NATIONAL OPEN UNIVERSITY OF NIGERIA

Detailed Programme Proposal

for

MPhil/PhD

in the

Faculty of Computing

2024

About the Programme

1.1 Name of the Programme: MPhil/PhD Information Technology

1.2 Code of the Programme: 5501

1.3 Description of the Programme

The MPhil/PhD Information Technology (IT) programme is structured into 2 semesters (1 year) for regular students with course work for the entire programme leading to direct studies into PhD in Information Technology.

The MPhil/PhD Information Technology programme aims at admitting research – oriented graduates of Computing discipline and related fields of study into the high echelon of IT professionalism. To be admitted for the Phil/PhD information Technology Programme, a candidate is expected to have a Masters degree in Computer Science, Information Technology, Information Systems, Data Science, Cyber Security, Electrical or Electronics Engineering.

2. Programme Philosophy, Vision and Mission

2.1 Philosophy

To enhance access for all who seek knowledge in the field of Information Technology at the level of pre-doctorate degree irrespective of location, number, age and time through the open and distance learning mode.

To be considered as the pacesetter Department that promotes Research and Development in areas that are relevant to the needs of the Nigerian society while providing accessible and quality education anchored by social justice, equity, equality and national cohesion through a comprehensive reach that transcends all barriers.

2.3 Mission

To provide functional, cost–effective, flexible learning which adds life-long value to quality education for all who seek knowledge in the field of Information Technology

3. Aims and Objectives

3.1 Aims

The MPhil/PhD Information Technology programme aims at admitting research– oriented graduates of Computing and related fields of study into the high echelon of IT professionalism.

The programme is expected to exploit all the web-based resources at NOUN to guide students into ground breaking research areas towards concluding their periods of study with an internationally comparable thesis by each student at the end of their doctoral programme.

3.2 Objectives

The objectives of the MPhil/PhD IT Programme is to inculcate the spirit of innovation and research among the qualified Faculty and students for the advancement of fundamental knowledge and technological innovation through research and development as well as to meet the requirement of institutions of higher learning. The programme aims to produce high level IT professionals and scholars in IT at pre-PhD level.

4. Entry Requirements

To be admitted to the MPhil/PhD information Technology Programme, a candidate is expected to.

i. Have at least credit level passes in five (5) subjects at the SSCE or its equivalent NECO, GCE, NABTEB or TC II 'O' level examinations. The credit level passes must include English language, Mathematics, and Physics to form the core subjects and any other two (2)-credit level passes from Chemistry, Biology/Agric, Further Mathematics and Computer Studies taken from a maximum of two (2) sittings

ii. Have a master's degree in computing-related fields from the National Open University of Nigeria (NOUN) or any other University recognized by the Senate of NOUN in addition to (i) above with at least 3.5 /5.0 CGPA.

Short listed candidates will be required to present their research proposals before the PG Committee who will decide on the selection of the candidate for the MPhil/PhD programme.

Note:

Computing-related fields

Computing-related fields from recognized institutions include Computer Science, Data Management, Information Technology, Cybersecurity, Artificial Intelligence, Data Science, Software Engineering, Communication Technology, Physics Electronics, Physics with Mathematics, System Engineering, Computer with Mathematics

5. Programme Structure

The PhD Information Technology programme is structured into 2 semesters (1 year) for regular students with course work. The programme structure is detailed in the outline of the course structure (7).

6. Degree Rules

To qualify to progress to a Ph.D. in Information Technology programme, a student is required to:

a) Pass all compulsory and an elective course and all other requirements contained in the OPP and DPP for the MPhil/PhD programme.

7. **Outline of Courses Structure**

The MPhil/PhD Information Technology (IT) programme is structured into 2 semesters (1 year) as shown below:

1st year

Course Code	Course Titles	Unit(s)	Status
1st Semester			
CIT913	Advanced Artificial Intelligence	3	C
CIT915	Advanced Database Management Systems	3	C
CIT917	Advanced Operational Research	3	E
	Total Compulsory Units	6	
	Total Elective Units	3	
	Total Credit Units	**6**	
2nd Semester			
CIT922	ICT Research Methodology and Statistics	3	C
CIT926	Advanced Data Communication and Networks	3	E
CIT928	Advanced Computer Architecture	3	E
CIT932	Advanced Systems Analysis and Design	3	C
	Total Compulsory Units	6	
	Total Elective Units	6	
	Total Credit Units	**6**	

N/B: Students are required to do at least one elective throughout the programme.

N/B: MPhil/PhD Students must attain a minimum of 15 credit units to progress to the PhD programme.

8. Summary of Distribution of Courses Credit

Year	**Core Courses**		**Elective (Minimum)**	**Total**
	First semester	**Second Semester**		

1	6	6	3	**15**

9. Course content Specifications, Syllabus of all courses in the Programme

CIT922: Advanced ICT Research Methodology and Statistics (3 Units)

This seminar is geared towards directing students to be familiar with research methodologies in the information technology field.
Studies will gain an understanding of the theory and practice of methods and approaches applicable to the conduct of ICT research. They will have the capacity to design and communicate research proposals for ICT projects and to critically assess and evaluate alternative approaches to conducting research on ICT issues. They will consider the ethical issues involved in planning, conducting and reporting. Students will be challenged to apply concepts and critically engage with issues as they related to personal research needs and the assessment items will relate to their research topic.

CIT913: Advanced Artificial Intelligence

Basic AI issues attention, Search, Control, Game trees, knowledge representation, Application of AI techniques in natural language, scene analysis, expert systems, KBCS robot planning. Lab. exercises in AI lang. e.g., LISP/Prolog. Study of different classes of expert systems, e.g. Rule Based: MYCIN or PROSPECTOR, Blackboard; HEARSAY or CRYSLIS, Expert System shells e.g. Rule Based: e.g. P-MYCIN, EXPERT. S.I. Frame Based e.g. KEE, KL-ONE Merit and Demerits of natural language interface for expert systems. Extensive independent study of recent development in the field and the submission of a group proposal for the application of Expert System in different areas. And any other relevant topic in AI.

CIT926 Advanced Data Communication and Networks/Security (3 Units)

Introduction to Data Communication and Computer Network Concepts: Data Transmission, Data Encoding and Communication Technique, Multiplexing and Switching. Media Access Control and Data Link Layer: Data Link Layer Fundamentals, Retransmission Strategies, Contention-based Media Access Protocols, Polling-based Media Access Control Protocols, Media Access Control Protocols for High Speed Networks. Network Layer: Introduction to Layer Functionality and Design Issues, Routing Algorithms, Congestion Control Algorithms, Internetworking and Network Layer in the Internet. Transport Layer and Application Layer Services: Transport Services and Mechanism, TCP/UDP, Network Security

CIT932: Advanced System Analysis and Design

General systems concepts: Systems project team organization; Overview of systems development process; Project identification and selection; system requirements analysis and feasibility study; fact finding techniques; Systems design; Analysis techniques and tools e.g. Jackson System Development (JSD) techniques etc. Data flow diagrams, HIPO charts. Business system design; procurement, site preparation, system installation, system testing, system conversions; system project, report writing, and presentation; system documentation; post installation evaluation; compilation of a real-life system analysis team project to provide experience in applying the principles and techniques presented above.

NATIONAL OPEN UNIVERSITY OF NIGERIA

Detailed Programme Proposal

for

MPhil/PhD

in the

Faculty of Computing

for

SENATE Approved

2022

About the Programme

1.1 Name of the Programme: PhD Information Technology

1.2 Code of the Programme: 5501

1.3 Description of the Programme

The PhD Information Technology (IT) programme is structured into 6 semesters (3 years) for regular students with course work for the first year/session and seminar and research work for the second and third year respectively.

The PhD Information Technology programme aims at admitting research – oriented graduates of Computer Science and Information Technology and related fields of study into the high echelon of IT professionalism. To be admitted for the PhD information Technology Programme, a candidate is expected to have a Master's degree in Computer Science/IT (Information Technology) Electrical or Electronics Engineering.

2. Programme Philosophy, Vision and Mission

2.1 Philosophy

To enhance access for all who seek knowledge in the field of Information Technology at the level of doctorate degree irrespective of location, number, age and time through the distance learning mode.

2.2 Vision

To be considered as the pacesetter Department that promotes Research and Development in areas that are relevant to the needs of the Nigerian society while providing accessible and quality education anchored by social justice, equity, equality and national cohesion through a comprehensive reach that transcends all barriers.

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To provide functional, cost–effective, flexible learning which adds life-long value to quality education for all who seek knowledge in the field of Information Technology

3. Aims and Objectives

3.1 Aims

The PhD Information Technology programme aims at admitting research– oriented graduates of Computer Science and Information Technology and related fields of study into the high echelon of IT professionalism. The programme is expected to exploit all the web-based resources at NOUN to guide students into ground breaking g research areas towards concluding their periods of study with an internationally comparable thesis by each student.

3.2 Objectives

The objectives of the PhD IT Programme is to inculcate the spirit of innovation and research among the qualified Faculty and students for the advancement of fundamental knowledge and technological innovation through research and development as well as to meet the requirement of institutions of higher learning. The programme aims to produce high level IT professionals and scholars in IT at PhD level.

4. Entry Requirements

To be admitted for the PhD information Technology Programme, a candidate is expected to

i. Have at least credit level passes in five (5) subjects at the SSC or its equivalent NECO, GCE, NABTEB or TC II 'O' level examinations. The credit level passes must include English language, Mathematics, and Physics to form the core subjects and any other two (2)-credit level passes from Chemistry, Biology/Agric, Further Mathematics and Computer Studies taken from a maximum of two (2) sittings

ii. Have a master's degree in computer-related fields from the National Open University of Nigeria (NOUN) or any other University recognised by the Senate of NOUN in addition to (i) above with at least 4.0/5.0-point CGPA.

Note:

Computing-related fields

Computing-related fields from recognized institutions include Computer Science, Information Technology, Cybersecurity, Artificial Intelligence, Data Science, Software Engineering, Communication Technology, System Engineering, Computer with Mathematics.

Short listed candidates will be required to present their research proposals before the PG Committee who will decide on the selection of the candidate for the PhD programme.

5. Programme Structure

The PhD Information Technology programme is structured into 6 semesters (3 years) for regular students with course work for the first year/session and seminar and research work for the second and third year respectively. The programme structure is detailed in the outline of the course structure (7).

6. Degree Rules

To qualify for the award of a Ph.D. in Information Technology a student is required to;

a) Pass all seminars and all other requirements contained in the OPP and DPP for the PhD programme.

b) Execute and submit to the School Postgraduate Studies a comprehensive Research embodied in a thesis to be defended before an SPGS committee which includes an external examiner.

7. **Outline of Courses Structure**

The PhD Information Technology (IT) programme is structured into 6 semesters (3 years) shown below:

N/B: Students are required to do at least one elective each semester.

1st year

Course Code	Course Titles	Unit(s)	Status
1st Semester			
CIT901	Seminar on Emerging Technologies	3	C
CIT903	Seminar on Artificial Intelligence or Advanced Data Communication and Networks	3	C
	Total Compulsory Units	6	
	Total Credit Units	**6**	
2nd Semester			
CIT902	Seminar on ICT Research Methodology and Statistics	3	C
CIT912	Seminar on Advanced System Analysis and Design	3	C
	Total Compulsory Units	6	
	Total Credit Units	**6**	

2nd and 3rd year

Course Code	Course Titles	Unit(s)	Status
1st Semester	Dissertation		
	Total Credit Units		
2nd Semester			

	Dissertation	12	C
	Total Credit Units	**12**	

N/B: PhD Students must attain a minimum of 24 credit units to graduate. They are to mandatorily present all the seminars and publish minimum of 3-journal publication from their work before graduation.

8. Summary of Distribution of Courses Credit: year 1-3

Year	**Core Courses**		**Total**
	First semester	**Second Semester**	
1	6	6	**12**
2 and 3	Not yet determine	Not yet determine	**12**
Total	**12**	**12**	**24**

9. Course content Specifications, Syllabus of all courses in the Programme

CIT901: Seminar on Emerging Technologies in Information Technologies – Seminar I (3 Units)

Students are expected to write a seminar paper on any new and recent technologies in IT Computer Networking and Securities, Artificial Intelligence, ASPs (Application Service Providers) Distributed Java Database and Computing Issues, E-Commerce Internet Broadcasting, Internet Collaboration Internet Multimedia, Linux Platforms, Software Object-Oriented Database and Software Development, Voice I/O (Computer Input/Output), Voice over IP (IP Telephony) XML. Big Data, Internet of things.

CIT902: Seminar on ICT Research Methodology and Statistics (3 Units)

This seminar is geared towards directing students to be familiar with research methodologies in the information technology field.
Studies will gain an understanding of the theory and practice of methods and approaches applicable to the conduct of ICT research. They will have the capacity to design and communicate research proposals for ICT projects and to critically assess and evaluate alternative approaches to conducting research on ICT issues. They will consider the ethical issues involved in planning, conducting and reporting. Students will be challenged to apply concepts and critically engage with

issues as they related to personal research needs and the assessment items will relate to their research topic.

CIT903: Seminar on Artificial Intelligence

Basic AI issues attention, Search, Control, Game trees, knowledge representation, Application of AI techniques in natural language, scene analysis, expert systems, KBCS robot planning. Lab. exercises in AI lang. e.g., LISP/Prolog. Study of different classes of expert systems, e.g. Rule Based: MYCIN or PROSPECTOR, Blackboard; HEARSAY or CRYSLIS, Expert System shells e.g. Rule Based: e.g. P-MYCIN, EXPERT. S.I. Frame Based e.g. KEE, KL-ONE Merit and Demerits of natural language interface for expert systems. Extensive independent study of recent development in the field and the submission of a group proposal for the application of Expert System in different areas. And any other relevant topic in AI.

Or

Advanced Data Communication and Networks/Security (3 Units)

Introduction to Data Communication and Computer Network Concepts: Data Transmission, Data Encoding and Communication Technique, Multiplexing and Switching. Media Access Control and Data Link Layer: Data Link Layer Fundamentals, Retransmission Strategies, Contention-based Media Access Protocols, Polling-based Media Access Control Protocols, Media Access Control Protocols for High Speed Networks. Network Layer: Introduction to Layer Functionality and Design Issues, Routing Algorithms, Congestion Control Algorithms, Internetworking and Network Layer in the Internet. Transport Layer and Application Layer Services: Transport Services and Mechanism, TCP/UDP, Network Security

CIT912: Seminar on Advanced System Analysis and Design

General systems concepts: Systems project team organization; Overview of systems development process; Project identification and selection; system requirements analysis and feasibility study; fact finding techniques; Systems design; Analysis techniques and tools e.g. Jackson System Development (JSD) techniques etc. Data flow diagrams, HIPO charts. Business system design; procurement, site preparation, system installation, system testing, system conversions; system project, report writing, and presentation; system documentation; post installation evaluation; compilation of a real-life system analysis team project to provide experience in applying the principles and techniques presented above.

CIT999: Dissertation (6 Units)

Students are to choose a researchable thesis topic which will be approved by the PG committee.

10. Instructional Methods

The language of instruction is English Language.

11. Quality Assurance

The Department maintains high standard as stipulated by the NUC Benchmark and international best practice.

12. Evaluation

12.1 Research Supervisors

Each Candidate for the degree of PhD shall have two supervisors. The main supervisor should not be below the rank of a Senior Lecturer while the second supervisor must not be below the rank of a Professor.

12.2 Reports by Supervisors

The supervisors through the appropriate Department shall furnish a report on each Candidate to the Board at least once every academic year

12.3 Examination

Each seminar will serve as assessment.

13. Staff

The National Open University of Nigeria has chosen to operate on small academic Faculty Staff supported on the field by instructional Facilitators who are situated at the various Study Centres of the University. This should greatly improve quality.

To commence this programme, the Faculty has the following academic staff to man the programme:

a. ACADEMIC STAFF

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S/N	NAMES	STATUS	QUALIFCATION
1	Dr. Francis B. Osang	Senior Lecturer/HOD	Ph.D. ICT (2016), M.Sc., Information Technology (2010) B.Sc. Computer Science (2002)
2	Dr. Greg O. Onwodi	Associate Professor	Ph.D. Computer Science (2015), M.Sc. Information Technology (2004), B.Sc. Computer Science (1995)
3.	Dr. Vivian Nwaocha	Associate Professor	Ph.D. Computer Science (2017) , M.Sc. Computer Science (2006), PGD Computer Science and Engineering (2002), B.Eng Metallurgical and Material Engineering (1995)
4.	Prof. Mikail Olaniyi	Professor	Ph.D., Computer Engineering, M.Sc. Computer Engineering, B.Engr. Computer Engineering
5.	Prof. Joshua Abah	Professor	Ph.D. Computer Science, M.Sc. Computer Science, B.Sc. Computer Science
6.	Dr. Juliana Ndunagu N.	Associate Professor	Ph.D. Computer Science (2009), M.Sc. Computer Science and Engineering (2001), PGDE Education (2008) , B.Sc. Mathematics (1986)
7.	Dr. Adewale Adesina	Senior Lecturer	Ph.D. (2017) Computer Science (2006), M.Sc., Computer science, B.Engr (Chemical Engr -2000)
8.	Dr. Adenrele Afolorunso	Senior Lecturer	Ph.D.(2017), M.Sc. Computer Science (2006) B.Sc. Computer Science and Mathematics (1995)
9.	Dr Okunade Oluwasogo Adekunle	Senior Lecturer	Ph.D. (2021), M.Sc. Computer Science (2009) B.Sc. Computer Science and Mathematics (2004)
10	Dr Abiodun Yinka	Lecturer I	Ph.D.(2020), M.Sc. Computer Science (2012) B. Tech Computer Science and Mathematics (2008)

b. FACILITATORS

12	Prof. Francis Bakpo	Professor	Ph.D. Computer Science
13	Prof. Awodele Oludele	Professor	Ph.D. Computer Science
14	Prof. Adeyinka Adekunle	Professor	Ph.D. Computer Science
15	Prof. S. Sodiya	Professor	Ph.D. Computer Science
16	Prof. Nwojo N. Agwu	Professor	Ph.D. Computer Science
17	Prof. Davoc Choji	Professor	Ph.D. Computer Science
18	Prof. Greg. M. Wajiga	Professor	Ph.D. Computer Science
19	Prof. David A. Abayomi	Professor	Ph.D. Computer Science
20	Prof. O.B. Longe	Professor	Ph.D. Computer Science
21	Prof. Virginai Ebere Ejiofor	Professor	Ph.D. Computer Science
22	Dr. GodsPower O. Ekuobase	Associate Professor	Ph.D. Computer Science,
23	Dr. Usman Babawuro	Associate Professor	Ph.D. Computer Technology
24	Dr. Godwin Udoinyang	Associate Professor	Ph.D. Computer Science
25	Dr. Moses Ekpenyong	Associate Professor	PhD. Computer Science
26	Dr. John A. Odey	Senior Lecturer	Ph.D. Computer Science
27	Dr. Alao Olujumi Daniel	Senior Lecturer	Ph.D. Computer Science
28	Dr. O. Osunade	Associate Professor	Ph.D. Computer Science
29	Dr. Umezinwa Nnamdi C.	Facilitator	Ph.D. Information Technology
30	Dr. Boukari Souley	Facilitator	Ph.D. Computer Science
31	Dr. Adetumbe Adebayo O.	Facilitator	Ph.D. Computer Science

32	Dr. Ekechukwu B.C.	Facilitator	Ph.D. Computer Science
33	Dr. Falodum Sunday E.	Facilitator	Ph.D. Communication Physics
34	Dr. Folorunso Segun	Facilitator	Ph.D. Computer Science
35	Dr. Josiah Ahaiwe	Facilitator	Ph.D. Computer Science
36	Dr. Peter Bamidele Shola	Facilitator	Ph.D. Computer Science
37	Dr. Sadia S.A.	Facilitator	Ph.D. Computer Science
38	Dr. Arinze S. Nwaeze	Facilitator	Ph.D. Computer Science
39	Dr. Ogwu Oliver	Facilitator	Ph.D. Computer Science
40	Dr. Owa Vivtor Korede	Facilitator	Ph.D. Computer Science
41	Omidiora E.O.	Facilitator	Ph.D. Computer Science
42	Dr. Fidelis O. Odema Chete	Facilitator	Ph.D. Computer Science
43	Dr. Benson Yusuf Baha	Facilitator	Ph.D. Computer Science
44	Dr. Oyebanji Omotayo	Senior Lecturer	Ph.D., Computer Science

14. Learners' Support

Learners support focuses on meeting the needs of all learners. Meeting such needs is central to high quality learning and the effective provision of ODL. It serves as an intermediary between the student (the learner) and the University.

The Directorate of Learners Support Services operates through a network of study centers located in each of the State capitals and some communities as at now.

The study centres are the first point of call for students learning activities. The centre screen newly admitted students, registers students, keeps student records, serves as multimedia delivery routes, provides regular guidance and counselling, develops and manages essential feedback mechanism.

The essential staffs at the study centres are: the Centre Directors, the Student Counsellors, the Facilitators, the Administrative Officer, and the Accountant. The student counsellors in particular are in constant touch with learners to provide early warning signals regarding difficulties, with studies and offer prompt remedial action. The Instructional and Tutorial Facilitators conduct regular tutorial meetings and facilitate instruction at the centres. They are responsible for Tutor-Marked Assignments and assist with the conduct of examinations. The study Centres Director is in charge of the day-to-day administration of the centre and regular liaises with the headquarters. Recently, the Senate of the University has now directed that an academic staff from each of the schools be posted to each of the study centres to attend to students challenges

15. Recognition of the Programme

NUC Recognised (in NUC BMAS)

16. Proposed Starting Data and Presentation Schedule

2018

17. Target Students

Students who have a Masters degree in Computer Science/IT (Information Technology), Electrical or Electronics Engineering from the National Open University of Nigeria (NOUN) or any other University recognised by the Senate of NOUN with at least 4.0 CGPA in a highest grading scale of 5.0.

18. Student Enrolment Projection

Year	Student Enrolment
1	1000
2	2000
3	3000
4	4000
5	5000

19. Conclusion

The PhD Information Technology (IT) Programme is designed to help those with MSc. IT and related field deepen their research focus in IT and also help the Nigerian society/economy solve pressing IT based problems.