SYSTEMS ENGINEERING ADMISSIONS REQUIREMENTS AND PROGRAMMES.

Philosophy and Objective of Systems Engineering Programme

The Systems Engineer specializes in engineering modeling and the general deployment of cybernetics and artificial intelligence concepts in the planning, design, operation and management of engineering activities especially in areas such as:

- Information and Communication Technology
- Reactor devices and processes
- 'Energy systems
- Engineering manufacturing processes
- Operations, control and monitoring of electro-mechanical devices and systems
- Engineering graphics, simulation and animation
- Risk management in engineering systems.

In fact, when large-scale problems are under study, few people can be expected to be fully knowledgeable in the complete span of factors and parameters, which must be considered. For such cases, interdisciplinary teams arrive at solutions, where each member contributes his own special expertise. In order to work effectively on such teams, each member needs to be aware of the fundamental systems and design aspects of the problem.

The programme provides students with basic training and skills in analysis, designs, monitoring and control of engineering systems. The programme stresses the importance of humanistic and societal concerns as they shape the designer's approach to the solution of problems confronting modern society. The Systems Engineer therefore strives to serve the dual needs of the society for the design of reliable and efficient systems, whilst protecting the overall integrity of the host environment.

The objectives of the programme are:

- To bridge the gap between management/decision science and the Engineering profession through the integration of decision Science/Management courses to the traditional engineering discipline
- To produce engineers with multidisciplinary skills for today's complex economy,
- To impart analytical and cutting-edge computing skills in Engineering training,
- To initiate and carry out engineering design, and
- To engage in management and to pursue research and development

Academic Postgraduate Programmes

Systems engineering is a unique interdisciplinary engineering discipline that deals with design and management of complex systems based on systems thinking theories. A postgraduate Programme in Systems Engineering should therefore be desirable by any forward-thinking individual with innovative ideas who wishes to be relevant in the future. With an array of well concocted programmes taught by well-groomed academics, Systems Engineering is no doubt the engineering discipline of the future. Given the cosmopolitan nature of Lagos, the Department of Systems Engineering is suited to answer the technological and developmental questions that have kept focused minds agitated in the past. Currently, the department runs Master of Science degree by coursework, Master of Engineering Systems Management, Master of Philosophy and Doctor of Philosophy in Systems Engineering. In the near future, the department hopes to commence a Postgraduate Diploma in Systems Engineering. A degree in Systems Engineering provides a leverage for enterprising individuals who may wish to bridge the gap that existed in his chosen field of traditional engineering.

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Postgraduate Programmes Coordinator

A. DEGREE OF MASTER OF SCIENCE IN SYSTEMS ENGINEERING

Introduction

The MSc Systems Engineering programme consists of three key elements viz:

- A core component designed to provide the basic advanced knowledge and detailed technical skills required by the students to cover both numerical and symbolic based systems.

- An advanced taught component to provide further technical expertise in a chosen area of specialization.

- A project, designed to allow students to carry out a significant piece of work, either closely related to the requirements of the public or organized private sectors or at the leading edge of research.

To qualify for a degree a student must normally satisfy the examiners in all three components.

The taught programme comprises a minimum of four core courses and three elective courses chosen from a menu of several courses in the area of specialization of the student. Each course is equivalent to approximately 30 hours of lecture. In addition, each course will normally also involve group assignments and presentations.

The programme has five areas of specialization from which the student is expected to select one viz:

- Engineering Analysis
- Modeling and Simulation
- Artificial Intelligence
- Information and Communication
- Engineering Systems Management

Programme Specializations

The M.Sc. (Systems Engineering) is a programme consisting of courses of instruction and a project. Major areas of instruction are Continuum Mechanics, Engineering Modelling and Simulation, Computational Techniques, Stochastic Systems, Geophysical and Environmental Fluid mechanics. Others include software engineering, artificial intelligence Systems, Robotics, intelligent control and Water Resources, Applied Mechanics, Thermo fluids, Design and Production Engineering as well as Engineering Safety and Reliability.

These courses have been grouped into five designated areas of specialization as listed below:

a. M.Sc.(Systems Engineering) with specialization in Engineering Analysis
b. M.Sc.(Systems Engineering) with specialization in Modelling and Simulation
c. M.Sc.(Systems Engineering) with specialization in Artificial Intelligence
d. M.Sc.(Systems Engineering) with specialization in Information and communication Technology
e. M.Sc.(Systems Engineering), with specialization in Engineering Systems Management

For full-time students, the duration of the programme is for twelve calendar months.

Admission Requirements

I. Candidates with a Bachelor's degree in an Engineering or Physical Sciences (Physics, Mathematics, Computer Science etc.) discipline from the University of Lagos or any other approved University may apply for admission into this programme.

II. Candidates may be required to satisfy the Department in a selection process before admission.

III. Candidates are required to satisfy all other requirements of the School of Postgraduate Studies.

Graduation Requirements

To satisfy the requirements for the award of the M.Sc. Systems Engineering degree, in any area of specialization, a candidate must: -

I. Offer and pass all core courses in his chosen area of specialization.

II. Offer and pass such a number of 800-level elective courses as is required to bring the total of 800-level course units (including core courses but excluding project) to at least 21 units.

III. Offer and pass 6 units of project and

IV. Satisfy all other conditions stipulated in the regulation of the School of Postgraduate Studies.

B. DEGREE OF MASTER OF PHILOSOPHY IN SYSTEMS ENGINEERING

Introduction

The M. Phil Programme consists of courses of formal instruction, research seminar(s) and a dissertation. A candidate may specialize in one of the areas of specializations listed above, for the Master of Science degree programme.

Admission Requirements

To be eligible for admission into the M.Phil. Programme, a candidate must:

I. Hold either a Masters Degree of at least a CGPA of 3.5/5.0 in any of the designated specialties of Systems Engineering from this or any other approved university, or a first class or second class upper bachelor's degree in an Engineering discipline or in Physics,

Mathematics, Computer Science and related disciplines from this or any other approved university.

II. Satisfy the department in a selection process and

III. Satisfy all other requirements of the School of Postgraduate Studies.

Graduation Requirements

A. To fulfill the conditions for the award of M. Phil. (Systems Engineering) degree, a candidate whose qualification on entry into the programme is a recognised M. Sc. in any of the designated specialties of Systems Engineering, must.

1. Offer and pass a minimum of 6 units of research seminars at 900-level and

2. Satisfy all other requirements stipulated in the regulation of the School of Postgraduate Studies.

To fulfill the conditions for the award of the M. Phil (Systems Engineering), a candidate whose entry qualification is a first degree, must:

1. Offer and pass all the core courses in his chosen area of specialization

2. Offer and pass such number of 800-level courses as is required to bring the total number of 800-level course units to at least 21.

3. Offer and pass a minimum of 6 units of research seminars at the 900-level, and

- Satisfy all other existing requirements stipulated in the regulations of the School of Postgraduate Studies.

C *DEGREE OF DOCTOR OF PHILOSOPHY IN SYSTEMS ENGINEERING*

Introduction:

In this programme, the emphasis is on original research, candidates may undertake their research in one of the areas of specialization listed for the M.Sc. (Systems Engineering) Degree program.

Admission Requirements

To be eligible for admission into the Ph.D. programme, a candidate is required to:-

1. Be a holder of an M.Phil. Degree or equivalent in Systems Engineering awarded by this or any other approved university.

2. Be a holder of an M. Sc. degree or equivalent with a minimum CGP A of 4.0/5.0 in Systems Engineering awarded by this or any other approved University.

3. Satisfy the Department in a selection process and satisfy all other admission requirements of the School of Postgraduate Studies.

Graduation Requirements

To satisfy the requirements for the award of a Ph.D. (Systems Engineering) degree: -

1. Holders of M.Sc. (Systems Engineering) must offer and pass a minimum of 12 units of 900-level courses

2. Holders of M.Phil. (Systems Engineering) must offer and pass a minimum of 6 units of Research Seminars at 900-level.

3. Satisfy all other requirements of the School of Postgraduate Studies.