

INTRODUCTION

The financial industry has been relying on experts from various fields, e.g Statistics, Mathematics and Engineering in order to acquire necessary technical expertise to solve a specific problem. Generally, however, it has been recognized that people are much more trained to solve financial problems if they have additional knowledge in finance and economics enabling them understand the role of financial instruments within the broader economic and business context.

Financial companies are calling on experts in the area of risk identification, risk modeling and mitigation to help them respond to increased regulation and public pressure to manage financial risk. Further, the industry expects future employees to be able to understand financial theory, to develop dynamic models and innovative products including programming their own developments. The advancement of the capital market such as the digitization of the Nairobi stock exchange and plans to introduce derivatives such as options, futures and forwards will also require integrated knowledge in Statistics, Mathematics, Finance and economics.

It is with the foregoing reasons that the University top management challenged the Department of Statistics and Actuarial Sciences to come up with an integrated undergraduate programme that would enable a graduate to solve a financial/risk problem holistically. Thus, JKUAT has now embarked on the training of manpower in Financial Engineering.

PROGRAMME OBJECTIVES

The program will prepare a student for a career as a Financial Engineer, concerned with the construction of models and application of financial theory and instruments in formulating solutions to financial problems as well as exploring financial opportunities.

Students will use statistical methods to identify, quantify and develop various strategies to mitigate against financial risks. They will also study topics in areas of economics, marketing, mathematics of investment and finance, risk management, insurance and accounting. The program is interdisciplinary and the knowledge and skills developed by students are applicable in many business settings. Hence, the graduates are expected to find employment in investment firms, commercial banking, insurance, employee benefits, pension, investment management,

Risk management areas, management consulting or continue with postgraduate studies in the area.

PROGRAMME STRUCTURE AND REGULATIONS

Duration: The program will take a total of nine semesters.

Courses: A student will be required to take 12 required units in each year. In addition, each student will be required to take 3 University units and 1 faculty unit in the first year of study. In any year of study, a student may also be required to take one or more compulsory additional units. Each student will also be required to undertake practical attachment for a period of not less than 8 weeks after the end of the eighth semester.

One unit is defined as a series of 35 one lecture hours with a three hour practical period and a two hours class lecture period being equivalent to a three hours lecture.

Mode of study: This is a full-time program at JKUAT and is conducted during normal semester time.

Regulations: All JKUAT University regulations and the regulations of the Degree of the Bachelor of Science in Financial Engineering shall apply.

Examinations: Examinations are taken at the end of every semester for the courses taken in that semester. The JKUAT and the faculty examination rules and regulations for the degree programs shall apply.

COURSE OUTLINE

Semester I and II

University Units

HRD 2101 Communication skills

SZL 2111 HIV/AIDS

HRD 2102 Development Studies and Social Ethics

Faculty Unit

SMA 2104 Mathematics for Sciences

Core units

SMA 2100 Discrete Mathematics

STA 2104 Calculus for Statistics I

HBC 2107 Introduction to Microeconomics

HBC 2237 Financial Accounting Theory

ICS 2107 Introduction to Information technology

HBC 2112 Business Law I

STA 2105 Calculus for Statistics II

STA 2100 Probability & Statistics I

STA 2120 Foundations of Financial Mathematics

SMA 2201 Linear Algebra I

HBC 2125 Introduction to Macroeconomics

ICS 2108 Programming methodology

Semester III and IV

Core units

SMA 2200 Calculus III

STA 2200 Probability & Statistics II

SMA 2304 Ordinary Differential Equations I

STA 2220 Fixed Income Securities Analysis

HBC 2205 Financial Institutions and Markets

ICS 2214 Database Management Systems

STA 2201 Probability & Statistics III

SMA 2306 Linear Algebra II

STA 2202 Introduction to Computer Interactive Statistics

STA 2221 Theory of Insurance Practice

STA 2306 Real Analysis for Statistics

HBC 2213 Management Accounting

Additional Compulsory units

HBC 2213 Organizational Behavior

SMA 2321 Numerical Analysis I

Semester V and VI units

Core units

STA 2300 Theory of Estimation

STA 2302 Probability & Statistics IV

STA 2303 Linear Programming

STA 2311 Introduction to Programming languages for Statistics

HBC 2223 Portfolio Theory & Investments Analysis

HBC 2220 Financial Statements Analysis

HRD 2114 Research Methodology

STA 2301 Tests of Hypotheses

STA 2401 Time Series Analysis

STA 2310 Risk Theory

STA 2405 Measure & Probability

STA 2411 Regression Modelling I

Additional Compulsory units

SMA 2305 Complex Analysis

STA 2305 Statistical programming

Semester VII & VIII

University Unit

HRD 2401 Entrepreneurship Skills

Core units

STA 2406 Stochastic Processes

STA 2420 Financial Time Series

STA 2421 Derivative Securities

STA 2422 Game Theory

HBC 2119 Business Finance

STA 2408 Regression Modelling II

STA 2423 Financial Risk Management

STA 2424 Advanced Portfolio Theory

STA 2425 Computer Aided Financial Modeling
STA 2426 Management of Extreme Financial Risks
HBC 2323 Mergers & Acquisitions
STA 2427 Supply Chain Management

Compulsory Additional Unit

STA 2428 Optimization Techniques

Elective units

STA 2404 Non-Parametric Methods
HBC 2324 Fund Management
SMA 2429 Project (2 Units for Sem. I & II)

NB: The units may be re-ordered if deemed necessary

Semester IX

Core Unit

SMA 2496 Practical Attachment (At least 8 weeks)

ENTRY REQUIREMENTS

The following shall be eligible for consideration for admission into the degree program.

- I. Kenya Certificate of Secondary Education (KCSE) applicants must have a mean aggregate of at least grade C+ with at least C+ in both mathematics and English.
- II. Kenya advanced Certificate of Education (KACE) or the A-level equivalent with at least two (2) principle passes including Mathematics
- III. Diploma in Applied Sciences with at least a credit pass in relevant subjects from an Institution recognized by the University Senate.
- IV. A holder of other qualifications recognized by the University Senate as equivalent to I, II and III above.

STAFF AND FACILITIES

The course is taught and examined by the staff of JKUAT together with the Senate approved specialist lecturers in the relevant subject areas. There are sufficient computer resources to support the programme. The University main library stocks a range of textbooks and journals in the areas of Statistics, Finance and Economics, among others, relevant to the program.

HOW TO APPLY

Advertisement of programme is through the press. The application forms are then obtainable from JKUAT,

upon payment of a non-refundable fee of Kshs. 1,575.00 for Kenyan Citizens and Kshs. 1,890.00 for Non-Citizens. Applications forms may also be downloaded from the <http://www.jkuat.ac.ke/> and must be submitted with the above respective fees.

TUITION AND ATTACHMENT FEES

The estimate for tuition fees is Kshs. 76,403 per semester for the first two semesters and 62,078.00 per semester for the next six semesters for Kenyan Citizens. For non-citizens, add an extra 20% to the amount in every semester.

OTHER FEES

Upon request.

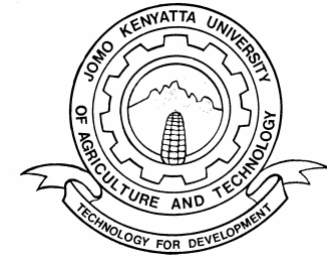
ACCOMMODATION

University accommodation may not be available and students are advised to make their own arrangements. Suitable accommodation are available within Juja and its environs and the office of the Dean of Students may assist.

For more information, contact:

The Director,
JKUAT ADP,
P.O Box 62000, Nairobi 00200
Tel: (067) 52181-4, 52711 Ext 6119
Fax: (067) 52164/52030
Email: adp@fsc.jkuat.ac.ke OR

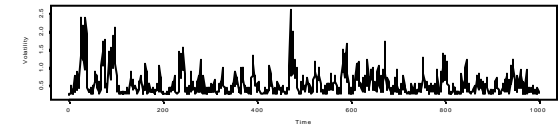
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JOMO KENYATTA UNIVERSITY OF
AGRICULTURE AND TECHNOLOGY (JKUAT)

**DEPARTMENT OF STATISTICS
AND ACTUARIAL SCIENCES**

**Bachelor of Science in
FINANCIAL ENGINEERING
Programme**



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