Education (Mathematics)	Lecturer I
37.	Dr (Mrs)B. N. Aghahowa	NCE(Benin), B.Sc (Ed), M.Sc(Ed), Ph.D (Benin)	Curriculum / Social Studies	Lecturer I

38.	Dr (Mrs). A. A. Odia	NCE(Benin), B.Sc.(Ed)(Benin), M.Sc.(Ed), Ph.D (Benin)	Curriculum / Social Studies	Lecturer I
39.	Dr. F. O. Ahanor	NCE(Benin), B.Sc.(Ed)(Benin), M.Sc.(Ed), Ph.D (Benin)	Curriculum / Social Studies	Lecturer I
40.	Mrs. E. I. Essien	B.Ed. (Uyo), M.Ed. (Edu. Admin. & Planning), M.A. Law & Diploma (Jos), M.Sc.(Ed) (Benin)	Curriculum / Social Studies	Lecturer I1
41.	Mrs. F. E. Daudu	Diploma (Benin) B.Sc.(Ed), M.Sc.(Ed) (Benin)	Curriculum / Social Studies	Lecturer I1
42.	Mr. F. O. Idiaghe	B.Sc.(Ed), M.Sc.(Ed) (Benin)	Curriculum /Science Education (Biology)	Lecturer I1
43.	Dr. P. E. Ikuereye	NCE(Benin), B.Sc. (Ed.), M.Sc(Ed), Ph.D (Benin)	Curriculum /Instructional Technology	Lecturer I1
44.	Mr. F. O. Egbenoma	B.Sc.(Ed), M.Sc.(Ed) (Benin)	Education Computer Science	Lecturer I1

45.	Mrs. Ehiede C.	NCE, B.Sc.(Ed), (Benin)	Curriculum / Social Studies	Graduate Assistant
46.	Ogbemudiare Benard	NCE, B.Sc.(Ed), (Benin)	Curriculum / Social Studies	Graduate Assistant
47.	Iyamu H. O.	NCE, B.Sc.(Ed), (Benin)	Curriculum / Social Studies	Graduate Assistant

NON-ACADEMIC STAFF

S/N	NAME	QUALIFICATIONS	AREA OF SPECIALITY	RANK
5.	Mr. H. O. Obaraye	LL.B	Law	Principal Executive officer I
6.	H. Oamen	B.SC	Public Administration	Principal Executive officer II
7.	Mrs. Endurance I. Efekimo	Bsc	Social works	Senior Executive officer
8.	Mrs. E. O. Okungbowa	B.sc	Political Science	Higher executive officer

ADMISSION REQUIREMENTS

B.Sc. (Ed) Biology (A Four-year Programme)

Four-year Programme candidates seeking admission into this programme should possess any of the following qualifications:
At least five Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/NABTEB, NTC/NBC or at least five merit level passes in the Teachers Grade II Certificate Examination (TC II) or any other recognized equivalents obtained at not more than two sittings. The subjects should include English Language, Biology, Chemistry and Mathematics.
NOTE: The University Matriculations Examination (UME) subjects are:

(a) Use of English
(b) Biology
(c) Chemistry
(d) Mathematics or Physics

B.Sc. (Ed) Chemistry (A Four-year Programme)

Candidates seeking admission into this programme should possess any of the following qualifications:
At least five Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/NABTEB, NTC/NBC or at least five merit level passes in the Teachers Grade II Certificate Examination (TC II) or any other recognized equivalents obtained at not more than two sittings. The subjects should include English Language, Chemistry and Mathematics and two others from Biology, Agricultural Science and Physics.
NOTE: The University Matriculations Examination (UME) subject are:

(a) Use of English
(b) Chemistry
(c) Mathematics
(d) Biology or Physics

B.Sc (Ed) Computer Science (A Four-year Programme)

Candidates seeking admission into this programme should possess any of the following qualifications:

At least five Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/NABTEB, NTC/NBC or at least five merit level passes in the Teachers Grade II Certificate Examination (TC II) or any other recognized equivalents obtained at no more than two sittings. The subjects should include English Language, Mathematics, Physics and any other two subjects of which should be from Science or Social Science.

NOTE: The University Matriculations Examination (UME) subjects are:

(a) Use of English
(b) Mathematics
(c) Physics
(d) Any other Science or Social Science subject.

B.Sc(Ed) Integrated Science (A Four-year Programme)

Four-year Programme candidates seeking admission into this programme should possess any of the following qualifications:

At least five Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/NABTEB, NTC/NBC or at least five merit level passes in the Teachers Grade II Certificate Examination (TC II) or any other recognized equivalents obtained at not more than two sittings. The subjects should include English Language, Biology, Chemistry and Mathematics.

NOTE: The University Matriculations Examination (UME) subjects are:

(a) Use of English
(b) Biology
(c) Chemistry

(d) Any other Science subject

B.Sc (Ed) Mathematics (A Four-year Programme)

Candidates seeking admission into this programme should posses any of the following qualifications:

At least five Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/NABTEB, NTC/NBC or at least five merit level passes in the Teachers Grade II Certificate Examination (TC II) or any other recognized equivalents obtained at not more than two sittings. The subjects should include English Language, Mathematics, Physics and any other from Science or Social Science.

NOTE: The University Matriculation Examination (UME) subjects are:

(a) Use of English
(b) Mathematics
(c) Physics
(d) Any Science or Social Science subject.

B.Sc.(Ed) Physics (A Four-year Programme)

Candidates seeking admission into this programme should possess any of the following qualifications:

At least five Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/NABTEB, NTC/NBC or at least five merit level passes in the Teachers Grade II Certificate Examination (TC II) or any other recognized equivalents obtained at not more than two sittings. The subjects should include English Language, Physics and Mathematics in addition to two other Science subjects one of which should be Chemistry or further Mathematics.

NOTE: The University Matriculation Examination (UME) subjects are:

(a) Use of English
(b) Mathematics
(c) Physics

(d) Chemistry or Biology or Further Mathematics

B.Sc.(Ed) Social Studies (A Four-year Programme)

Candidates seeking admission into this programme should posses any of the following qualifications:

At least five Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/NABTEB, NTC/NBC or at least five merit level passes in the Teachers Grade II Certificate Examination (TC II) or any other recognized equivalents obtained at not more than two sittings. The subjects should include English Language, Mathematics and any other Social Science subjects.

UME Subjects

(a) Use of English

(b) Three (3) subjects from Arts and Social Sciences of which at least one must be from Social Sciences

In addition, candidates for the four-year programmes are expected to score 200 marks and above in the UME and pass the University screening interview.

DIRECT ENTRY (A Three-year Programme)

Admission Requirements for the Three-Year Full Time Degree Programme

Candidates who posses any of the following qualifications may be considered for admission:

a) At least two merit level passes in the relevant subjects at the Nigeria Certificate in Education (NCE). In addition, candidates should possess three (3) Ordinary Level Credit passes in WASSCE, WAEC/GCE, NECO, SSCE/GCE, NABTEB, NTC/NBC or three (3) merit level passes in the Teachers Grade II Certificate (TC II) or any other recognized equivalent obtained at one sitting or five (5) credits level passed at two sittings. The 'O' level subjects or equivalents should include English

Language and Mathematics and subjects relevant to the intended course of study (see UME Requirements).

b) At least a merit level pass in the University of Benin Diploma or Diploma in relevant courses from a recognized institution and five Ordinary Level Credit passes including English Language and Mathematics obtained at not more than two sittings. The subjects should be relevant to the intended course of study (see UME Requirements).

c) At least two Advanced Level passes in the General Certificate of Education (GCE) or the Higher School Certificate (HSC) or any other recognized equivalent in the relevant subjects areas and five ordinary level credit passes in WASSE, WAEC, GCE, NECO, SSCE/GCE, NABTEB, NTC/NBC or five merit passes at the TC II or any other recognized equivalent obtained at not more than two sittings including English Language and Mathematics. The 'O' Level subjects or equivalent should be relevant to the intended course of study (see UME Subjects).

ADMISSION REQUIREMENTS FOR THE FIVE-YEAR AND SIX-YEAR PART-TIME DEGREE PROGRAMMES

Same as for the Three Year and Four Year Full Time Programmes respectively.

IN GENERAL

i) A pass in NCE General English/ a merit in TC.II and NCE basic Mathematics are regarded as equivalence of Ordinary Level credit passes in English Language and Mathematics respectively.

ii) Where a candidate is unable to matriculate because of deficiency in English or Mathematics, General English at NCE shall be accepted but not both.

iii) Holders of Ordinary National Diploma (OND) are required to fulfil the UTME requirements

SUMMARY OF DISTRIBUTION OF COURSE CREDIT

B.Sc(Ed) BIOLOGY

LEVEL	GST	EDUCATION	SUBJECT AREA SPECIALIZATION	TOTAL
100	10	06	29	45
200		10	31	41
300		15	31	46
400		15	22	37
Total	**10**	**46**	**113**	**169**

B.Sc(Ed) CHEMISTRY

LEVEL	GST	EDUCATION	SUBJECT AREA SPECIALIZATION	TOTAL
100	10	06	27	43
200		10	27	38
300		15	29	45
400		15	24	39
Total	**10**	**48**	**107**	**165**

B.Sc(Ed) COMPUTER SCIENCE

LEVEL	GST	EDUCATION	SUBJECT AREA SPECIALIZATION	TOTAL
100	10	06	30	46
200		10	24	34
300		15	24	39
400		15	18	33
Total	**10**	**46**	**96**	**152**

B.Sc(Ed) INTEGRATED SCIENCE

LEVEL	GST	EDUCATION	SUBJECT AREA SPECIALIZATION	TOTAL
100	10	06	30	46
200		10	28	38
300		15	29	44
400		15	23	38
Total	**10**	**46**	**110**	**166**

B.Sc(Ed) MATHEMATICS

LEVEL	GST	EDUCATION	SUBJECT AREA SPECIALIZATION	TOTAL
100	10	06	24	40
200		10	24	34
300		15	27	42
400		15	21	36
Total	**10**	**46**	**96**	**152**

B.Sc(Ed) PHYSICS

LEVEL	GST	EDUCATION	SUBJECT AREA OF SPECIALIZATION	TOTAL
100	10	06	33	49
200		10	24	34
300		15	27	42

400		15	19	34
Total	**10**	**46**	**103**	**159**

B.Sc(Ed) SOCIAL STUDIES

LEVEL	**CSC**	**GST**	**EDUCATION**	**SUBJECT AREA SPECIALIZATION**	**TOTAL**
100		10	06	24	40
200	3		10	29	42
300			15	27	42
400			15	23	38
Total		**10**	**46**	**103**	**162**

COURSE DESCRIPTION (EDUCATION COURSES)

EDU 111 - History of Education (3 Credits)

This course is a study of educational development from ancient times to the present with particular reference to the evolution of modern education in Nigeria. The history of early childhood education will be of particular interest.

EDU 121 - General Teaching Methods (3 Credits)

Evaluation of teaching methods in relation to changing concepts about a child and the learning processes. The course deals with typical images of the classroom, the role of the teacher as a catalyst the current practices and methods of teaching in accordance with the prevailing trends of education.

EDU 211 - Developmental Psychology (2 Credits)

An introductory study of the determination of human development from birth to adolescence with special reference to the effects of heredity and environment on physical, cognitive, social, moral and emotional development of the normal child. Recent studies of child rearing practices in Africa will be highlighted.

EDU 212 - Philosophy of Education (2 Credits)

This course is an introduction to major philosophical ideas which have influenced educational thought and practices. Emphasis is placed on the development over the years. The National Policy on Education is also given a pride of place.

EDU 221: Computer Science Methods (2 Credits)

The focus is on educational application of micro-computers in all activities relating to learning and teaching of Computer Science as a subject.

EDU 221: English Methods (2 Credits)

This course is design primarily fir teachers and prospective teachers of English to help them becomes better teachers of English and the language Arts. It is aimed at helping teachers acquire the skills of teaching English as a second language and offer a variety of approaches to language teaching.

EDU 221: French Methods (2 Credits)

This course is about the comprehensive methodes of teaching French as a foreign language in Nigeria. The course will expose French students to the origin, sources and evolution of French methods and art of teaching French language in an Anglophone country like Nigeria. It also examines the various techniques through which one can teach French language in secondary schools.

EDU 221: Mathematics Methods (2 Credits)

Mathematics is a compulsory subject at the primary and secondary levels of education. This course is intended to acquaint prospective secondary school mathematics teachers with relevant information, ideas and methods of mathematics teaching. The course will examine the historical development of the current mathematics curricular as well as fundamental issues pertinent to the effective teaching of mathematics.

EDU 221: Science Methods (2 Credits)

The course presents relevant information, ideas, theories and methods relevant to science teaching especially at the secondary school level.

EDU 222 - Sociology of Education (2 Credits)

To gain insight into the socialization of the young child; family influence on the socializing of the young child; gender role identification in the young child; urbanization and the informal housing sector; the environmentally deprived young child and child abuse. This course is designed to help students identify the structure and forces that surround the school as a social system. The roles of the teacher and the school are also examined; social problems and educational strategies are designed to solve them, especially in the Nigerian system are examined in depth.

EDU 223 - Instructional Technology (2 Credits)

The course deals with the theories and use of audio-visual materials in teaching and learning. For instance, models, maps, charts and the roles of radio and television in instructional activities. The place of the mass media in instruction is also examined and practicum.

EDU 300 - Supervised Teaching Practice I (3 Credits)

This is a 6-week field experience in a secondary school setting. Emphasis is on knowledge of the application of the theories of school administration, classroom teaching activities, under the guidance and supervision of both resident and Faculty of education supervisors.

EDU 311 - Curriculum Studies (3 Credits)

This course provides a broad understanding of the basic elements of the field of curriculum and theoretical alternative to the kinds of perspectives which dominate curriculum discourse. The course also examines issues in curriculum planning, organization and school curriculum problems in Nigeria. A critical examination of the new National Policy on Education would be done.

EDU 312 - Educational Psychology (2 Credits)

The relation and application of psychological principles to educational practice and performance with special reference to the Nigeria post primary school.

EDU 313: Integrated Curriculum (Computer Science/Mathematics) (2 Credits)

Students are exposed to various applications of micro-computers in educational activities through learning and teaching of Computer Science/Mathematics concepts. Identify various approaches and analyzing educational apps with their functions and demonstrate competences in teaching Computer Science/Mathematics.

EDU 313: Integrated Curriculum (Science) (2 Credits)

Integrated curriculum (science) is compulsory for undergraduate students in Science and science related programmes. The course is intended to introduce the concept of basic science and technology to those students who might be assigned to teach the subject at the Junior Secondary Schools. It focuses on basic ideas that are necessary for effective teaching of the subject.

EDU 313: Integrated Curriculum (Language Arts) (2 Credits)

Language arts form the foundation for effective communication. This course is designed to develop students' language competences in the four modes of language communication skills: listening, speaking, reading and writing. Thus, emphasis will be placed on the listening, speaking reading and writing processes, literary analysis of texts and the visual media.

EDU 313 - Integrated Curriculum (Social Studies)

(2 Credits)

An introductory course designed to acquaint prospective social studies teachers with the concept and meaning of social studies of the Junior Secondary School Curriculum. The evolution, contents and scope of the Junior Social Studies curriculum are examined in this course. An examination of the problems and prospects of social studies teaching with special reference to the methodologies and resources for the implementation of the curriculum in Nigeria Junior Secondary Schools.

EDU 321 - Introduction to Educational Research and Statistics (3 Credits)

An introductory study of basic concepts and nature of education research, methods of collecting and organizing data, analysis, presentation and reporting results.

EDU 322 - Comparative Education (2 Credits)

The course pays attention to the purpose of education. Educational systems and national character; education and modernity; the nature, purpose, levels and methods of comparative education will be studied in detail. The dynamics and problems of educational reform and development in developing countries; systems of education in selected African countries and others outside Africa (USA, Britain, France, Canada, Japan and Russia) will also be examined. Contemporary issues in comparative education and the future of education world-wide will also be discussed.

EDU 400 - Supervised Teaching Practice II (3 Credits)

This is a 5 week field experience in a secondary school setting. Emphasis is on knowledge of the application of the theories of school administration, classroom teaching activities, under the guidance and supervision of both resident and Faculty of Education supervisors.

EDU 411 - Measurement and Evaluation (3 Credits)

Examination of modern concepts and methods of measuring and evaluating aspects of human behaviour, with particular reference to the educational process in Nigerian post-primary schools. Student will be exposed to the development of test in Nigeria, the principles of construction, administration, scoring, and interpretation of various test scores and other measurement instruments, as well as the social and ethical issues in testing.

EDU 412 - Introduction to Educational Management
(3 Credits)

This course is an introduction to the principles and practice of educational management. It focuses on the basic management concepts as they relate to the education industry – planning, financing, cost management information, theories of management, education agencies, organization of schools in Nigeria and other countries.

EDU 421 - Guidance and Counseling (3 Credits)

An introductory course on the rationale, principles, scope and practice of guidance and counseling in post-primary schools in Nigeria. The course will be practically oriented and includes visits o some off optional/vocational establishments.

EDU 499 - Project (3 Credits)

This is practical application of research methods and statistics in education. In the course, the student(s) is(are) expected to study in detail an area of interest in

educational theory and practice with particular reference to the Nigerian environment. This detailed study is carried out under the guidance of a lecturer(s). To enhance the originality of the work, the student(s) is(are) expected to present seminar(s) on various aspects of the topic to a group of students as study progresses under the chairmanship of the Supervisor. A discussion would normally follow the presentation. The power of logical presentation, effective communication and sensitivity to educational issues and problems in a developing country like ours.

CIT 113 - Introduction to Integrated Curriculum (Sciences) (3 Credits)

Integrated curriculum (science) is compulsory for undergraduate students in Science and science related programmes. The course is intended to introduce the concept of basic science and technology to those students who might be assigned to teach the subject at the Junior Secondary Schools. It focuses on basic ideas that are necessary for effective teaching of the subject.

B.Sc.(Ed) BIOLOGY

4 YEAR DEGREE PROGRAMME IN EDUCATION BIOLOGY

100 LEVEL: FIRST SEMESTER

Course Code	**Course Title**	**Credits**
Pre-requisites		
EDU 111	History of Education	3
PBB 111	Introduction to Plant Biology I	3
AEB 111	Introductory Animal and Environmental Biology	4
CHM 111	General Chemistry I	3
CHM 113	Organic Chemistry I	3
GST 111	Use of English I	2
GST 112	Philosophy & Logic	2
CSC 110	Intro. to Computing	3
	Total - - - -	**23**
	SECOND SEMESTER	
EDU 121	General Teaching Methods	3
PBB 122	Introduction to Plant Biology II	3
AEB 122	Functional Zoology	4
CHM 122	General Chemistry II	3
CHM 124	Organic Chemistry	3
GST 121	Uses of English II	2
GST 122	Nigerian People and Culture	2
GST 123	History & Philosophy of Science	2
	Total - - - -	**22**
	Grand Total - - -	**45**

200 LEVEL: FIRST SEMESTER

EDU 211	Development Psychology	2
EDU 212	Philosophy of Education	2
AEB 211	Environmental Ecology	4

AEB 213	Invertebrate Zoology	4
PBB 213	Introductory Mycology and Lichenologygy	3
PBB 211	Introductory Ecology	3
PBB 212	Bryology and Pteridology	3
	Total - - - -	19
	SECOND SEMESTER	
EDU 221	Methods of Teaching Biology	3
EDU 222	Sociology of Education	2
EDU 223	Instructional Technology	2
PBB 226	Higher Plants	3
PBB 224	Introductory Genetics	3
AEB 222	Histology	4
AEB 224	Vertebrate Zoology	4
	Total - - - -	**20**
	Grand Total - - -	**41**

300 LEVEL:	**FIRST SEMESTER**	
Course Code	**Course Title**	**Credits**
Credits	**Pre-requisite**	
EDU 300	Supervised Teaching Practice	3
EDU 311	Curriculum Studies	3
EDU 312	Educational Psychology	2
EDU 313	Integrated Curriculum (Science)	2
PBB 313	Biometrics	3
PBB 311	Plant Taxonomy, Botanical Garden/ Design and Maintenance	4
AEB 311	Animal Physiology	4
AEB 314	Comparative Vertebrate Anatomy	3
CED 300	Entrepreneurship	2
PBB 315	Whole Plant Physiology	3
AEB 316	Introductory Parasitology	4
	Total	**33**
	SECOND SEMESTER	
EDU 321	Introduction to Education Research and Statistics Data Processing and Computer Usage	3
EDU 322	Comparative Education	2
AEB 327	Introductory Entomology	4
PBB 322	Cell Biology	4
	Total - - - -	**13**
	Grand Total - - -	**46**

400 LEVEL:	**FIRST SEMESTER**	
EDU 400	Supervised Teaching Practice II	3
EDU 411	Measurement and Evaluation	3
EDU 412	Introduction to Educational	

	Management	3
AEB 413	Principles of Systematic Zoology	3
AEB 411	Environmental Physiology	4
PBB 412	Molecule Biology	3
PBB 413	Economic Botany	3
	Total - - - -	**22**

	SECOND SEMESTER	
EDU 421	Guidance and Counseling	3
EDU 499	Project	3
AEB 422	Evolution	3
AEB 423	Animal Behaviour	3
PBB 421	Genetics	3
	Total - - - -	**15**
	Grand Total - - -	**37**

COURSE DESCRIPTION

AEB 111** **Introductory Animal and Environmental Biology (4 Credits, First Semester)**

Man population growth and impact on the biosphere, faunal biodiversity:

Invertebrata: Protozoa, Porifera, Coelenterata, Platyhelminthes, Nematoda, Mollusca, Annelida, Arthropoda, Echinodermata.

Chordata: Cephalochordata, Pisces, Amphibia. Reptilia, Aves, Mammalia. Mammalian Anatomy: Anatomy of *Rattus rattus.*

AEB122 **Functional Zoology (4 Credits)**

Embryology: Gametogenesis, fertilization and cleavage as demonstrated by Amphioxus.

Genetics: The cell and distribution of genetic material; mitosis, meiosis. Inheritance, sex determination and sex-linked inheritance.

Histology: Cells, tissues, organ formation and main features.

Physiology: Functioning of mammalian skin, muscles/skeleton, alimentary system, nutritional requirements and deficiencies.

AEB 211 **Environmental Ecology (4 Credits, First Semester)**

Pre-requisite **AEB 111**

Aquatic and terrestrial ecosystems of Nigeria: Physical and chemical properties, faunal adaptations for life: inter-relationships (food chains/webs). Conservation of faunal resources of Nigeria.

AEB 213 **Invertebrate Biology (4 Credits, First Semester)**

Pre-requisite **AEB 111**

Syllabus: Identification, phylogeny, biology and economic importance of Protozoa. Porifera. Coelenterates, Platyelminthes. Aschelminthes, Annelida, Mollusca. Arthropoda and Echinodermata of Nigeria.

AEB 222 **Histology (4 Credits, Second Semester)**

Pre-requisite **AEB 122**

Syllabus: Structure of vertebrate skin, skeletal, muscular, alimentary, respiratory, circulatory, excretory, nervous, endocrine and reproductive systems.

AEB 224 **Vertebrate Biology (4 Credits, Second Semester)**

Pre-requisite **AEB 111**

Identification, phylogeny, biology and economic importance of Cephalochordata, Hemichordata, Urochordata, Agnatha, Pisces, Amphibia, Reptilia, Aves and Mammalia of Nigeria. Students are expected to dissect the dogfish.

AEB 311 **Animal Physiology (4 Credits, First Semester)**

Pre-requisite **AEB 122**

Syllabus: Principles of physiological adaptation, homeostasis, nervous, neuromuscular and endocrine systems, nutrition and digestion, blood and circulation, excretion, respiration and osmoregulation.

AEB 314 **Comparative Vertebrate Anatomy (3 Credits, First Semester)**

Pre-requisite **AEB 111, 224**

Syllabus Functional comparative anatomy of the organ systems in vertebrate, skin, circulatory, digestive, excretory, nervous, respiratory, skeletal and urino-genital systems of Pisces, Amphibia, Reptilia, Aves and Mammalia. Students are expected to dissert fish, toad, lizard, chick and rat.

AEB 316 **Introductory Parasitology (4 Credits, First Semester)**

Pre-requisite **AEB 222, 213**

Syllabus Parasitism: Facultative and obligate parasitism: nature of different body habitats. (Host-parasite relationships). Classification, morphology and life cycles of important examples of protozoans, platyhelminthes and nematodes. Resistance and immunity to protozoan and helminthes parasites.

AEB 327 **Introductory Entomology (4 Credits, Second Semester)**

Pre-requisite **AEB 211, 213**

Syllabus Evolution, identification. Systematics, morphology, biology, life cycles and distributions of insects, mites and ticks. Behaviour and ecology of social insects.

AEB 411 **Environmental Physiology (4 Credits, First Semester)**

Pre-requisite **AEB 311, 312**

Syllabus Physiological adaptations to changes in the environment: temperature, light, hydrogen-ion concentration, water, osmotic and ionic concentration, oxygen. Temperature relations of poikilothermic animals. Physiology of migration, hibernation, aestivation and diapause, effects of high attitude and hydrostatic pressure on organisms and adaptations to these factors. Reproductive adaptations.

AEB 413** **Principles of Systematic Zoology (3 Credits, First Semester)**

Pre-requisites **AEB 213, 224, 327 OR 316**

Syllabus Zoological classifications - the species category, polytypic species population systematics. Intra specific categories, higher categories. Methods of zoological classification, taxonomic characters, quantitative and qualify analysis of natural variation, procedures of classification – Zoological nomenclature-essential rules and interpretation of rules.

AEB 422 Evolution (3 Credits, Second Semester)

Pre-requisite **AEB 224**

Syllabus Principles and mechanisms of evolution. Genetic basis of evolution. The origin and evolution of chordates and vertebrates, inference of phylogenies from fossils adaptive radiation, speciation, mutation variation (genetic and non-genetic) and natural selection.

AEB 423 Animal Behaviour (3 Credits, Second Semester)

Pre-requisites **AEB 213, 224**

Reflexes and development of behaviour. Motivation and conflict: effect of hormones on behaviour. Instinct and teaming: behaviour and evolution, social life in animals.

AEB 418 Community and Ecosystem Ecology (4 Credits, First Semester)

Pre-requisites **AEB 211, 213, 224**

Syllabus Community structure: species diversity and tropic structure. Community metabolism: primary and secondary production, their measurement and limiting factors in natural ecosystems. Energy budgets and ecological efficiencies. Nutrient cycles. Community changes: Wildlife recourses of Nigeria.

PBB 111: INTRODUCTORY PLANT BIOLOGY I (3 Credits, First Semester)

Introduction to Botany. Prospects of a Botanist. Diversity of living organisms and habitatas, life forms, mode of nutrition, size, shape, e.g. common features of organisms. Need of arranging them into classifications. Concept of five kingdom and their characteristics and possible evolutionary relationship among major groups of organisms. A brief survey of bacteria, viruses, PPLO. Life cycle of algae, bryophytes, pteridophytes, gymnosperms and angiosperms (*2 Lectures, 1 practical/week).*

PBB 122: INTRODUCTION TO PLANT BIOLOGY II (3 Credits, Second Semester)

The general morphology, anatomy, Histology and physiology of flowering plants. Seed structure, dispersal and germination. Development of primary and secondary plant body; water relations, photosynthesis, translocation and storage organs, respiration. *(2 lectures, 1 practical/week).*

PBB 211: INTRODUCTORY ECOLOGY (3 Credits, First Semester)

Themes of Ecology: autecology and synecology, historical aspects. Current trends in ecology. Plant community hypotheses. Concepts of ecosystem: Food chains, webs, interaction between plants and animals. Ecological groups: hydrophytes, halophytes, xerophytes, epiphytes and mesophytes. The effect of physical environment on plants. Climatic, biotic and topographic factors *(2 lectures, 1 practical/week).*

PBB 212: BRYOLOGY AND PTERIDOLOGY (3 Credits, First Semester)

Origin of Bryophytes and Pteridophytes. Tropical bryology and Pteriodology. Nomenclature of bryophytes and pteriodohytes Moss flora. General taxonomy. Ecology of bryophytes and pteridophytes, classification. Characteristics

(gametophytic and sporaphtic). Life cycle of selected groups. Phylogeny of bryophytes. World red light of bryophytes. Morphology and anatomy of bryophytes. Economic importance (*2 lectures, 1 practical/week)*.

PBB 213: INTRODUCTORY MYCOLOGY AND LICHENOLOGY (3 Credits, First Semester)

A systematic, evolutionary and phylogenetic study of fungi and algae with reference to their ecology and importance to man. Distribution and diversity of Lichens. Ultrastructure, cytology and physiology of Lichens. Lichens as bioremediators of pollution. Lichen systematic. Vegetative morphology. Reproductive morphology and development of Lichens. Lichens photobionts. Characteristics of association. Economic importance (*2 lectures, 1 practical/week)*.

Pre-requisite: *BOT 122 or Instructor's Consent (2 Lectures, 1 Practical/week).*

PBB 226: HIGHER PLANTS (3 Credits, Second Semester)

A survey of the evolution, morphology, ecology and importance to man of the Gymnosperms and Angiosperms. A study of the major types of development of embryo in Angiosperms and Gymnosperms *(2 lectures, 1 practical/week).*

PBB 224: INTRODUCTORY GENETCS (3 Credits, Second Semester)

Chromosome number and their interpretations. Chromosome mechanism in mitosis and meiosis genetic and non-genetic variations. Mendalian inheritance. Linkage and crossing over. Mechanisms of sex determination. Sex linked inheritance *(2 Lectures , 1 Practical/week).*

PBB 313: BIOMETRICS (3 Credits, First Semester)

Population and samples, probability distribution, normal poison and binomial distribution, mean standard error, standard deviation, cub fitting, CHI-TEST, student t-test. F-distribution, regression, correlation coefficient, analysis of variance (one way and two ways). *(2 Lectures/week).*

PBB 311: PLANT TAXONOMY, BOTANICAL GARDEN/DESIGN AND MAINTENANCE (4 Credits, First Semester)

Floral morphology and evolution of floral structures, principles and practice of flowing plant taxonomy, emphasizing the phylogenetic relationship and evolutionary features in classification. Detailed study of selected locally important families (students are required to submit a collection of fifty well pressed herbarium specimens).

Pre-requisite: *BOT 226 (2 Lectures, 2 Practical/week)*

PBB 315: WHOLE PLANT PHYSIOLOGY (3 Credits, First Semester)

Principles of cell water relations: plant water relations including the importance of environmental factors. Properties of water in relation to processes in the living plant. Morphological adaptations of plants to water status of the habitat, water uptake and movement. The ascent of sap. Mineral nutrition. Mechanism of nutrient uptake and translocation. Role of macro and micro nutrient elements. Ion deficiency symptoms *(2 Lectures, 1 Practical/week).*

PBB 322: CELL BIOLOGY (4 Credits, Second Semester)

The physical properties of protoplasm, pH and buffers, amino acids, proteins carbohydrates and lipids. Enzyme action, glycolysis and substrate level

phosphorylation. Nature and properties of the bacterial and higher plant cell walls. The organelles and their functions *(3 Lectures, 1 Practical per week).*

PBB 413: ECONOMIC BOTANY (3 Credits, First Semester)

The origin, history, sources, taxonomy, morphology, ecology and uses of the economic plants of West Africa. A few example, which may very from year to year, are to be chosen from all groups of plants (food, fibre, medical, forage, cereals, timber, etc.)

PBB 412: MOLECULAR BIOLOGY (3 Credits, First Semester)

Structure and function of DNA and RNA. The genetic code. Mechanism of protein synthesis. Regulation of protein biosynthesis and implications for control of growth and differentiation. Genetic engineering. ***(3 Lectures/week).***

PBB 421: GENETICS (3 Credits, Second Semester)

Polyploidy: origin, significance and classification. Chromosomal mutations and aberration. Gene concept, multiple allelism, geneaction and gene mutation. Polygenic inheritance. Extra-chromosomal inheritance. Population genetics. Human genetics.

Pre-requisites: *BOT 224, BOT 315 (2 Lectures, 1 Practical/week)*

B.Sc.(Ed) Chemistry

4 YEAR DEGREE PROGRAMME IN EDUCATION CHEMISTRY

100 LEVEL	**FIRST SEMESTER**	**Credits**
EDU 111	History of Education	3
CHM 111	General Chemistry I	3
CHM 113	Organic Chemistry I	3
	2 Electives from Botany and Zoology/ PHY/ECO/MATHS	6
GST 111	Use of English I	2
GST 112	Philosophy & Logic	2
CSC 110	Introduction to Computing	3
	Total	**22**
	SECOND SEMESTER	
EDU 121	General Teaching Methods	3
CHM 122	General Chemistry II	3
CHM 124	Organic Chemistry II	3
	2 Elective from Botany or Zoology/ PHY/GEO/MATHS or Mathematics	6
GST 121	Use of English II	2
GST 122	Nigerian People & Culture	2
GST 123	History & Philosophy of Science	2
	Total	**21**
	Grand Total 43	

200 LEVEL:	**FIRST SEMESTER**	
EDU 211	Development Psychology	2
EDU 212	Philosophy of Education	2
CHM 211	Organic Chemistry	4
CHM 213	Physical Chemistry I	3
CHM 205	Practical Chemistry	0
CHM 214	Introductory Environmental Chemistry	2
MTH 219	Statistics	3
PHY 209	Practical Physics	2
	Total	**18**
	SECOND SEMESTER	
EDU 221	Methods of Teaching Chemistry	3
EDU 222	Sociology of Education	2
EDU 223	Instructional Technology	2
CHM 221	Inorganic Chemistry	4
CHM 223	Physical Chemistry II	3
CHM 205	Practical Chemistry	2
	Total	**16**
	Grand Total 38	

300 LEVEL:	**FIRST SEMESTER**	**Credits**
EDU 300	Supervised Teaching Practice I	3
EDU 311	Curriculum Studies	3
EDU 312	Educational Psychology	2
EDU 313	Integrated Curriculum (Science)	2
CHM 311	Aromatic and Alicyclic Chemistry	3
CHM 310	Practical Organic Chemistry	2
CHM 312	Inorganic Chemistry	3
CHM 314	Instrumental Methods of Analysis	3
CED 300	Entrepreneurship	2
CHM 315	Introduction to Spectroscopy	2
	Total	**25**
	SECOND SEMESTER	
EDU 321	Introduction to Education Research & Statistics Data Processing & Computer Usage	3
EDU 322	Comparative Education	3
CHM 325	Practical Analytical and Inorganic Chemistry	2
CHM 323	Physical Chemistry	3
CHM 326	Practical Physical Chemistry	2
CHM 322	Instrumental Methods of Analysis	4
	Total	**17**
	Grand Total 41	

400 LEVEL: FIRST SEMESTER

EDU 400	Supervised Teaching Practice II	3
EDU 411	Measurement and Evaluation	3
EDU 412	Introduction to Education Management	3
CHM 411	Organic Reaction Mechanism	3
CHM 414	Applied Spectroscopy	2
CHM 412	Co-ordination Chemistry	3
CHM 413	Structure, Bonding and Chemical Kinetics	3
CHM 318	Polymer and Rubber Science and Technology	3
	Total	**22**
	SECOND SEMESTER	
EDU 421	Guidance and Counseling	3
EDU 499	Project	3
CHM 424	Natural Products	2
CHM 428	Radiochemistry and Nuclear Chemistry	2
CHM 422	Polymers: Properties and Application	3
Any one of the following courses:		
CHM 421	Chemical Technology	2
CHM 429	Fibre Science and Colour Chemistry	2
	Total	**17**
	Grand Total 39	

COURSE DESCRIPTION

CHM 111-GENERAL CHEMISTRY I (3 CREDITS)

a. Relationship of Chemistry to other sciences. Atoms, subatomic particles, isotopes, molecules, avogadro's number. Mole concept. Dalton's theory. Modern concepts of atomic theory. Laws of chemical combination: relative atomic masses.

b. Introduction to nuclear reactions. Nuclear binding energy, fission and fusion reatctions.

c. States of matter: Gases, gas laws. General gas equation. Liquids and solids. Introduction to lattice structure. Isomorphism. Giant molecules.

d. Introduction to the periodic table. Hydrogen and hydrates. Chemistry of groups 0,1,11 elements. Acid, base, properties of oxides.

CHM 113-ORGANIC CHEMISTRY I (3 CREDITS) 1ST SEMESTER

a. General Principles of Organic Chemistry

i) Introduction: Definition of organic chemistry. Classification of organic compounds. Homologous series. Functional groups.

ii) General procedure for isolation and purification of organic compounds.

iii) Determination of structure of organic compounds. Elemental analysis percentage composition, empirical and molecular formula, structural formula.

iv) Isomerism. Structural isomerism and stereo isomerism.

v) Electronic theory in organic Chemistry. Atomic models, quantum-numbers, atomic orbital. Hybridization leading to formation of carbon carbon single double and triple bonds. Hydrogen bonding, electronegetivity, dipole moment polarization, bond energy, inductive and resonance effects.

b. Non-polar functional group Chemistry

i) Alakanes: Structure physical properties. Substitution actions including mechanism.

ii) Alkenes: Structure and physical properties: Reaction: addition stereoisomerism – definition, geometrical and optical isomers. Conditions for optical isomenism.

iii) Alkynes: Structure. Acidity of acetylenic hydrogen: reaction addition of H2 X2, H2O, etc. Test for alkynes.

iv) Benzene: Structure and aromaticity of Benzene. Introduction to electrophilic substitution reactions.

c.

i) Common (trivial) names IUPAC names of classes of compounds.

ii) Introduction to petrochemistry: Origin of petroleum. Importance, fractional distillation of crude oil, components properties and uses Octane number cracking.

iii) Coal Tar Chemistry: Origin, production, important components and uses.

CHM 122 - GENERAL II CHEMISTRY (1 CREDITS) 2ND SEMESTER

Acid, Bases and Salts. Quantitative and qualitative analysis. Theory of volumetric analysis – operations and methods. Calculations; mole, molarty and molaility. Behaviour of electrolytes. Water, colligative properties. Ostwald's dilution law. Arthenius. Bronsted lowry. Lewis concepts and applications. Buffers introduction to reaction rates. Equilibria rand equilibrium constants. Solubility products. Common effects. Precipitation reactions. Chemistry of Redox reactions.

CHM 124-ORGANIC CHEMISTRY II (3 CREDITS) 2ND SEMESTER

a. Polar function group Chemistry

i) Hydroxyl group-Alcohols and phenols. Acidity-comparison. Important metals bases. Alkyl halide, oxidation. Test for alcohols and phenols. Importance.

ii) Carbonyl Group-Aldehydres and ketone structure: physical properties important methods of preparation. Reaction: Tollen's reagent. Fehling's alcohols, including mechanisms, with ammonia, hydrazines and the derivatives, including mechanisms, aldol condensation. Tests for aldehydes and ketone. Importance.

iii) Carboxylic group: Menocarboxylic.acids. Structure. Physical properties. Acidity and resonance. Important methods of preparation from alcohols aromatic hydrocarbons through Grignard's reagent. Reaction with bases. Conversion to esters, amides, halides and anhydrides. Test for carboxylic acid. Importance.

iv) Carboxylic acid derivatives anhydrides acid halides, estersand amides. Change of reactivity when-OH of acid acid is replaced by-OCOR, -X, -OR, -NR_2, reactions with water, alcohols, amines, LAIH, $NaBH_4$. Test for esters.

v) Amino group-Ammines, structure, physical properties. Important methods of preparation. Reaction with acids, bases, basicity and salt formation Alkylation acylation: with nitrous acids. Heinseberg methods of separation. Test for amines. Importance.

b. Miscellaneous Topics

fats and oils-Definition, importance, saponification. Soaps and detergents. Mode of cleansing action. Use in paints and vanishes.

Amino acids, proteins-Definitions, classification, essential amino acids, special properties and reactions, isoelectric points, pest. Importance.

Carbohydrates-Definition, classification, importance nomenclature, structure and reactions of glucose. Mutarotaion tests.

Natural products-Main classes (other than lipids, carbohydrates and proteins); Steroids. Terpenoids, alkaloids, prostaglandins definition, importance, examples.

200 LEVEL

CHM 205-PRACTICAL CHEMISTRY (2 CREDITS) 1ST & 2ND SEMESTERS

a. Qualitative analysis for anions and cations. Experiments in kinetics. Surfacechemistry and thermochemistry.
b. Tests for functional groups. Use of simple techniques for purification, e.g. recrystalization, precipitation, steam distillation; fractional distillation. Preparation of simple esters, aldehydes, ketones, and amines. Hydrolysis of esters.

CHM 211-ORGANIC CHEMISTRY (4 CREDITS) 1ST SEMESTER

a. Isomerism and conformation: Stercoisomerism, geometric isomerism: E, Z notation for geometrical isomerism. Optical isomerism: E, Z notation for geometrical isomerism. Optical isomerism due to asymmetric carbon atom. Enantiomorph, diaesteroisomers, mesoforms, racemic form. Measurement of optical activity. Methods of resolution of racemic forms. R.S. specification. Conformation isomerism.
b. Electrical and structural effects on physical and chemical properties. Inductive and resonance effect.
c. Introduction to organic reaction mechanism. Classification of reagents and reactions. Nucleophilic reaction at saturated carbon (S_N1 and S_N2). Elimination reactions (E1 & E2).
d. Chemistry of sugars and proteins. Configuration of monosaccharide. Disaccharides and polysaccharide. Different chemical types and reactions. Proteins: Amino acids. Peptide and protein structure. Reactions tests current trends in protein chemistry.
Pre-requisite CHM 113 and CHM 124

CHM 213-PHYSICAL CHEMISTRY I (3 CREDITS) 1ST SEMESTER

The state of matter the equations of states. The molecular mass of gases the kinetic molecular theory mean free path molecular diameter of gases: Chemical kinetics concept of reactions. Order of reaction detailed derivation and application of the rate expression for first can second orders of reaction third order reaction experimental methods of determining order of reaction factors influencing reaction rate activation energy arthenue. Equation and its applications. Elementary, treatment of fast reactions and the theories of reaction rate. Introduction to catalysis (Homogeneous & Heterogeneous) ***(Pre-requisite CHM 122).***

CHM 214-INTRODUCTORY ENVIRONMENTAL CHEMISTRY (2 CREDITS) 1ST SEMESTER

a. Components of the total environments: air, water, land, their natural forms. Causes of environment impairment.
b. Environmental pollution: sources and types of pollution. Effects of pollution.
c. Water and waste water characteristics and their measurements. WHO standards. Industrial water supply. Introduction to waste water treatment.
d. Solid waste: Effects on solid and water. Solid waste management.

CHM 221-INORGANIC CHEMISTRY (4 CREDITS) 2ND SEMESTER

a. Atomic structure and periodic classification of elements. Periodicity of atomic properties atomic and ionic radii, electronegativity. Dissociation and hydration energies.

b. Theories of valency. Ionic lattices and molecular shapes. Oxo-acids, their structure and properties. Binary compounds. Structural treatment of chlorides. Nitrides, carbides. Oxides and halides.

c. Theory of classical analytical chemistry. Qualitative methods of analysis. Gravimetry – determination of the solid, liquid and volatile content of materials. Theory of precipitation process. Precipitation gravimetry. Volumetric analysis – acid-base titrations. Redox titrations. Non-aqueous. Complexometric titrations. Ionic equilibra. Acids, buffers. Applications of classical analytical technical techniques. ***Pre-requisite CHM 111***

CHM 223-PHYSICAL CHEMISTRY II (3 CREDITS) 2ND SEMESTER

a. Fundamental (length, time, etc) and derived (area, volume, pressure, etc) quantities: SI system of units. Thermodynamic systems. Processes (reversible, irreversible) and properties (intensive, extensive).

b. First law of hemodynamics heat, work and internal energy change. Isothermal and adiabatic process for ideal and real gases; heat capacities: applications of first law of thermodynamics.

c. Thermochemistry heats of reaction, formation combustion, etc. Calorimetry Hess'law. Enthalpy and its methods of measurements. Thermochemical interpretation of chemical reactions.

d. Second law of thermodynamics: spontaneous process. Entropy. Carrot cycle. Gihb's free energy. Gibbs-Helmohlthz equation and its applications. Principles and applications of free energy concepts in determining spontaneity or a reaction. Systems in equilibrium.

e. Third law of the thermodynamics: tests and uses of third law. Evaluation of total entropy change in a system.

300 LEVEL

CHM 310-PRACTICAL ORGANIC CHEMISTRY (2 CREDITS) 1ST SEMESTER

a. Characterization and estimation of functional group in organic compounds.

b. Preparation of derivatives of organic compounds.

c. Application of spectroscopy for structural elucidation.

d. Preparation of simple organic compounds including Gringnard reaction, Diels Alder reaction.

CHM 311-AROMATIC AND ALICYCLIC CHEMISTRY (3 CREDITS) 1ST SEMESTER

a. Benzene: Natural occurrence properties, stability of benzene. Canonical structures of benzene: Kckule. Dewall. Aromaticity: classical treatment, comparism of aromatic and non-aromatic systems.

b. Polynuclear aromatic hydrocarbons (PAH). Types. Occurrence. Canonical forms. Reactivity of different positions in naphthalene, phenanthrene and anthracene.

c. Important aromatic compounds: amines, amides, acids, phenols, aldehydes. Ketones and diazoonium compounds and derivatives. Natural sources, synthesis and properties.

d. Nucleophilic substitution reaction in aromatic systems.

e. Alcyclic alkanes; Synthesis of alicyclic compounds. Nomenclature of polycyclic alkanes: Synthesis of alicyclic compound and special reactions: strain theory. Conformational analysis. (Pre-requisite JIM 211).

CHM 312-INORGANIC CHEMISTRY (3 CREDITS) 1ST SEMESTER

The Chemistry of the group (0-7) elements and emphasis is on correlation between theoretical concepts and experimental findings. Chemistry of transition elements, first, second and third

series. Lanthanides, actinides. Hydrides, electron deficient compounds and boron Chemistry. Introduction to Radiochemistry. (Pre-requisite: CHM221).

CHM 313-ENVIRONMENTAL CHEMISTRY (3 CREDITS) 1ST SEMESTER

1. Air Pollution

a. The atmosphere: the atmospheric gases: pollution from natural sources (volcanoes, etc) human activities (burning of fossil fuel, automobile exhaust emissions, etc); ozone layer, atmospheric particular matter.

b. Environmental impact of air pollution: Green house effects of air pollutants (NOxi, SO_2CO_1 particulate matter, etc).

c. Air quality: Ambient air quality standards. Emission standards. Air quality assessment/pollutant measurements. Control/treatment industry emitted gases.

2. Wastes Recycling

a. Introductory aspects of wastes treatment for recycling (re-use). Liquid wastes (sewage, industrial effluent) treatments for re-use.

b. Biodegradable organic wastes for composition to serve as organic manure.

CHM 314-SEPARATION METHODS (3 CREDITS) 1ST SEMESTER

Distillation and rectification: The McCabe-Thiele graphic method and pouchon-savarit method. Solvent extraction. Chromatographic techniques. Gel filtration, ion exchange and electrophoresis.

CHM 315-INTRODUCTION TO SPECTROSCOPY (2 CREDITS) 1ST SEMESTER

a. The origin of spectra, wavelength, wave number, frequency and quantum relationships. Laws of absorption.

b. Principles and instrumentation if IR, UV, NMR. MS Raman and Mosshauer Spectro Interpretation of simple spectra.

CHM 316-CHEMISTRY AND TECHNOLOGY OF LIPIDS (3 CREDITS) 2ND SEMESTER

Definition and classification of lipids. Role and use of lipids in foods. Glyceride composition and structure. Physical characteristics of lipids. Chemical reactions of lipids. Lipid oxidation and antioxidants. Technology of processing fats and oils. Effects of processing on functional properties and nutritive value.

CHM 317-MINERAL PROCESSING (3 CREDITS) 2ND SEMESTER

The occurrence and important world source of economic minerals. Methods of extraction and purification of minerals. Mineral processing comminution. Particle sizing, concentration, solid liquid separations, physical reforming and chemical processing influence of chemical constitution and crystal structure on the chemical and physical properties of minerals. The physical and chemical processing and utilization of the ores of iron. Lead, Tin, Zinc and Uranium.

CHM 318-POLYMER AND RUBBER SCIENCE AND TECHNOLOGY (3 CREDITS) 1ST SEMESTER

a. Monomer, polymers, copolymers, polymer architecture (i.e. structure conformation of molecular chain, etc.) General methods of polymerization. Natural polymers, rubber, cellulose, wool, etc.

b. Liner chain growth polyrnerisation: Radical initiators. Mechanism of chain growth polymerization, chain transfer, branching, inhibition and retardation logic initiatiors, living polymers kinetics of chain growth polymerization. Autoacceleration. Copolymerization, kinetics of emulsion polymerization. Ring opening reactions.

c. Liner step-growth polyrnerisation. Reaction types. Reactivity, stoichiometry kinetics, extent of reactions, molar mass relationships. Gelation.

d. Characterization techniques: IR. Use of IR in structural characterization. Identification and composition. Raman spectroscopy. Molan mass characterization: light scattering osmometry, viscometry, etc. Optical techniques. (Pre-requisite: CHM 211 and CHM 232).

CHM 319-RUBBER SCIENCE AND TECHNOLOGY (2 CREDITS) 2ND SEMESTER

Rubber latex technology. Principles of rubber compounding. Rubber processing additives.cross-linking agents, accelerators.

CHM 320-INDUSTRIAL CHEMISTRY PRACTICALS (2 CREDITS) 2ND SEMESTER

Food analysis processing. Polymer science practicals. Fastness properties of locally available dyes. Practical in extractive metallurgy.

CHM 321- INTRODUCTION TO QUANTUM CHEMISTRY (2 CREDITS) 2ND SEMESTER

Populates of quantum theory: Quantum states, relations between wave and particle properties free election, discrete quantum states. The schrodinger wave discrete equation: time dependent wave equation. Quantum mechanical treatment of a particle in a box. Wave equation of the hydrogen atom, treatment of hydrogen and hydrogen niolecule ion.

CHM 322- INSTRUMENTAL METHODS OF ANALYSIS (4 CREDITS) 2ND SEMESTER

a. Optical methods of analysis: photometric titration photoluminescence spectroscopy, urhidity and nephelometry. Fluorescence and phosphorescence. Flame emission and atomic absorption spectroinetry, flame photometry.
b. Electrochemical methods of analysis potentiometric titration, voltametry amperometric titration methods, coulometry, polarographic technique, electrogravimetric methods. Di tfeicntial thermal analysis, differential scanning calorimetry.

CHM 323-PHYSICAL CHEMISTRY (3 CREDITS) 2ND SEMESTER

a. Phase equilibra: thermodynamics of phase equilibria with one, two and three components. Mixture of two liquids – ideal system and Raoult's law. Partition coefficient. Claudius clapeyson equation: Bunsen's absorption coefficients: Henry and Raoult's law.
b. Surface Chemistry: Colloids, emulsion and foams. Adhesion and surface tension: contact angels and measurement, application of contact angle, wetting, etc. Surface tension of liquids. Interf tensions. Absorption: types of absorption, Gibb's absorption equations: Absorption isotherms. Heat of absorption.
c. Electrochemistry conductance ionic theory. Debyc-Hucket theory conductance at infinite dilution. Electrochemical cells, electrode potential Nernst equation applied electrochemistry: electrochemistry refining of copper electrolysis of alkyl halide, corrosion as an electrochemical process. (Pre-requisite: CHM 213 and CHM 223)

CHM 324- STEREOCHEMISTRY AND POLYFUNCTIONAL COMPOUNDS (3 CREDITS) 2ND SEMESTER

a. Stereochemistry of compounds – with symmetric carbon – biphenyls, R, S specification of configuration.
b. Important methods of preparation and reactions of halogen-acids, hydroxyl acid, dicarboxyclin acids. Keto acids, unsaturated acids. Lacto ketones and epoxides. Importance in synthesis of some organic compounds.
c. Simple heterocompounds containing one, two or three hetcrcatos: nomenclature. Syuthcsis. Simple reactions.

CHM 325-INORGANIC AND ANALYTICAL PRACTICAL (2 CREDITS) 2ND SEMESTER

a. Preparation of complex inorganic compounds.

b. Chromatographic techniques.
c. Gravi metric analysis and precipitation titration.
d. Potentiometric titration.
e. Flame photometry, polarimetry and refractometry.

CHM 326-PRACTICAL PHYSICAL CHEMISTRY (2 CREDITS) 2ND SEMESTER

a. Phase equilibria.
b. Electrochemistry – conductivity measurements.
c. Absorption form solutions.
d. Thermochemistry of neutralization reactions.

CHM 327-FIBRE SCIENCE AND TECHNOLOGY (3 CREDITS) 1ST SEMESTER

a. Terms and definitions used in Textile industry e.g. denier tax.etc. General survey of the chemical composition, structure and reactivity of natural and man-made fibres. Preparation. Properties and application of synaesthetic fibres and chemically modified nature fibres.
b. General survey of fibre processing techniques: melt, dry and wet spring, etc. General survey of textile processing from fibre to fabric. Orientation and drawing for fibres after treatment: scouring: lubrication, sizing and bleaching. Dyeing of fibres; fibres-finishing.e.g. water proofing, fire proofing, rot proofing, etc. Testing of fibres.

CHM 328-SOIL CHEMISTRY (2 CREDITS) 2ND SEMESTER

Colloid chemistry and surface properties of soils. Chemical and physical make up of soils, soils of Nigeria. Macronutrients and micronutrient. Depletion and replenishment of nutrients under different kinds of cultivation. Fertilizer requirements. Selected economic aspects of fertilizer importance and manufacture.

400 LEVEL

CHM 405-SELECTED TOPICS INDUSTRIAL CHEMISTRY (4 CREDITS) 2ND SEMESTER

a. Food Chemistry: Dairy chemistry, nutrition, food pigments and flavours. Meat process novel foods.
b. Mineral Processes: Metallurgy and materials science.
c. Dyes and Pigments: Textile chemistry and manufacture.
d. Polymer Engineering: Engineering plastics and composites.

CHM 410-DIFFRACTION METHOD (2 CREDITS) 1ST SEMESTER

1 and diffraction of x-ray. Crystal lattices, symmetry labeling of planes. Interpretation of diffraction data for structure determination. Fourier synthesis. Z ray instrumentation, Neutron diffraction and its application. Electron diffraction.

CHM 411-ORGANIC REACTION MECHANISM (3 CREDITS) 1ST SEMESTER

Methods of determining reaction mechanism. Critical treatment of nucleophilic substitution of aiurated carbon, cletrophilic addition to multiple bonds. Elimination reactions. Electrophilic aromatic substitution and nuclcophilic aromatic substitution. Steric effects, and neighbouring roup participation. Molecular rearrangements. Radical reactions. (Pre-requisite: CHM 311).

CHM 412-COORDINATION CHEMISTRY (3 CREDITS) 1ST SEMESTER

Definition, recognition and application of coordination compounds. Nomenclature. Coordination formula and isomerism inorganic complexes. Stereochemistry of complex molecules. Theories of tructiie and bonding. Physical methods of structural investigation. Magnetic properties. Absorption and vibration spectra. The spectrochemical series. The Naphelauxetic series and the Jahii-Teller distortions. Stabilization of unusual oxidation states by complex formation.
Thermodynamic stability of complex compounds the stability constant, the chelate cliect. Preparation and reactions of complexes. Kinetics and mechanism. (Pre-requisite: CHM 312)

CHM 413-ADVANCED CHEMICAL KINETICS (3 CREDITS) 1ST SEMESTER

a. Complex reaction systems: distinction from elementary reactions. Examples of complere reactions. Concurrent reactions, opposing reactions, consecutive reactions. Radical reactions.
b. Theories of reaction rates: collision theory and absolute (Transition state) theory. Relationship between the two theories. Theory of unimolecular reactions. Lindermann's theory. Modilications and treatments by Hinsliclwood. RRK, slater and RRKM.
c. Radiation induced Chemical Reactions:
   Photochemistry: Quatum yields, fluorescence and phosphorescence, photosensitation. Flash photolysis applications.
   Radiation chemistry: Interaction of radiation with matter, ions and electrons. Radiolysis. Applications. (Pre-requisite: CHM 323)

CHM 414- APPLIED SPECTROSCOPY (3 CREDITS) 1ST SEMESTER

The origin of spectra. Wave length, wave number, frequency and quatum relations. Laws of absorption principles. Instrumentation and application of IR, UV, NMR, mass and Mosshauer spectroscopic techniques in the determination of structure of compounds.

CHM 417-MINERAL PROCESSING II (3 CREDITS) 1ST SEMESTER

Chemical processing of minerals. Hydrometallurgical processes, halogen processes and metallurgy. High temperature processes and metallurgical thermochemistry. Characterization and utilization of clays and other ceramic materials (Emphasis on Nigerian clay deposits).

CHM 418-RHEOLOGY AND PROCESSING OF PLASTICS (3 CREDITS) 1ST SEMESTER

Rheology of polymer melts. Rheology of polyblends. Application of rheological and heat transfer equations in analyzing polymer processing operations. Mixing, basic concepts and characterization of mixing power requirements. Review of polymer processing methods, solution application. Extrusion: extruder-hased processes. Machine construction. Extrusion line layout. Extrusion blow molding, parison control. Injecting blow molding. Injecting molding principles, mold features, design. Process variables. Theoretical analysis of cavity filling. Other processes: calendaring, thermoforming, etc.

CHM 419-ORGANIC SYNTHESIS (3 CREDITS) 1ST SEMESTER

a. Critical review of important reactions, reagents and methods including mechanisms in synthetic organic chemistry. Applications for synthesis of important and complex organic compounds.
b. Survey of the organometallic chemistry of the representative elements. Preparations, reactions and uses.

CHM 421-CHEMICAL TECHNOLOGY (3 CREDITS) 2ND SEMESTER

a. Potential raw materials and major sources of raw materials for chemical manufacture. Treatment of experimental data.

b. Unit operations: Mass transfer, heat transfer. Types of reactors: hatch flow and cascade (multi hatch reactors). Elements of chemical engineering design. Treatment of some industrial inorganic and organic industrial chemical processes: Industrial production of ammonia, sulphuric acid, nitric acid.

CHM 422-POLYMER: PROPERTIES AND APPLICATIONS (3 CREDITS) 2ND SEMESDTER

a. Chain statistics and structure: Freely-jointed chain and Gaussian distribution; mean-square end-to-end distance and radius of gyration. Rotational isomeric-state model. Excluded volume.
b. Glass Transition Temperature: Bond rotation and energy harriers, free volume. Relation of chemical structure to Tg plasticization, secondary transitions, measurement of transitions.
c. Crystallisation: Morphology, nuclearation, crystal growth, spherulite formation. A cam kinetics. Melting behaviour.
d. Rubber-like state: Statistical molecular theories, single chain network theory, stress-strain relation for extension. Compression and shear; thermodynamic analysis.
e. Linear Mechanical Behaviour: Creep; stress relaxation, linear viscoelasticity, spring and dashpot models, relaxation spectra. Boltiman superposition principles: time-temptation superposition.
f. Anisotropy, Yield and Fracture: Polymer orientation, mathematical description, experimental studies on polymer lilms and yield criteria, necking and cold-drawing. Fracture and fatigue.
g. Degradation Behaviour of Polymers: Reactions and processes of thermal oxidative and photochemical degradation.

CHM 423-INDUSTRIAL MANAGEMENT (3 CREDITS) 2ND SEMESTER

F of investment evaluation. Fixed investment, working capitcal, lixed capital. Cost e unit aid instrumental cost. Fixed capital control. Manufacturing cost estimation and cost (Prolitability control and calculation of returns on investment. Finance accounting, financial analysis organization. Principles of modern management, process planning and evaluation of work.

CHM 424-NATURAL PRODUCTS (2 CREDITS) 2ND SEMESTER

Chemistry of terpenoids. Steroids and alkaloids. General methods of isolation, separation and structural determination of natural products. Classifications. Discussion of the chemistry of important natural products, their applications and biogenesis.

CHM 425-QUANTUM CHEMISTRY AND STATISTICAL THERMODYNAMICS (3 CREDITS) 2ND SEMESTER

Postulates of quantum theory. The schrodinger equation, and the particle in the box. Treatment of hydrogen molecule ion, the H molecule and many electron atom. Microstates and randomness. Ensembles probability and distribution functions statistical thermodynamics of gases. The calculation of the modynamic equilibrium constants from partition functions.

CHM 426-CHEMICAL PRINCIPLES OF FOOD PROCESS (3 CREDITS) 1ST SEMESTER

Production of sugar wings spirits beers jam, jelly, juices, ice-cream, margarine, chocolate selected Nigerian foods, etc. Food dehydration, cooling and freezing. Food canning food additive and toxicology water activity and food stability. Chemical and physical principles governing various methods of food processing and preservation. (Students will be required to submit term reports on selected food in lieu of actual)

CHM 427-PETROCHEMISTRY (2 CREDITS) 1ST SEMESTER

Raw materials for organic chemical manufacture, potential raw materials and current major OUFCCS. Petroleum and natural gas; utilization and petrochemical feedstocks. Creacking l'or ethylenenaphta cracking. Acetliylene by cracking and other possesses. Ethylene and propylene based products and processes. C-4 streams from riaphia crackers. Synthetic rubbers. Seam reforming and consequences. Aromatic hydrocarbon sources and derivatives.

CHM 428-RADIO CHEMISTRY AND NUCLEAR CHEMISTRY (2 CREDITS) 2ND SEMESTER

Natural radioactions, fission and fusion. Decay process nature of radiation. Nuclciu energetic of nuclear reactions. Principles and measurement of radioactivity. Applications of radioactivity: activation analysis. Isotope exchange reactions, isotope dilution and trace n kinetic and equilibria studie. Radiation hazards.

CHM 429-CHEMISTRY DYES AND PIGMENTS (3 CREDITS) 2ND SEMESTER

a. Dyes Intermediates: Derivatives of benzene, naphthalene anthraquinone, heuzanthronic indigo with re-synthesis of dyestuffs and intermediates. General review of the chemistry of the systems with 5 and 6 member rings.

b. Dyes and Pigments: Classification of dyestuff and pigments. Theory of colour constitution. Proper application of dyestuffs and pigments. Reactive dyestuff, disperse dyes and fluorescent dyestuff and pigments. Relationship between colour and fastness proper. (Pre-requisite: CHM 311 and CHM 329)

B.Sc.(Ed) Computer Science

4 YEAR DEGREE PROGRAMME IN EDUCATION COMPUTER SCIENCE CONTENT

100 LEVEL: FIRST SEMESTER

Course Code	**Course Title**	**Credits**
EDU 111	History of Education	3
MTH 110	Algebra and Trigonometry	3
MTH 112	Calculus	3
CSC 110	Introduction to Computing	3
GST 111	Use of English	2
GST 112	Philosophy & Logic	2
		16

Minimum 6 Credits from any of the following two groups below

GROUP A:	**Elective**	
PHY 111	Mechanics Thermal Physics and Properties of Matter	3
PHY 113	Vibrations, Waves and Optics	3
CHM 111	General Chemistry I	3
CHM 113	Organic Chemistry I	2
AEB 111	Introductory Zoology	4
PBB 111	Introduction to Plant Biology I	3
	Or	
GROUP B		
ACC 111	Introduction to Accounting I	3

ECO 111	Principles of Economics I	3
BUS 111	Introduction to Business I	3
	Total	**22**

100 LEVEL SECOND SEMESTER

Credits		
EDU 121	General Teaching Methods	3
MTH 123	Vectors, Geometry, Statistics	3
MTH 125	Differential Equations & Dynamics	3
GST 121	Use of English II	2
GST 122	Nigerian Peoples & Culture	2
GST 123	History & Philosophy of Science	2
CSC 120	Introduction to Software Packages	3
	Total	**18**

Minimum of 6 Credits from any one of the following two groups:

GROUP A

Credits		
CHM 122	General Chemistry II	3
CHM 124	Organic Chemistry II	3
PBB 122	Introduction to Plant Biology II	3
AEB 122	Functional Zoology	4
PHY 124	Electromagnetism & Modern Physics	3

GROUP B

ACC 121	Introduction to Accounting II	3
ECO 121	Principles of Economics II	3
CED 121	Introduction to Business II	3
	Total	**24**
	Grand Total	**46**

200 LEVEL: FIRST SEMESTER

EDU 211	Developmental Psychology	2
EDU 212	Philosophy of Education	2
CSC 211	Structured Programming in Pascal	3
CSC 212	Symbolic Programming in FORTRAN	3
MTH 230	Linear Algebra	3
		13

Minimum of 6 Credits from the following Electives:

1st & 2nd Semesters

PHY 224	Electromagnetism & Electronics	3
MTH 210	Elementary Algebra & Analysis	3
MTH 218	Mathematics Methods I	3
	Total	**19**

SECOND SEMESTER

EDU 221	Education Application of Microcomputers	3
EDU 222	Sociology of Education	2
EDU 223	Instructional Technology	2
CSC 222	Assembly Language Programming I	3
CSC 220	Introduction to Data Processing	3
MTH 227	Introduction Numerical Analysis	3
	Total	**15**
	Grand Total	**34**

300 LEVEL

EDU 300	Supervised Teaching Practice I	3
EDU 311	Curriculum Studies	3
EDU 312	Educational Psychology	2
CSC 312	Assembly Language Programming	3
CSC 325	Compiler Construction	3
CSC 318	Introduction to Formal Languages	3
EDU 313	Integrated Curriculum (Computer Science and Mathematics)	2
CSC 313	Data Structure	3
CED 300	Entrepreneurship	2
	Total	**24**

SECOND SEMESTER

EDU 321	Introduction to Educational Research and Statistics Data Processing and Computer Usage	3
EDU 322	Comparative Education	2
CSC 321	Systems Analysis and Design	3
CSC 328	Discrete Maths, Network & Graph Theory	3
MTH 314	Introduction Operations Research	3
	Total	**14**
	Grand Total	**38**

400 LEVEL	**FIRST SEMESTER**	**Credits**
EDU 400	Supervised-Teaching Practice	3
EDU 411	Measurement & Evaluation	3
EDU 412	Introduction to Education I Management	3
CSC 316	Digital Computer Design	3
CSC 411	Operating Systems	3
CSC 415	Artificial Intelligence	3
CSC 413	Database Management Systems	3
	Total	**21**

SECOND SEMESTER

EDU 421	Guidance & Counselling	3
EDU 499	Professional Seminar/Project	3

CSC 326	Computer Architecture I	3
CSC 422	Concept of Programming Languages	3
	Total	**12**
	Grand Total	**33**

COURSE DESCRIPTION

CSC 110 Introduction to Computing 3 Credits

Status: Core

Course Content:

History of Computers, functional components of a computer, characteristic of a computer, problem-solving, flowcharts and algorithms. The internet. Social, ethical and professional issues of computing, software, hardware and networking development trend. Social application of computing; network communication, internet piracy/crime and computing technologies. Computer applications.

CSC 111 Programming Essentials 3 Credits

Status: Mandatory

Course Content:

System description techniques; flowcharts, algorithms, data flow diagrams, decision tables, etc., program development life cycle, errors. Basic programming: statements, symbolic names; arrays, subscripts expressions and control statements. Introduction to visual basic programming language.

CSC 120 Use of Packages 3 Credits

Status: Core

Course Content:

Aims and objectives of packages, structure of packages, usage and areas of applications of packages, capabilities and limitations of popular packages. Distinction between packages and conventional computer languages. Practical sessions on the use of the following packages:

i) Spreadsheet: Lotus 1-2-3 or MS-Excel
ii) Word Processing: Word Perfect or MS-Word
iii) DBMS: Dbase, MS-Access or Oracle
iv) Design: MS-Power Point or CorelDraw or Auto CAD

CSC 211 Structure Programming in PASCAL 3 Credits

Pre-requisite CSC 110 Status: Core

Course Content:

Definition of Structured Programming, Declarations, Data Types. Programming; operations, built-in functions, strings, pointers, list processing, procedures, multi-tasking. Arithmetic rules and procedures. Structure of Pascal programs. Files in Pascal.

CSC 212 Symbolic Programming in FORTRAN 3 Credits

Pre-requisite CSC 110 Status: Core

Course Content:

Fundamentals of FORTRAN computation, constants, variables. Operations and expressions, function, assignment statement. Coding form, program writing. GO TO, IF, flowcharts, double precision, complex and logical variables subscripts, dimension. File manipulation.

CSC 220 Introduction to Data Processing 3 Credits

Pre-requisite CSC 110 **Status: Core**

Course Content:

Data processing concepts, electronic data processing and computers, files, computer applications, information systems, staffing and system control, communications, the internet, current trends in computing; compute careers.

CSC 222 Assembly Language Programming I 3 Credits

Pre-requisite CSC 110, 211, 212 **Status: Core**

Course Content:

Distinction between high level and assembly language, use of memories. Computer Arithmetic; Number bases, binary, octal, decimal and hexadecimal number representations. Assembly language programming techniques, simple (OS assisted) input/output; data manipulation; program control; bit operations; interrupt handling and subprograms.

CSC 313 Data Structure & Information Manipulation 3 Credits

Pre-requisite CSC 220, 212, 211 **Status: Core**

Course Content:

Data structure and representation. Binary trees, traversal algorithms, recursion, block programming techniques, searching and sorting algorithms, symbol tables and hashing, files: access methods and organizations, internal and external files, other types of trees.

CSC 314 Operations Research 3 Credits

Pre-requisite MTS 230, CSC 212 **Status: Core**

Course Content:

LP Models, simplex method, revised simplex methods and project from inverse; duality theorem. Dual simplex method, integer programming models; parametric programming, special problems. The transportation problem, applications. Game theory 2 person 0-sum game.

CSC 316 Introduction to Digital & Micro-processors 3 Credits

Pre-requisite PHY 224, CSC 211, 212 **Status: Core**

Course Content:

Combinational logic; sequential logic; microprocessors and micro-computers.

CSC 318 Formal Languages & Automata Theory 3 Credits

Pre-requisite CSC 220, 211 **Status: Core**

Course Content:

Meaning of alphabet; string, concatenation; language; level of language. Grammar, parsing. The finite state automata. Turning machines.

CSC 321 Systems Analysis & Design 3 Credits

Pre-requisite CSC 220, 212, 313 **Status: Core**

Course Content:

Planning projects. Feasibility study. System life cycle. Design of computerized systems. Systems installation and maintenance. Decision tables in programming and decision making.

CSC 322 Commercial Programming in COBOL 3 Credits

Pre-requisite CSC 316, 346, PHY 224 **Status: Core**

Course Content:

Memory system: general characteristics of memory operations (Technology-magnetic recording, semi-conductor memory, charged coupled devises, magnetic bubble), memory addressing, memory hierarchy, virtual memory, control systems; hardware computer programmed control, synchronous control, I/O control, introduction to the methodology of fault-tolerant computing.

CSC 325 Compiler Construction 3 Credits

Pre-requisite CSC 312, 318 Status: Core

Course Content:

Logical analysis, lexical and syntactic analysis. Code generation, code optimization, translator-writing systems, general language terminology. Precedence: operator precedence, II-parse, top-down and bottom-up parsing, grammars.

CSC 326 Computer Architecture 3 Credits

Pre-requisite CSC 316 Status: Core

Course Content:

Basic Logic. Data representation; instruction formats, computer architecture; case study; architecture of an actual simple minicomputer. Memory system: general characteristics of memory operation; (Technology-magnetic recording, semi-conductor memory, charged coupled devices, magnetic bubble); memory addressing, memory hierarchy, virtual memory, control systems: hardware computer programmed control, Asynchronous control, I/O control. Introduction to the methodology of fault-tolerant computing.

CSC 328 Discrete Mathematics, Network and Graph 3 Credits

Pre-requisite MTH 230, CSC 211, 212 Status: Core

Course Content:

Graph theory, undirected and directed graphs; partition and distance planar and non-planar graphs. Matrix representation. Applications from network flow; LP and PERT, CPM switching network; shortest path; algebras, algorithms, monoids and machines, lattice and Boolean algebra, groups, combinatorial logic and language.

CSC 411 Operating System 3 Credits

Pre-requisite CSC 220, 312, 326 Status: Core

Course Content:

Design, adapting and implementation of operating systems, deadlock memory management, resource allocation, protection. Applications in actual systems e.g. Primos, UNIX, MS-DOS, XENIX, LINUX, etc.

CSC 413 Database Management Systems 3 Credits

Pre-requisite CSC 313, 321 Status: Mandotory

Course Content:

Database systems development framework; database planning; logical and physical database design. Query processing. Backup and recovery. Concurrency management; performance turning, database security, integrity and control. Database systems architectural frameworks: client/server, distributed and parallel database systems. Object-oriented databases. Knowledge base and database systems. Intelligent database. Data and database administration; data warehouse

database design; web database systems; database programming languages. Current trends in database research and best practice.

CSC 412 Advanced Programming Concepts 3 Credits
Pre-requisite CSC 211, 212, 313 Status: Core

Course Content:

Principles of good programming style, expression; structured programming concepts, control flow, invariant relation of a loop; stepwise refinement of both statement and data: program modularization (bottom-up approach, top-down approach, nested virtual machine approach); language for structured programming, debugging, testing verifying code inspection, semantic analysis. Test construction, program verification, test generation and running.

CSC 415 Artificial Intelligence 3 Credits
Pre-requisite CSC 313 Status: Core

Course Content:

Fundamental proof techniques: State space search: exhaustive, heuristic, performance evaluation. Search decompositions, AND/OR graphs, means-end analysis. Playing games by searching trees. Minimax procedure, pruning: alternative search strategies. Searching and rule base systems. Language for A1 problem solving: Natural language processing. Prescriptive grammar, argument transition networks, transformational grammars. Computer vision systems and image processing: image recognition, threshold and filtering, edge detection, morphology and the search for structure. Neutral networks.

CSC 427 Data Communications and Networks 3 Credits
Pre-requisite CSC 313, 328 Status: Core

Course Content:

Introduction, waves, fourier analysis, measure of communication, channel characteristics, transmission media, noise and distortion, modulation and demodulation, multiplexing TDM, FDM and FCM. Parallel and serial transmission (Synchronous and Asynchronous). Bus characteristics, structures and loop systems, computer networks: topologies, hubs, repeaters, gateways. Examples and design considerations; data switching principles; broadcast techniques; network structure for packet switching, protocols, description of networks e.g. ARPANET, DSC, INTERNET, Worldwide web, etc.

CSC 422 Concept of Programming Language 3 Credits
Pre-requisite CSC 313 Status: Core

Course Content:

Origin of programming languages and characteristics of languages, concept of modern programming languages, design and implementation techniques: object-oriented programming; logic programming; visual programming; parallel programming. Computer optimization and programming languages.

B.Sc.(Ed) INTEGRATED SCIENCE
4 YEAR DEGREE PROGRAMME IN EDUCATION INTEGRATED SCIENCE
100 LEVEL: FIRST SEMESTER
Course Code Course Title Credits
Pre-requisites

EDU 111	History of Education	3
CHM 111	General Chemistry I	3
PHY 109	Practical Physics	2
PHY 111	Mechanics, Thermal Physics & Properties of Matter	3
PBB 111	Introduction to Plant Biology I	3
MTH 110	Algebra and Trigonometry	3
GST 111	Use of English I	2
GST 112	Philosophy & Logic	2
CSC 110	Intro. to Computing	3
	Total	**24**
	SECOND SEMESTER	
EDU 121	General Teaching Methods	3
CHM 122	General Chemistry II	3
PHY 124	Electromagnetism & Modern Physics	4
MTH 123	Vector, Geometry & Statistics	3
PBB 122	Introduction to Plant Biology II	3
GST 121	Uses of English II	2
GST 122	Nigerian People & Culture	2
GST 123	History & Philosophy of Science	2
	Total	**22**
	Grand Total	**46**

200 LEVEL:	**FIRST SEMESTER**	
EDU 211	Development Psychology	2
EDU 212	Philosophy of Education	2
CHM 113	Organic Chemistry I	3
PHY 113	Vibration, Waves & Optics	3
MTH 112	Calculus	3
PBB 113	General Plant Physiology	3
MKS 114	Introduction to Human Biology	3
AEB 111	Introductory Animal and environmental Biology	4
CIT 113	Introduction to Integrated Science	2
	Total	**22**
	SECOND SEMESTER	
EDU 221	Methods of Teaching Chemistry	3
EDU 222	Sociology of Education	2
EDU 223	Instructional Technology	2
CHM124	Organic Chemistry	3
AEB 122	Functional Zoology	4
MTH 125	Differential Equation & Dynamics	3
	Total	**16**
	Grand Total	**38**

300 LEVEL:	**FIRST SEMESTER**	
EDU 300	Supervised-Teaching Practice I	3
EDU 311	Curriculum Studies	3
PBB 315	Whole Plant Physiology	3
EDU 312	Educational Psychology	2
EDU 313	Integrated Curriculum (Science)	2
CHM 211	Organic Chemistry	4
PHY 212	Thermal Physics	2
CED 300	Entrepreneurship	2
MED 211	Family Life Education	3
AEB 211	Environmental Ecology	4
AEB 316	Introduction to Parasitology	4
	Total	**32**
	SECOND SEMESTER	
EDU 321	Introduction to Education Research & Statistics Data Processing & Computer Usage	3
EDU 322	Comparative Education	2
CHM 221	Inorganic Chemistry	4
PBB 224	Introductory Genetics	3
	Total	**12**
	Grand Total	**44**

400 LEVEL:	**FIRST SEMESTER**	
EDU 400	Supervisor Teaching Practice II	3
EDU 411	Measurement & Evaluation	3
EDU 412	Introduction to Education Management	3
CHM 313	Environmental Chemistry	3
PHY 314	Elecromagnetic Theory	2
MED 411	Community & Environmental Health	3
PBB 412	Economic Botany	3
AEB 418	Community & Ecosystem Ecology	4
	Total	**24**
	SECOND SEMESTER	
EDU 421	Guidance & Counselling	3
EDU 499	Project	3
PHY 322	Thermodynamics	2
MED 423	Development of Health Attitudes & Contemporary Issues in Health Education	3
CHM 324	Contemporary Issues in Health Education	3
	Total	**14**
	Grand Total	**38**

B.Sc.(Ed) MATHEMATICS
4-YEAR DEGREE PROGRAMME IN EDUCATION MATHEMATICS

100 LEVEL: FIRST SEMESTER

Course Code	Course Title	Credits
EDU 111	History of Education	3
MTH 110	Algebra & Trigonometry	3
MTH 112	Calculus	3
2 Electives from Chemistry/(Botany/Zoology)		
	Physics or Comparative Science	6
GST 111	Use of English I	2
GST 112	Philosophy & Logic	2
CSC 110	Intro. to Computing	3
	Total	**22**
	SECOND SEMESTER	
EDU 121	General Teaching Method	3
MTH 123	Vectors, Geometry & Statistics	3
MTH 125	Differential Equations & Dynamics	3
2 Electives from either Chemistry, Botany/Zoology,		
	Physics or Social Science 6	
GST 121	Use of English II	2
GST 122	Nigerian Peoples & Culture	2
GST 123	History & Philosophy of Science	2
	Total	**21**
	Grand Total	**43**

200 LEVEL: FIRST SEMESTER

EDU 211	Developmental Psychology	2	
EDU 212	Philosophy of Education	2	
MTH 210	Elementary Algebra & Analysis	3	
MTH 230	Linear Algebra	3	
MTH 212	Real Analysis I	3	
MTH 218	Mathematical Methods I	3	**Total**
	16		
	SECOND SEMESTER		
EDU 221	Mathematics Methods	2	
EDU 222	Sociology of Education	2	
EDU 223	Instructional Technology	2	
MTH 220	Algebra	3	
MTH 222	Real Analysis II	3	
MTH 125	Differential Equations & Dynamics	3	
MTH 242	Further Analysis	3	
	Total	**18**	
	Grand Total	**34**	

300 LEVEL FIRST SEMESTER

EDU 300	Supervised Teaching Practical	3
EDU 311	Curriculum Studies	3
EDU 312	Educational Psychology	2
EDU 313	Integrated Curriculum (Computer Science and Mathematics)	2
MTH 213	Vector Analysis	3
MTH 219	Statistics	3
MTH 312	Real Analysis III	3
CSC 212	Symbolic Programming in FORTRAN	3
CED 300	Entrepreneurship	2
	Total	**24**

	SECOND SEMESTER	
EDU 321	Introduction to Educational Research & Statistics Data Processing and Computer Usage	3
EDU 322	Comparative Education	3
MTH 240	Number Theory	3
MTH 228	Mathematical Methods II	3
MTH 227	Introduction to Numerical Analysis	3
MTH 229	Applied Statistical Methods	3
	Total	**18**
	Grand Total	**42**

400 LEVEL	**FIRST SEMESTER**	
EDU 400	Supervised Teaching Practice II	3
EDU 411	Measurement & Evaluation	3
EDU 412	Introduction to Educational Management	3
MTH313	Complex Analysis I	3
MTH315	Dynamics of a Rigid Body	3
MTH 319	Probability Distributions	3
	Total	**18**

	SECOND SEMESTER	
EDU 421	Guidance & Counselling	3
EDU 499	Project	3
MTH 323	Complex Analysis II	3
MTH 328	Mathematics Methods II	3
MTH 329	Statistical Inference I	3
MTH 336	Vector Field Theory	3
	Total	**18**
	Grand Total	**36**

COURSE DESCRIPTION

MTH 110 (3 Credits) Algebra & Trigonometry (1st Semester)

Real number system. Simple definition of integers, rational and irrational numbers. The principle of mathematical induction. Real sequences and series: elementary notions of convergence of geometric, arithmetic and other simple series. Theory of quadratic equations.

Simple inequalities: absolute value and the triangle inequality. Identities partial fractions. Sets and subsets; union, intersection, complements. Properties of some binary operation of sets distributive, closure, associative, commutative laws with examples. Relation in a set equivalent relation. Properties of set functions and inverse set functions. Permutations and angels of any magnitude. Addition and factor formulae. Complex numbers. Algebra of complex numbers, the suitability A, B, C, D, E, F.

MTH 112 (3 Credits) Calculus (1st Semester)

Elementary functions of a single real variable and their graphs, limits and the idea of continuity graphs of simple functions. Polynomial, rational trigonometric, etc. rate of change, tangent and normal to a curve.

Differentiation as limit of rate of change of elementary functions, product, quotients, function of function rules. Implicit differentiation, differentiation of trigonometric, inverse trigonometric functions and of exponential functions. Logarithms and parametric differentiation. Use of binomial expansion for any index.

Stationary values of simple functions: maxima, minima and points of inflexion, are of surface of revolution.

Integration as an inverse of differentiation. Integration of harder functions: integration by substitution and by parts. Define integrals: volume of revolution, area of surface of revolution. Suitability A, B, C, D, E, F.

MTH 123 (3 Credits) Vectors and Geometry (2nd Semester)

Types of vectors: points, line and relative vectors, geometrical representation of vectors in 1-3 dimension. Addition of vectors and multiplication by a scalar. Components vectors in 1-3 dimension, direction cosines. Linear independence of vectors. Point of division of a line.

Scalar and vector products of two vectors. Simple applications. Two-dimensional coordinate geometry: straight lines, angle between two lines, distance between points. Equation of circle. Tangent and normal to a circle.

Properties of parabola ellipse, hyperbola straight lines and planes in space; direction cosines; angle between lines and between lines and planes, distance of a point from a plane; suitability A, B, C, D, E, F.

MTH 125 (3 Credits) Differential Equations and Dynamics (2nd Semester)

Differential equation: Formation of differential equations. Differential equation of 1st degree and 1st order of the type; variables separable, exact, homogenous and linear differential equation of the second order with constant coefficients of the form.

$$a\frac{d^2y}{dx^2} + b\frac{dy}{dx} + cy = 0$$

Dynamics

Resume of simple kinematics of a particle. Differentiation and integration of vectors w.r.t. scalar variable. Application to radial and transverse, normal and tangential components of velocity and acceleration of a particle moving in a place force momentum and laws of motion; law of conservation of linear momentum. Motion under gravity, projectiles. Simple cases of resisted

vertical motion on the surface of rough inclined planes. Angular momentum. Motion in a circle (horizontal and vertical). Law of conservation of angular momentum.

Application of the law of conservation of energy. Work, power and energy. Description of simple harmonic motion (SHM). SHM of a particle attached to an elastic string or spring. The simple pendulum. Impulse and change in momentum. Direct impact of two smooth spheres, and of a sphere on a smooth plane.

Rigid body motion; moments of inertia, parallel and perpendicular axes theorem. Motion of a rigid body in a plane with one point fixed compound pendulum. Reactions at the pivot. Pure rolling motion of a rigid body along a straight line. Suitability A,B,C,D,E,F.

MTH 129 (3 Credits) Elementary Statistics (2nd Semester)

Introduction of statistics diagrammatic representation of descriptive data. Measures of location and dispersion for ungrouped data. Grouped distribution measure of location and dispersion for grouped data. Problem of grouping. Associated graphs. Introduction to probability simple space and events, addition law, use of permutation and combination in evaluation probability. Binomial distribution. Linear correlation; scatter diagram, moment and rank correlation, linear regression; suitability A,B,C,D,E,F.

200 LEVEL

MTH 210 (3 Credits) Elementary Algebra & Analysis (1st Semester)

Elements of set theory. Quadratic equations. Graph of simple functions; polynomials, logarithmic and trigonometric. Matrices; addition, multiplication and inverse. Solution of equation in three unknowns. Trigonometrical ratios. Sums of angles. Small angles, solution of triangles.

Differentiation and integration: area and volume of revolution of solids. Descriptive statistics, means, median, mode and standard deviation, frequency distribution and related graphs; suitability; biochemistry, pharmacy, botany, zoology and microbiology.

MTH 212 (3 Credits) Real Analysis I (1st Semester)

Limits, sum, products, quotient of limits. Convergence of sequence and series of real numbers. Tests for convergence of series of non-negative terms. Absolute and conditional convergence. Alternating series. Brackets, rearrangement, Cauchy multiplication. Continuity, uniform continually. Monotonic functions. Differentiability, rolle's and mean value theorems for differentiable functions. Taylor series. Indeterminate forms.

Pre-requisite: MTH110, MTH112

Suitability: A, B, C, D, E, F.

MTH 213 (3 Credits) Vector Analysis (1st Semester)

Elementary vector algebra, vector and triple vector products. Solution of vector equations. Plane curves and space curves. Serret-ternet differential definition of grad, div and curl. Simple applications.

Pre-requisite: MTH110, MTH125

Suitability: A, E, F.

MTH 214 (3 Credits) Introduction to Operation Research (1st Semester)

Concept of or history of or roles of or in industries. Types of models. Introduction to or techniques. LP (problem formulation and graphical methods of solving LP). Feasible and infeasible region. Integra programming (graphical methods only). Concept of queuing system use of M/M/I and M/M/2 formulae (excluding derivation).

Elements of network. Analysis. Use of forward and backward pass. Application of expected value criteria and decision tree analysis in decision making.

Pre-requisite: MTH110

Suitability: B, C, D.

MTH 215 (3 Credits) Social Mathematics (1st Semester)

Set: Introduction to sets; definition, subsets, intersection and union. Indices and logarithms: definition of an index for all real number, laws of indices, meaning of logarithms: laws of logarithms. Polynomials and inequalities. Idea of function. Solution of polynomial equations up to quadratic. Inequalities. Absolute values. Solution of inequalities. Binomial series. The use in approximation.

Matrices

Introduction to matrices: addition, multiplication and inverse if a matrix. Use in solving simultaneous linear equations.

Co-ordinate Geometry

Cartesian co-ordinate: distance between points, equation of a straight line in the form $y = mx + c$. Identifying m and c from various situation intersection of two straight lines. Use in deriving experimental laws. Plotting graphs, polynomials. Use involving equations. Graphical solutions or linear programming.

Calculus

Derivative as slope of a curve at a point. Rules of differentiation. Stationary point and their identification curve sketching. Integration as inverse of differentiation. Indefinite and definite integrals. Areas.

Suitability: Social Science and Arts Faculties

MTH 218 (3 Credits) Mathematics Methods I (1st Semester)

Some techniques on integration; by substitution by parts and partial fraction. Differentiation; reduction formula, partial differentiations, applications and classification of critical points of functions of two variables. Lagrangian multiples, coordinate system: change from Cartesian to polar, spherical and cylindrical coordinate systems. Taylor's and Maclaurin's series. Differential coefficients of the nth order. Liebntiz's rule; application to the solution of differential equations.

Complex numbers; hyperbolic functions, De Moivre's theorem. Roots of complex numbers roots of polynomials, exponential form. Functions of complex variables.

Pre-requisite: MTH110, MTH125

Suitability: A, B, C, D, E, F.

MTH 219 (3 Credits) Statistics (1st Semester)

Regression and correlation: least squares estimation of simple linear regression, interpretation of regression coefficient; use of regression. The product-moment and rank correlation their interpretation and use. Elementary time-series analysis.

Probability: finite sample space, axioms of probability, simple theorems, concepts of probability addition and multiplication rules, conditional probability and independence, tree diagrams, Bayes' theorem combinatorial analysis. Probability distributions: random variables, means variances, binomial, hypergeometric poisson normal distributions.

Pre-requisite: MTH110, MTH125

Suitability: B,C,D.

MTH 230 (3 Credits) Algebra (1st Semester)

Set Theory, Cartestian products. Mappings. Vectors space; basis, dimension, linear mappings. Matrices; algebra of matrices, determinants, inverse, rank. Solvability of system of linear equations. Symmetric and skew-symmetric. Quadratic forms. Eigen-values.

Pre-requisite: MTH110

Co-requisite: MTH210
Suitability: A, B, C, D, E, F.

MTH 220 (3 Credits) Algebra (2nd Semester)

Groups, subgroups, normal subgroups. Permutation groups. Homomorphism, rings, integral domains. Fields. Unique factorization domain; irreducible polynomials ideals.
Pre-requisite: MTH110
Suitability: A, B, C, D, E, F.

MTH 221 (3 Credits) Algebra Mathematics II (2nd Semester)

Simple series: Taylor binomial exponential: logarithmic and trigonometric: Simple 1st and 2nd order differential equations with constant coefficients. Complex numbers algebra of complex numbers, the argand diagram. Introduction to probability binomial, poisson and normal distributions. Introduction to large sample estimates and tests using normal distribution. Linear regression and correlation.
Suitability: Biochemistry, Pharmacy Botany, Zoology and Microbiology.

MTH 222 (3 Credits) Real Analysis II (2nd Semester)

Uniform continuity, monotone functions. Riemann integration. Fundamental theorem of calculus. Improper and infinite integrals. Special function of analysis. Exponential, logarithmic and trigonometric functions.
Co-requisite: MTH 212
Suitability: A, B, C, D, E, F.

MTH 223 (3 Credits) Dynamics of a Particle (2nd Semester)

Motion of a particle in a resisting medium, harder problems. Forced oscillations. Plane motion of a particle in (r,O), (s,O), (p,r) coordinates. Harden, examples on cases of projectiles. Gravitating particles. Changing mass.
Pre-requisite: MTH 123, MTH125
Suitability: A, E, F.

MTH 227 (3 Credits) Introductory Numerical Analysis (2nd Semester)

Introduction to numerical computation: Solution of non-linear equations. Solution of simultaneous linear equation. Direct and iterative schemes; finite difference operators. Interpolation and approximation: Numerical differentiation and quadrature numerical solution of ordinary differential equations. Curve fitting and least squares. Introduction to linear programming.
Pre-requisite: MTH110, MTH112
Suitability: B, C, D.

MTH 228 (3 Credits) Mathematic Methods II (2nd Semester)

Differential equations: Exact differential equations, in homogeneous second order differential equations, rigorous treatment of D – operator and application to integrations by parts. Series development of differential equation. Fourier series and application. Partial differential equations. Separation of variables. Fourier method of solution.
Suitability: A, B, C, D, E, F.
Pre-requisite: MTH110, MTH125

MTH 229 (3 Credits) Applied Statistical Methods (2nd Semester)

Revision of descriptive statistics: measures of location and dispersion, graphical representation of data. Inference about means proportions and standard deviation: large and small samples. The chi-square test of independence and goodness of fit. One way analysis of variance. Correlation and regression: tests of simple regression and correlation coefficients. Estimation and

prediction in multiple regressions. Use of calculators, table and statistical packages. Introductory inference, calculators, table and statistical packages. Introductory inference. Meaning and existence of sampling distribution, sampling distribution of the mean and proportion in sample, point and interval estimation of means and proportions, simple hypothesis testing.
Suitability: B, C, D.
Note: This course is a practical course of all other statistics courses. It is also a course for all students and staff members who need and/or use statistics in their research.

MTH 240 (3 Credits) Number Theory (2nd Semester)

Prime number. Theory of convergence. Quadratic resides. Reciprocity theorem. Arithmetical functions. Partitions.
Pre-requisite: MTH 110

MTH 242 (3 Credits) Further Analysis (2nd Semester)

The real number system. Dedekind cut, bounds of real number. Archimedean property of real numbers. Extended real number system. Topology of the real line. Absolute and conditional convergence of series. Brackets real-arrangements. Cauchy multiplication. Lim inf criterion for convergence. Bolzam Weierstrass theorem. Completeness of real number. Lim inf and lim. Sup of subsets of real numbers. Power series. Enumerable and non-enumerable sets.
Co-requisite: MTH 212
Suitability: A.

300 LEVEL

MTH 310 (3 Credits) Abstract Analysis (1st Semester)

Group. Legrange's theorem. Lsomorphism theorem. Cayley's theorem Sylow theorems Direct products. Fundamental theorem of abelian groups. Extension of fields.
Pre-requisite: MTH 220
Suitability: A.

MTH 311 (3 Credits) History of Mathematics (1st Semester)

Mathematics in ancients civilizations, Babylonians, Egyptian and Greek mathematics Development of Mathematics in Europe. Solution of cubic and quadratic equation. Invention the calculus and coordinate geometry. Non-ecludean geometry. Biographical sketches of famous Mathematics. Present day trends in Mathematics.

MTH 312 (3 Credits) Real Analysis III (1st Semester)

Double limits. Double sequences and series. Limits and continuous functions of several variables. Derivatives of functions of several variables. Taylor's theorem. Inverse functions and implicit function theorems.
Pre-requisites: MTH 212
Suitability: A, B, C, D, E, F.

MTH 313 (3 Credits) Complex Analysis I (1st Semester)

Functions of a complex variable polynomials, rational trigonometric logarithmic functions and their inverses. Branch points. Riemann surface convergence of sequences and series absolute and uniform convergence. Limit and continuity of a continuity of a complex – valued function of

a complex variable. Differentiation, complex derivative. Dauchy-Rilemann equations. Analytic functions. Introduction to conformal mapping.
Pre-requisites: MTH 222
Suitability: A, B, C, D, E, F.

MTH 314 (3 Credits) Introduction Operations Research (1st Semester)

Phases of operation Research study. Classification of operation research models linear. Programming simplex, big m. two phase simple, dual simples and the revised simplex methods, integer linear programming pure and mixed cases by Gomory Algorithm and Branch and Bound Dynamic programming decision theory. Inventory models critical path analysis and project controls.
Pre-requisites: MTH 214
Suitability: A, B, C, D, E, F.

MTH 315 (3 Credits) Dynamic of a Rigid Body (1st Semester)

General motion of a rigid body as a translation plus a rotation. Moment and products of inertia in 3 dimension. Parallel and perpendicular axes theorems. Principal axes, angular momentum, kinetic energy of a rigid body. Impulsive motion. Examples involving one and two dimensional motion of simple systems.

Moving frames of reference rotating and translating frames of reference Coriolis force. Motion near the earth's surface. The foucault's pendulum.

Euler's dynamical equations for motion of a rigid body with one point fixed. The symmetrical top, precession.
Suitability: A
Pre-requisites: MTH 223

MTH 316 (3 Credits) Electricity and Magnetism (1st Semester)

Electrostatics; the electrostatic field of force conductivity, conductors and condensers, continuous distributions. Method of images. Dielecrics, electro-static stress and energy. Direct current circuits. Magnetism; magnetic materials. The energy and interaction between two dipoles. Induced magnetism. Magnetostatics, origin of magnetic field. Magnetic interaction of currents. The vector potential. Biot Savart law. Solenloid. Magnetic field of current sheets. Magnetic energy coefficients of self and mutual inductions, energy of assembly of circuits. Electromagnetism electro-magnetic induction in one or two circuits involving condensers. Maxwell's equations.
Suitability: A
Pre-requisite: MTH 234

MTH 317 (3 Credits) Numerical Linear Algebra (1st Semester)

Introduction to basic concepts of linear algebra. Pivoting strategies Gaussian elimination. Compact schemes for caussian elimination. Special matrices; symmetric positive-definite matrices, banded matrices. Error analysis for linear systems. Iterative methods. Over-determined linear systems. Computation of eigen-values and eigenvectors.
Suitability: A, B, C, D, E, F.
Pre-requisite: MTH 110, 112

MTH 319 (3 Credits) Probability Distributions (1st Semester)

Discrete and continuous probability distributions. Mathematical expectation and moments of random variable. Moments generating functions.

The binomial, posson, geometric, hypergeometric and negative binomial distributions. The normal, uniform gamma and beta distributions. The central limit theorem (proof by mgf.).

Functions of a univariable random variables. Bivariate distribution. Independence. Sums of independent random variables.
Suitability: B, C, D.
Pre-requisite: MTH 219

MTH 330 (3 Credits) Mathematical Logic (1st Semester)

Rules of inference. Propositional calculus. Quantifiers; abstract objects. Axiomatic methods. Proof writing. Problem solving. Truth tables. Tautologies. Logic circuits. Axiomatization, the deduction and completeness theorems. Predicate logic interpretations. Truth models. First order theories. Skolem-Lowenhein theorem. Equality.
Pre-requisite: MTH 210

MTH 332 (3 Credits) Topology I (1st Semester)

Metric space. Topological spaces, open and closed sets, closure, interior, boundary and exterior points of a set. Neighbourhoods, subsurfaces and induced topologies. Coarser and finer topologies. Bases and subbases. Continuity and homeomorphism. Separation axions. Hausdorff. Regular, normal spaces.
Pre-requisite: MTH 212
Suitability: A

MTH 336 (3 Credits) Vector Field Theory (1st Semester)

Gradient, divergence and curl: further treatment and application of the differential definitions. The integral definition of gradient, divergence and curl. Line, surface and volume integrals. Green's Gauss' and Stoke's theorems. Curvilinear coordinates. Simple notion of tensors. The use of tensor notation.
Pre-requisite: MTH 213
Suitability: A

MTH 320 (3 Credits) Abstract Algebra II (2nd Semester)

Vectors functions of a real variable. Boundedness. Limits, continuity and differentiability. Functions of class C'. Taylor's formulae. Analytic functions. Curves: regular differentiable and smooth. Curvature and Torsion. Tangent line and normal plane.

Vector functions of a vector variable; linear continuity and limits. Directional derivatives. Differentiable functions and functions of class C'. Taylor's theorem and inverse function theorem. Concept of a surface parametric representation, tangent plane and normal lines Topological properties of simple surfaces.
Pre-requisite: MTH 212
Suitability: A

MTH 322 (3 Credits) Real Analysis IV (2nd Semester)

Riemann-satieties integration functions of bounded variation. Uniform convergence sufficient condition for uniform convergence sums, term by term differentiation and integration of a series of functions. Power series. Uniform continuity weirestrass approximation theorem.

Multiple integrals. Existence and evaluation by repeated integration. Change of variables.
Suitability: A, B, C, D, E, F.
Pre-requisite: MTH 222

MTH 323 (3 Credits) Complex Analysis IV (2nd Semester)

Integration; curves, Jordan curve theorem, riemann integration along smooth curves. Csuchy's theorem (proof for any closed polygon) and consequences e.g. Cauch's integral formulae and related theorems; Morera's theorem, Cauchy's inequality. Liouville's theorem. Singularies, Laurent's theorem, residue theorem and application to evaluation of integrals and summation of

series. Maximum modules principles. Schwartz's lemma, the argument theorem, Rouche's theorem, the fundamental theorem of algebra. Introduction to analytic continuation.
Suitability: A, B, C, D, E, F.

MTH 324 (3 Credits) Mathematical Modeling (2nd Semester)

Methodology of model building; identification, formulation, and solution of problems, cause-effect diagrams. Equation types: Algebraic, ordinary differential equations, partial differential equations, difference, integral and functional equations, application of Mathematical models to physical, Biological, Social and Behavioural Sciences.
Suitability: B, C, D.

MTH 325 (3 Credits) Analytical Dynamics (2nd Semester)

Degrees of freedom. Holonomic and non-holonomic constrains. Generalized coordinates. Legrange's equations for holonomic system, force dependent on coordinates only, force obtainable from a potential.

Impulsive multiplier ariation for non-holonomic systems. Larange's multipliers. Variation principles. Calculus of variation, hamilton's principle. Legrange's equation from hamilton's principles.

Canonical transformations. Normal modes of vibrations. Hamilton-Jacobi equations.
Pre-requisite: MTH 225
Suitability: A

MTH 326 (3 Credits) Fluid Dynamics (2nd Semester)

Real and ideal fluids. Differentiation following the motion of fluid particles. Equations 0 motion and continuity for incompressible inviscid fluids. Velocity potentials and stoke's stream functions. Bermoulli's equation with application to flow along curved paths. Kinetic energy. Sources, sinks, doublets in 2 and 3-dimensions, limiting stream lines. Images in rigid infinite plane.
Pre-requisite: MTH 213
Suitability: A

MTH 328 (3 Credits) Mathematical Methods III (2nd Semester)

Special operators: Hermitian, projection and unitary operators. Eigenvalues and eigenvectors: use of net and bra-notation. Infinite dimensional vector space; the classical orthogonal polynomials (Legendie. Hermite and Laguerre polynomials). Rodrigue's formula. Special functions: gemina and beta functions. Bessel functions.

Elementary properties of the hypergeometric function, detailed treatment of multiple integrals. General theory of operators, finite dimensional representations of operators, diagonalization of operators. Special theory functions of operators. Integral and differential operators.
Pre-requisite: MTH 218
Suitability: A, B, C, D, E, F.

MTH 329 (3 Credits) Statistical Inference I (2nd Semester)

Principles and methods of estimation, methods and maximum like hood. Use of unbiasedness and minimum variance in selecting good estimator. Interval estimation. Derivation of point and interval estimators of means, proportions and standard deviations.

Principle of hypothesis testing; type I and II errors. Power curve-values. The s.t. chi-square and f-tests. Use of non-parametric tests: the sign and median tests. Wilcoxon two sample rank test.

Analysis of variance: two analysis. Quality control; acceptance sampling, control chart, cumulative-sum techniques.
Pre-requisite: MTH 219, MTH 229
Co-requisite: MTH 319
Suitability: B, C, D.

MTH 340 (3 Credits) Differential Geometry I (2nd Semester)

Vector functions of real variable. Boundedness; Limits, continuity and differentiability functions of class C-Taylor's theorem and inverse function theorem. Concept of a surface parameteric representation, tangent plane and normal lines. Topological properties of simple surfaces.
Pre-requisite: MTH 212

MTH 342 (3 Credits) Topology II (2nd Semester)

Separation axions. Hausdorff, regular, completely regular and normal spaces. Compactness, local compactness, connectedness. Product spaces. Completeness in metric spaces.
Pre-requisite: MTH 212
Co-requisite: MTH 332
Suitability: A

B.Sc.(Ed) PHYSICS

4 YEAR DEGREE PROGRAMME IN EDUCATION PHYSICS

100 LEVEL	**FIRST SEMESTER**	**CREDITS**
EDU 111	History of Education	3
PHY109	Practical Physics	0
PHY 111	Mechanics, Thermal Physics and Properties of Matter	3
PHY 113	Vibration, Waves and Optics	3
MTH 110	Algebra and Trigonometry	3
MTH 112	Calculus	3
CHM 111	General Chemistry I	3
GST 111	Use of English I	2
GST 112	Philosophy & Logic	2
CSC 110	Instruction to Computing	3
	Total	**25**

SECOND SEMESTER

EDU 121	General Teaching Methods	3
PHY 109	Practical Physics	2
PHY 124	Electromagnetism and Modern Physics	4
MTH 123	Vector, Geometry and Statistics	3
MTH 125	Differential Equation and Dynamics	3
CHM 122	General Chemistry II	3
GST 121	Use of English II	2
GST 122	Nigerian People & Culture	2
GST 123	History & Philosophy of Science	2
	Total	**24**
	Grand Total	**49**

200 LEVEL	**FIRST SEMESTER**	
EDU 211	Developmental Psychology	2
EDU 212	Philosophy of Education	2
PHY 209	Practical Physics	0
PHY 211	Mechanics	2
PHY 212	Thermal Physics	2
PHY 215	Atomic and Nuclear Physics	2
MTH 218	Mathematical Methods	3
MTH 213	Vector Analysis	3
	Total	**18**
	SECOND SEMESTER	
EDU 221	Methods of Teaching Physics	3
EDU 222	Sociology of Education	2
EDU 223	Instructional Technology	2
PHY 209	Practical Physics	2
PHY 223	Waves and Optics	2
PHY 224	Electromagnetism and Electronic	3
MTH227	1 Elective from Mathematics	3
	Total	**16**
	Grand Total	**34**
300 LEVEL	**FIRST SEMESTER**	
EDU 300	Supervised Teaching Practice I	3
EDU 311	Curriculum Studies	3
EDU 312	Educational Psychology	2
EDU 313	Integrated Curriculum (Science)	2
PHY 309	Practical Physics	2
PHY 311	Quantum Mechanics	2
PHY 314	Electromagnetic Theory	2
PHY 318	Solid State Physics	2
MTH 328	Mathematical Methods	2
CED 300	Entrepreneurship	2
	Total	**23**
	SECOND SEMESTER	
EDU 321	Introduction to Education Research & Statistics Data Processing & Computer Usage	3
EDU 322	Comparative Education	3
PHY 309	Practical Physics	2
PHY 322	Thermodynamics	2
PHY 323	Waves and Optics	2

PHY 325	Atomic and Nuclear Physics	2
PHY 326	Electronics	2
PHY 329	Mathematics Physics	3
	Total	**19**
	Grand Total	**42**

400 LEVEL: FIRST SEMESTER

EDU 400	Supervisor Teaching Practice II	3
EDU 411	Measurement and Evaluation	3
EDU 412	Introduction to Education Management	3
PHY 412	Statistical Physics	2
PHY 414	Electromagnetic Theory	2
PHY 415	Nuclear Physics	2
PHY 416	Electronics	2
PHY 418	Solid State Physics	2
	Total	**19**

SECOND SEMESTER

EDU 421	Guidance and Counseling	3
EDU 499	Project	3
PHY 421	Quantum Theory	2
PHY 423	Modern Physics	2
PHY 427	Spectroscopy	2
MTH 336	Vector Field Theory	3
	Total	**15**
	Grand Total	**34**

COURSE DESCRIPTION

PHY 109- PRACTICAL PHYSICS (2 CREDITS)

Students are expected to carry out a minimum of 12 major experiments covering the main aspects of the courses taken in the year.

Pre-requisite: WASC, GCE O'LEVEL, WAEC/SSCE or NECO SSCE.

PHY 111- MECHANICS, THERMAL PHYSICS AND PROPS OF MATTER (3 CREDITS)

a) Mechanics

Scalars and vectors: Addition and resolution and of vectors. Rectilinear motion and Newton's law of motion. Inertial mass and gravitational mass; free fall; projectile. Motion, deflecting forces and circular motion. Newton's law of gravitation: satellites, escape velocity. Gravitational potential well; special case of circular motion. Momentum and the conversation of a momentum. Work, power energy; units, potential energy for a gravitational field and elastic bodies, kinetic energy conservation of energy: energy stored in a rotating body. Kinetic energy in elastic and inelastic collisions.

b) Thermal Physics and Properties of Matters

Temperature. Heat, work, heat capacities; second law, carrot cycle; thermohynamic ideal gas temperature scale. Thermal conductivity; radiation; black body and energy spectrum. Stefan's law.

Kinetic model of a gas: Equation of state, concept of diffusion mean free path. Molecular speeds. Avagadro's number, behavior of real gases.
A model for a solid; inter-particle forces in solids, liquids and gases; physical properties of solids. Crystalline structure. Close packing orderly arrangements, elastic deformation of an ordered structure; interference patterns and crystals. Model for matter; surface energy and surface tension, plastic deformation; thermal and electrical properties of metals.
Pre-requisite: WASC, GCE O'LEVEL, WASC SSCE or NECO SSCE

PHY 113- VIBRATIONS WAVES AND OPTICS (3 CREDITS)

Periodic motion of an oscillator; Velocity and acceleration of a sinusoidal oscillation. Equation of motion of a simple harmonic oscillator; damped oscillations, forced oscillations, resonance; propagation of longitudinal and transverse vibrations.
Wave behavior; Reflection of waves, stationary waves, propagation of straight and circular pulses; Fiber optics, diffraction, refraction, dispersion, interference, coherence, polarization.
Wave and light; mirrors, lenses, formation of images, lenses in contact microscope, telescope: Chromatic and spherical aberrations and their reduction. Dispersion by prisms; relation between colour and wavelength; spectra.

PHY 124- ELECTROMAGNETISM AND MODERN PHYSICS (4 CREDITS)

a) Electromagnetism (3 Credit) Electric field: strength. Flux and the inverse square law: electrostatic force between two charge particles; flux model for the electric field. Energy stored in an electric field, electrical potential due to dipole.
Steady direct current: Simple circuits; potential difference, resistance, power electromotive force, Kirchhorffs laws; potential divider, slide-wire potentiometer, bridege circuits, combing resistances.
Capacitors; capacitance, combination of dielectrics, energy store charging/discharging. Electromagnetic effects; Electromagnetic forces, electric motors, moving coil galvanometer, ammeter, voltmeter, electromagnetic induction, dynamo.
Alternating currents: Simple A.C. circuit, transformers, motors and alternating currents. Magnetic field: The field at the centre of a current-carrying flat coil, of a current carrying solenoid, outside a long solenoid; flux model and magnetic fields.
Electromagnetic Induction: Induction in a magnetic field: magnitude and direction of induced e.m.f., energy stored in a magnetic field; self-inductance.
Electricity and matter; Current flow in an electrolyte, Millikan experiment; conduction of electricity at law pressure, cathode rays, photoelectricity.
b) Modern Physics (1 Credit): Structure of atom: Atomic theory, x-rays, Planck's quantum theory; wave particle nature of matter, scattering experiment of Geiger and Matshen, Rutherford atom model, Bohr's atom model. Structure of nucleus: composition of nucleus, artificial transmutation of an element, natural transmutation of an element, discovery of neutron particle, emission, isotopes and particles emission, gamma radiation.
Pre-requisite: WASC.GCE/O'LEVEL, WASC SSCE, NECO/SSCE

PHY 209- PRACTICAL PHYSICS (2 CREDITS)

Students are expected to carry out a minimum of 12 major experiments covering main aspects of the courses taken in the year.
Pre-requisites: GCE A-Level or PHY 100

PHY 211- MECHANICS (2 CREDITS)

Elements of Newtonian mechanics, particle motion including projectiles momentum and energy theorems, time and space dependent forces, oscillators electron under central force, motion of

system of particles, rigid body motion. Lagrange's equation with some applications, viscosity, streamline flow. potsenille's equation and application venturimeter.
Pre-requisite: GCE Level or PHY 111

PHY 212- THERMAL PHYSICS (2 CREDITS)

Heat, work, temperature, first law of thermodynamics, latent, change of state, kinetic theory of gases, prefect and imperfect gases, van der waal's and viral equations. Joule-Thomson process. Thermal expansion, specific heats of solids and liquids.
Pre-requisite: GCE A'LEVEL or PHY 111

PHY 215- ATOMIC AND NUCLEAR PHYSICS (2 CREDITS)

Electronic structure of atoms, atomic models, quantum oscillator, energy quantization. Bohr's atom model, energy level diagrams, Bohr's correspondence principle, the motion of the nucleus, the reduced mass, nuclear size, binding energy of nuclei, natural and article radioactivity. Transformations, radioactive series, nuclear isomers-particle disintegration energy range, particle decay B-ray spectra.
Pre-requisite: GCE A'Level or PHY 124

PHY 223- WAVES AND OPTICS (2 CREDITS)

General wave equation, transverse wave in strings, longitudinal waves in rods and columns acoustic plane waves, superposition of waves, reflection and refraction of waves at boundaries, standing waves, waves in a dispersive medium, coherent wave optical path difference, interference of light waves. Young's double slit, Fresnel biprism and other apparatus depending on division of wave front. Thin film, parallel and wedge shaped films. Fizeau and Haidinger fringes.
Pre-requisite: GCE A-Level or PHY 113

PHY 224- ELECTROMAGNETISM AND ELECTRONICS (3 CREDITS)

a) Electroniagnetism (2 credit). Electrostatics, steady currents and their measurements, magnetic effect currents. Electrostatic induction, moving coil galvanometer including ballistic use. Alternating current, transformers, Eddy currents and hysteres Circuit theory Lransienti.
b) Electronics (1 Credit). Vacuum tubes, diode, triode, tetrode and pentode, application of valve semiconductors. Junction diodes, transistor applications.
Pre-requisite: GCE A-Level or PHY 124

PHY 309- PRACTICAL PHYSICS (4 CREDITS)

Students are expected to carry out a minimum of 12 major experiments covering the main aspects of the courses taken in the year.
Pre-requisite: PHY 209

PHY 311- QUANTUM MECHANICS (2 CREDITS)

The inadequacy of classical physics, basic postulates of quantum theory, elements of wave mechanics, the uncertainty principle, Schrodinger's equation arid exact solution for some simple physical systems including harmonic oscillator and hydrogen atom.
Pre-requisite: PHY 211, PHY 215

PHY 314- ELECTROMAGNETIC THEORY (2 CREDITS)

Review of vector analysis, poisson and laplace equation, electrical images, current and magnetic field interactions, magnetic properties, transients, alternating current analysis, time varying electromagnetic machinery.
Pre-requisite: PHY 224

PHY 315- METALLURGY AND MATERIALS SCIENCE (2 CREDITS)

Atomic bonding and crystal structure: Bounding in solids, crystal structures, lattices, plances and direction. Imperfections in solids: point, line and planer defects, amorphous materials. Practical determination of structure: x-ray diffraction techniques, preferred orientation in plycrystalline, metals, x-rays topography, application to polymers, other techniques of investigations, field-ion microscopy, infrared spectroscopy, observation of dislocations by etching and decoration. Alloys and phase diagrams: Rule of alloy formation, interpretation of phase diagrams, brief introduction to quantitative metallography, mechanical properties: Mechanical testing, electric/plastic behavior, fracture, strengthening mechanisms, creep/fatigue of metals and polymers. Electrical properties of solids. Dielectric! Piezoelectric properties of materials magnetic/optical properties of materials. Technological polymers.

PHY 316- BIOPHYSICS (2 CREDITS)

Biomechanics: Elastic and electrical properties of bone and its component tissues: Bone fracture. Friction and lubrication. Diffusion transport across membranes. Biophysical techniques: x-ray diffraction, microscopy, spectroscopy, electron spin resonance and nuclear magnetic resonance.
Ultrasonic: production and physical effects, pulsed and continuous wave ultrasound. Biological and industrial applications. Power measurements.

PHY 317- GEOPHYSICS (2 CREDITS)

The cart Ws internal structure. Fundamentals of Seismic, gravity, magnetic, electrical, radioactive and geothermal methods of exploration. Instrumentation.

PHY 318- SOLID STATE PHYSICS (2 CREDITS)

Interatomic forces and classification of solids; ionic, covalent and metallic bonding. Vander waal's forces: diffraction from a lattice vibrations, phonons, brillouin zones, vibrational modes of a iflonatomic lattice, free election model of a solid, electron distribution in a band, Fermi energy, application of free electron theory to explain paramagnetic properties of metals.
Pre-requisite: 215

PHY 322- THERMODYNAMIC (2 CREDITS)

Statistical equilibrium, free energy, enthalpy, entropy, second law of thermodynamics, reversible and irreversible process. Maxwell relations. Gibbs Dunhan equation, phase equilibria, phase rule, Clapeyron and Clausius Clapeyron equation, solution theory; Boltzman distribution transport process, random walk. Introduction to third law of thermodynamics, production and measurement of low temperatures, piezo electric effect, simultaneous electric and heat current, thermoelectric, refrigeration, thermodynamics of magnetic system.
Pre-requisite: PHY 212

PHY 323- WAVES AND OPTICS (2 CREDITS)

Michelson interferometer, applications; Fabry-Perot and etalon interferometer. Study of hyperfine structure, resolution, Taylor's criterion: distinction between Fresnel and Frauhofer diffraction. Fresnel diffraction; half-period zones, zone plate, imaging properties, Frauhofer intensity distribution pattern application to telescope and microscope.
Pre-requisite: 223

PHY 325- ATOMIC AND NUCLEAR PHYSICS (2 CREDITS)

Sommerfield's relativistic atom, space quantization, Larniour theorem, Bohr magneton, fine structure of H line, the vector atom model. L-S and J.3. couplings, Pauli's exclusion principle, selection rules. Liude's factor, applications of vector atom model. Normal and anomalous zeemanri effect. Paschen-Back effect, stark effect, experimental verification: x-ray spectra, Moseley law, x-ray energy levels, selection and intensity rules.

The constitutions of nucleus, magnetic and electric properties, angular momentum of nucleus, discovery o neutron, proton-neutron gypothesis; isotopes, mass spectrographs.
Pre-requisite: PHY 215

PHY 326- ELECTRONICS (2 CREDITS)

Review of vacuum tubes diode and transistor circuits including amplifiers, oscillator's etc. pulse and wave generation and shaping. Basic semiconductor processes unipolar transistor and properties as an amplifier; amplification of step voltages and pulse. The junction transistor, some important circuits: e.g. follower circuits, emitter follower cascade amplifier, negative and positive feed backs, delay lines, power supplies.
Pre-requisite: PHY 224

PHY 329- MATHEMATICAL PHYSICS (3 CREDITS)

Classical mechanics of a system of particles: total energy of a system. The principle of virtual displacement, D'Alembert's principle, Lagrangian equation, Hamilton's principle of least action the Euler differential equation, canonical transformations. Hamilton-Jacobi differential equation (cyclic variables). Bassel differential equation, Bassel functions, recurrence relations with applications to physical problems. The special theory of relativity. Lorentz transformation equation, relativity of time and simultaneity, conclusion of the special theory. The general theory of relativity: principle of equivalence, Minkowski's four dimensional space-time continuum gravitational bending of light, shift of spectral lines, criticism of the theory.
Pre-requisite: PHY 211

PHY 399 students are expected to go on industrial training at the end of the second semester examination for three months.

PHY 411- METALLURGY AND MATERIALS SCIENCE (3 CREDIT)

Mechanical properties of materials: Plasticity, work hardening, fracture, creep, fatigue, texture and x-ray. Heat treatment of materials: Recovery, recrystallisation, grain growth and annealing twins. Oxidation and corrosion. Production, treatment and engineering application of steels.
Pre-requisite: PHY 315

PHY 412- STATISTICAL PHYSICS (2 CREDITS)

Laws of equipartition of energy, partitions function, classical and quantum statistics with application to black body radiation, gas degeneration, electron, theory of metals, etc. Kinetic theory of radiation. Wein's displacement law, Einstein and Deby's theory of specific heats of solids, radiation pressure.
Pre-requisite: PHY 311, PHY 322

PHY 414- ELECTROMAGNETIC THEORY (2 CREDITS)

Application of Maxwell's equation, plane wave propagation, reflection of plane waves at a plan boundary between two non-conducting media. Complex refractive index, skin effect, filters transmission lines, wave-guide, cavity resonators and radiating systems.
Pre-requisite: PHY 314

PHY 415- NUCLEAR PHYSICS (2 CREDITS)

Nuclear forces, liquid drop model, shell model, compound nucleus, energy levels, theory of a and decay, classification of fundamental particles, nuclear reactions, particle wave analysis, compound nucleus, neutons and their properties, fission, Bohr-Wheller theory nuclear reactors, accelerators.
Pre-requisite: PHY 325

PHY 416- ELECTRONICS (2 CREDITS)

Equivalent signal circuits of semiconductors, diodes and transistor. Large and small signal operations. Wave-form shaping by diobes and pass networks. Wave form generation by transistors.

Class A. B. and C. amplifiers, serials feedback amplifiers and control systems. Integrated circuits, wave guides and serials. Design of wave filters, frequency and amplitude modulation. Modulators and demodulators. Wave propagation. Introduction to communication theory and its practical significance. Digital communication systems and channel capacity.
Pre-requisite: PHY 326

PHY 417- BIOPHYSICS (3 CREDITS)

Molecular Biophysics: Physical behavior of macromolecules in dilute solution. Methods of characterizing macromolecular behavior e.g. diffusion, sedimentation, light scattering, spectroscopy (visible IR and UV), x-ray diffraction and scattering. Electrical dispersion studies of water soluble proteins, synthetic polymers and emulsions, and also of food and agricultural materials.
Radiation Biophysics: lonising radiation: as applied in radio therapy, radio diagnosis, nuclear medicine and radiobiology, radiation protection, radiation damage and dosimetry, non-ioning radiation: ultrasonic, infra-red, radio frequency and micro-wave radiations. Applications of ionizing and non-ionizing radiations in industry and in environmental studies. Medical Physics/Bio-engineering of constrained flow (Hermodynamics), physics of cardiovascular system. Linear ad digital electronics as applied in medicine biology clinical physics.
Pre-requisite: PHY 316

PHY 418- SOLID STATE PHYSICS (2 CREDITS)

Band theory of solids. Electron motion in a periodic structure, insulators and semi-conductors, holes and electrons. Effective mass of an electron, hall effect in metals and semi-conductors, electrical conductivity in metals, defect in solids, dielectric and optical properties of solids, electronic polarization, optical. absorption magnetic properties of materials, proramagnetism, diamagnetism and ferromagnetism. Superconductivity, superconducting magnets, magnetic resonance.
Pre-requisite: PHY 318

PHY 421- QUANTUM THEORY (2 CREDITS)

Review of schrodinger wave equation, application to hydropen and helium atoms. Dirac's relativistic wave mechanics; perturbation theory, scattering, auger effect.
Pre-requisite: PHY 311

PHY 422- ENERGY SOURCES AND ENVIRONMENTAL POLUTION (3 CREDITS)

Coal oil and tar as sources of energy. Solar energy: sun, spectrum, solar energy devices. Hydrogen energy system, nuclear energy, biomass conversion, geothermal energy, wave and tidal. Energy hydropower, environmental pollution related to above energy sources.

PHY 423- MODERN OPTICS (2 CREDITS)

Vectorial nature of light, complex quantities, attenation, group velocity and propagation of electromagnetic waves in a medium and boundary conditions. Matrices applied to geometrical optics fourier and convolution theorems used in transforming objects. Fourier transform.
Spectroscopy. Review of interference and diffraction theories, image formation, phase contrast holography, laser and maser applications, introductions, introduction to fibre optics applications, introductions, introduction to fibre optics.
Pre-requisite: PHY 323, 314, 122, 123

PHY 425- EXPLORATION GEOPHYSICS (3 CREDITS)

Methods of applied geophysics. The earth's internal structure. Seismic waves propagation. Elements of seismic refraction and reflection records. Gravity prospecting, gravity field measurements, reduction and interpretation, isostasy, magnetism of the earth. Paleomagnetism.

Magnetic field measures, reduction and interpretation. Electrical and electromagnetic methods. Radioactive surveys. Geochronology, Geothermal methods, well-logging principles and applications.
Pre-requisite: PHY 317

PHY 426- INDUSTRIAL, ELECTRONICS AND QUALITY CONTROL (3 CREDITS)

Digital system, logic and circuits; Number systems Bolean algebra and truth table. Positive and negative logic diode and transistor logic circuits. Delay elements using transistors. Logic gates and their implementation. The OR, AND, NAN, NOR-gates counters, up and down counters series and parallel logic control system in industry. Logic and switching circuits computers: digital analogue and hybrid. The operational amplifiers, digital strong systems
Principles of control system: Open loop, closed loop and automatic control systems. Block diagrams. Positive back control system. Servomechanism. Analysis of steady state voltage control system analysis of steady state speed control system.
System reliability and quality control: Need of standards and specifications. Performance verification under specified environments. Pre-production and production testing quality check: Definition, reliability and cost, designing for reliability, equipment failure, failure rates, periods of failure, probability of failure, causes of failure, reliability and availability of equipment, instrument and electronic test equipment.
Pre-requisite: PHY 326

PHY 427- SPECTROSCOPY (2 CREDITS)

Rotational, vibrational electronic spectra of diatomic molecule: Rarnan spectra. Experimental techniques.

B.Sc. Ed SOCIAL STUDIES

HISTORY OF THE PROGRAMME

The Bachelor of Science (Education) Social Studies programme which was formerly housed in the Department of Physical and Health Education was transferred to the Department of Educational Psychology and Curriculum Studies, Faculty of Education, University of Benin in the 2004/2005 Session. It has a primary objective to train the much-needed graduate teachers in Social Studies for post primary institutions all over the country.

OBJECTIVES

The objectives of the programme include:

(a) To produce knowledgeable and professionally competent teachers of Social Studies for Secondary Schools.
(b) To produce knowledgeable and competent personnel for leadership positions in the public and private sectors.

LIST OF COURSES:

4 YEAR DEGREE PROGRAMME IN EDUCATION SOCIAL STUDIES

100 LEVEL

FIRST SEMESTER		CREDIT
EDU 111	History of Education	3

SSE 111	Introduction to Social Studies	3
SAA 111	Introduction to Sociology	3
GEO 111	Introduction to Geography	3
POL 111	Introduction to Political Science	3
SAA 112	Ethnography of Nigeria	3
GST 111	Use of English I	2
GST 112	Philosophy and Logic	2
		22

SECOND SEMESTER

EDU 121	General Teaching Methods	3
SSE 121	History and Philosophy of Social Studies	3
SSE 122	Socio-Cultural Environment in Nigeria	3
SSE 123	Socio-Economic Structure in Nigeria	3
GST 121	Use of English II	2
GST 122	Nigerian Peoples and Culture	2
GST 123	History and Philosophy of Science	2
		18

200 LEVEL

FIRST SEMESTER

EDU 211	Development Psychology	3
EDU 212	Philosophy of Education	2
CSC 211	Structured Programming in Pascal	3
SSE 211	Moral and Personality Development	2
SSE 212	Collective Behaviours	2
SSE 213	Introduction to Moral Education	3
SSE 214	Safety and Environmental Education	3
SAA 211	Sociological and Anthropological Analysis	3
SAA 213	Social Psychology	3
		23

SECOND SEMESTER

EDU 221	Methods of Teaching Social Studies	2
EDU 222	Sociology of Education	2
EDU 223	Instructional Technology	2
SSE 221	Consumer Education	2
SSE 222	Peace Education	2
SAA 221	History of Sociological and Anthropological Thought	3
SAA 223	Peoples and Cultures of Africa	3
SSE 223	Sexuality and Population Education	3
		19

300 LEVEL

FIRST SEMESTER

EDU 300	Teaching Practice I	3
EDU 311	Curriculum Studies	3
EDU 312	Educational Psychology	2
EDU 313	Social Studies	2

CED 300	Entrepreneurship	2
SSE 311	Democracy and Electoral Process	3
SSE 312	Socialization and Family Life Education	3
HED 311	Mental Health Education	3
SAA 314	Rural Sociology	3
		24

SECOND SEMESTER

EDU 321	Introduction to Research Method and Statistics	3
EDU 322	Comparative Education	3
SSE 321	Introduction to Legal Institution and Process	3
SSE 322	Value and Citizenship Education	3
SSE 323	Leadership and Followership	2
SSE 324	Traditional Systems	2
SAA 324	Urban Sociology	3
		18

400 LEVEL

FIRST SEMESTER

EDU 411	Measurement and Evaluation	3
EDU 412	Introduction to Educational Management	3
EDU 400	Teaching Practice II	3
SSE 411	Processes and Problems of Urbanization	2
SSE 412	Issues in National Development I	2
SSE 413	International Organizations and Integration	3
ADE 415	Community Development Education	2
POL 416	Public Personnel Administration	3
		21

SECOND SEMESTER

EDU 421	Guidance and Counseling	3
EDU 499	Research Project	3
SSE 421	Colonial Experience and Development in Africa	3
SSE 422	Political History of Nigeria	2
SSE 423	Issues in National Objectives of Nigeria	2
SSE 424	Culture and Social Stability	2
SSE 425	Issues in National Development II	2
		17

SOCIAL STUDIES COURSES

SSE 111- Introduction to Social Studies

This course introduces the students to the meaning, nature and scope of social studies including its objectives, history and relationship with fields particularly the social sciences. It also examines the social concerns of social studies.

SSE 121- History and Philosophy of Social Studies

The course acquaints students with the historical development of social studies including the beginnings in the U.S.A., Britain and Nigeria. It also examines the philosophy and objectives of social studies in these countries.

SSE 122- Socio-Cultural Environment in Nigeria

The course explores the concept of society and culture, the nature and functions of culture. Its increases students awareness and understanding of some socio-cultural beliefs and practices in Nigeria including festivals, burial rites, widowhood, mourning, manhood, inheritance, polygamy, value for male child, etc. as well as their criticism.

SSE 123- Socio-Economic Structure in Nigeria

Students are made to understand the pattern of production relations: poverty and income inequality. Poverty alleviation programmes, National directorate for employment. Its also explores the structure of the economy including agriculture, industry, energy/oil, international trade and investment environment.

SSE 211- Moral and Personality Development

This course is an introductory one concerned with cultural setting and morality; basic moral behavior for Nigerian children; stages and conditions in moral development; role of the school in moral training; adolescents and moral behavior; meaning, nature and measures of personality; some personality theories including Freud, Jersid, Maslow and Rogers; role the school in personality development.

SSE 212- Collective Behaviours

The course provides understanding of man as a member of social group; it explores the nature of man as a social being and his behavior dynamics in the group setting. It also explores man's behavior in such settings as strike, riot, voting, public opinion, etc.

SSE 213- Introduction to Moral Education

The course is concerned with the concept, nature, scope and objectives of moral education. It explores the rationale for moral education in a secular society, and makes distinction between moral and religious education as well as the problems of morality in Nigeria.

SSE 214- Safety and Environmental Education

Emphases include safety at home, on the road, in school and industry. Safety devices and precautions, causes of accidents and prevention in the home and on roads. Activities of the Federal Road Safety Corps and the Fire Service in Nigeria. Concept, scope and objectives of environmental education; nature and causes of environmental abuse in Nigeria. Environmental protection and the activities of Federal Environmental Protection Agencies.

SSE 221- Consumer Education

To include meaning and importance of consumption; theories of consumer behavior; economic, social and cultural forces influencing consumption. Desirable consumption values and habits. Advertising; consumer protection policies and programmes in Nigeria, Europe and America; NAFDAC and Nigerian Standards Organisation.

SSE 222- Peace Education

To include the concept, nature, scope and objectives of peace education. It should review the threats to world and national peace and explore ways of promoting peace at community, state, national and global levels. Should also examine the roles of agencies in promoting national and world peace.

SSE 223- Sexuality and Population Education

The course considers the concept, nature, scope and objectives of sexuality education. It includes issues in the cultural and religious contexts of sex; health hazards related to sexual discretion e.g. HIV/AIDS. It considers the concept, nature, scope and objectives of population education. Considers the population growth trends in Nigeria vis-à-vis GDP; some theories and views underlying population control. Problems of population education and the way out in Nigeria.

SSE 311- Democracy and Electoral Process

To include the concept, characteristics and historical development of democracy. Democracy in modern practice. Some theories of democracy; advantages of democracy. Constraints to democracy in Africa. Foundations of democracy – constitutionalism and electoral process. To expose students to the electoral process in Nigeria including party formation, primaries, registration of voters, campaigns, electoral Laws/Acts, Voting, etc.

SSE 313- Traditional Systems

The course includes the concept, evolution and theories and policies, programmes and processes of community development in Nigeria. Social studies as a tool for community development.

SSE 312- Socialisation and Family Life Education

To include the concept, functions and agents of socialization, constraints of effective socialization process in rural and urban settings and among different socio-economic groups. It also explores issues related to family life including sex education, courtship, marriage, reproduction, parenthood and responsibilities; social economic and psychological factors influencing family stability.

SSE 321- Introduction to Legal Institutions and Processes

The aim of this course is to increase students' awareness and understanding of the legal institutions and processes in Nigeria, their jurisdiction, relationship as well as important and functional legal terminologies. The course also teaches how to seek legal redress. It examines the constraints to effective legal processes in Nigeria.

SSE 322- Value and Citizenship Education

This course deals with the concept of values and their functions in the society. It includes types of values and how they are taught. The course is further concerned with the concepts of citizenship, citizenship education, its history and objective, methods, problems and means of promoting it in Nigeria.

SSE 323- Leadership and Followership

The course aims at teaching the concepts and theories of leadership and followership. It explores the qualities and duties of good leadership and followership in Nigeria since independence and idealize what is needed in Nigeria. It also focuses on the profiles and contributions of outstanding leadership in Nigeria.

SSE 324- Traditional Systems

The aims of the course is to broaden students' understanding concerning tradition and traditional systems in the cultural context. It includes the concepts of culture, tradition, customs, values, norms, mores, taboos, superstition reincarnation, creation and evolution of man, etc. it distinguishes between tradition and modernity. It explores the processes of education, religion, government, judiciary, discipline and sanction in different traditional systems. It points out the sources of weaknesses and inspiration of traditional systems in present modern life.

SSE 411- Processes and Problems of Urbanisation

Includes the theories, types and structure of the city; the development of cities in Nigeria. Factors influencing urbanization. Urbanization policies. Urbanization as development – a critique. Problems of urbanization in Nigeria. Toward effective urbanization policies.

SSE 412- Issues in National Development

To explore the concepts and theories of development including the classical and Marxist theories. Domains and indices of national development. The National Development Plan.

SSE 413- International Organisations and Integration

The aim is to explore and evaluate the objectives and activities of international organizations as UNO, OAU, ECOWAS, IMF, UNCTAD, ILO; FIFA, OPEC, etc in the promotion of global integration. It also examines prevailing constraints. It examines the need for more regional integration to promote interaction and harmony.

SSE 421- Colonial Experience and Development in Africa

It exposes the students to the realities of colonialism as it set back the victims on the path of development. Students should become more aware of the paradigms of Walter Rudney, Paure Fraire on how colonial experience affected development in Africa.

SSE 422- Political History of Nigeria

To include the political organizational structure of the people of Nigeria before colonialism; trade (Royal Niger Company) as the foundation of colonialism; colonial political structure – direct and the indirect rule, amalgamation; constitutional developments since 1922; nationalism, independence and the first republic, the military government, resumption of constitutionalism, second, third and fourth republics.

SSE 423- Issues in National Development

This course helps students to understand the national objectives; the underlying ideology and philosophy; reality and practice. It examines the consistency of some public policies with the national objectives. Social studies as a tool for promoting the national objects.

SSE 424- Culture and Social Stability

This course is concerned with the concept, nature, scope and functions of culture. It examines the cultural context of development. It stresses the need for desirable values for sustenance and stability of humanity.

SSE 425- Issues in National Development II

It includes the structure of Nigerian economy with reference to her economic history (agricultural and petroleum eras). It examines efforts to stimulate industrial growth and the attendant constraints including political, technological, cultural and psychological, attitudinal corruptive and neo-imperialist factors.