

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY MANAGEMENT

1. INTRODUCTION

With the new advancements in the field of computers and in a time when there is a boom in the local IT industry, the Jaramogi Oginga Odinga University of Science and Technology, School of Informatics and Innovative Systems (SIIS) has introduced MSc in Information Technology Management a two year postgraduate programme for professional in the information Technology sector in business and industry. The school is contributing in its own inimitable way to the development of Business informatics by offering this course with the help of efficient and highly qualified researchers and lecturers through a well-equipped computer lab. The course provides rigorous advancement of applied concepts of business Management and Information Technology. In the second year students also gets an opportunity to undertake a dissertation. Hence the combination of the applied concepts and practical training on software tools equip graduates with the requisite knowledge and skills required of Information technology Management professionals in business and industry.

2. OBJECTIVES

The overall objective of the programme is to produce skilled, motivated and internationally competitive information technology Management graduates to work in both private and public informatics sector of the economy. The specific objectives of the programme are:

- (a) Train graduates with the ability to apply information technology management knowledge, skills, techniques and tools to create best-possible solutions to practical problems of varying complexity, in a wide range of contexts.
- (b) Facilitate the acquisition, adoption and adaptation of information technology knowledge, techniques and tools to improve business performance.
- (c) Train graduates who are innovative and creative, who possess good problem-solving skills and are capable of life-long learning.
- (d) Train all-rounded graduates with demonstrable ethical and professional behaviour, and who possess effective communication, management, entrepreneurial and interpersonal skills.

3. ADMISSION REQUIREMENTS

To qualify for admission into the Master Degree candidates shall be:

- (a) Holders of at least an upper second class honours degree in Computer Science or Information Technology from Jaramogi Oginga Odinga University of Science and Technology or any other recognized University
- (b) Holders of a lower second class honors degree of Jaramogi Oginga Odinga University of Science and Technology or any other recognized University and a Postgraduate Diploma in Computer Science from any other recognized University, or evidence of extensive research experience as demonstrated by publications in peer reviewed journals, or professional experience as evidenced demonstratable by software systems development.

In addition to the above, applicants must meet the specific requirements of the Masters programme as approved by the Senate.

4. COURSE STRUCTURE AND DURATION

The MSc course shall normally take two years covering 4 semesters offered by unit method.

Courses shall be offered in units. A course unit is defined as that part of a semester subject described by coherent syllabus and taught normally over a period of a semester. It is designated as a total of 42 hours of study in a semester. For this purpose, one 1-hour lecture is equivalent 2-hours tutorial or 3-hours practical or any combination as may be approved by the Board of the School of Informatics and Innovative Systems.

Part-time students shall be allowed to take not less than 50% of the courses prescribed for the year.

All course units will be taught for a total of 42 contact hours, including examinations except project work which will take 480 hours of practical work and project writing.

Students are expected to start writing their proposals in Year Two Semester One.

5. EXAMINATIONS REGULATIONS

Jaramogi Oginga Odinga University of Science and Technology Examinations rules and regulation shall apply.

7. COURSE DISTRIBUTION

One semester shall comprise minimum of four (4) units and a maximum of six (6) units.

YEAR ONE: SEMESTER ONE

Course Code	Course Title	Contact Hours			Weight (Units)
		Lecture	Practical	Total	
IIT 5111	Computer Operating Systems & Virtualizations	28	14	42	1C
ICT 5111	IT Management Concepts	28	14	42	1C
ICT 5112	Strategic Information Systems	28	14	42	1C
ICT 5113	Data and Knowledge Management	28	14	42	1C
ICT 5114	Decision Making with Computer	28	14	42	1C
ICT 5115	Information Security Audit and Controls	28	14	42	1C
Total		168	84	252	6

YEAR ONE: SEMESTER TWO

Course	Course Title	Contact Hours	Weight
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Code		Lecture	Practical	Total	(Units)
ICT 5121	Project Management in IT	28	14	42	1C
ICT 5122	Business Processes Analysis and Information Systems Auditing	28	14	42	1C
ICT 5123	IT Entrepreneurial Process	28	14	42	1C
ICT 5124	Managing Service Operations	28	14	42	1C
ICT 5125	Research Methods	28	14	42	1C
MBM 5123	Financial Management	42	0	42	1R
Total		182	70	252	6

YEAR TWO: SEMESTER ONE

Course Code	Course Title	Contact Hours			Weight (Units)
		Lecture	Practical	Total	
ICT 5211	Introduction to Global IT Outsourcing	28	14	42	1C
ICT 5212	Information Assurance	28	14	42	1C
ICT 5213	Enterprise Systems Architecture	28	14	42	1C
ICT 5214	Enterprise Resource Planning	28	14	42	1C
ICT 5215	Quality Management Process	28	14	42	1C
	Electives (Any 1 Elective)*				

***ELECTIVES - Any 1 Electives**

Course Code	Course Title	Contact Hours			Weight (Units)
		Lecture	Practical	Total	
ICT 5216	Decision Support Systems for IT Managers	28	14	42	1E
ICT 5217	Business Process Management	28	14	42	1E
ICT 5218	IT Law	28	14	42	1E
ICT 5219	Global Outsourcing Strategy	28	14	42	1E
ICT 5231	Costs, Benefits and Risks in Outsourcing	28	14	42	1E
ICT 5232	Ubiquitous and Pervasive Computing	28	14	42	1E

YEAR TWO: SEMESTER TWO

Course Code	Course Title	Contact Hours			Weight (Units)
		Lecture	Practical	Total	
ICT 5221	Project	0	480	480	1C

7. COURSE DESCRIPTION

YEAR ONE: SEMESTER ONE

IIT 5111 Computer Operating Systems & Virtualizations (42 hrs)

Introduction to hypervirtualization: Xen, VMware, Citrix XenServer, Windows 2008R2 Hyper-V or later, and Oracle VirtualBox. Introduction to major enterprise computer operating systems: Windows Server Active Directory security, policy and access controls. Secure Linux/UNIX powered servers using current CentOS/RHEL, Ubuntu and Mac OSX servers. DNS server and its implementation. LDAP (OpenLDAP) solution for identity management and Single-sign-on (SSO). OpenSSL for secure network communications (SSL/TLS). Secure messaging solutions using MS Exchange Server and open source Postfix and Sendmail mail servers.

ICT 5111 IT Management Concepts (42 Hrs)

Advances and challenges of management concepts: the nature and form of Information Technology organisations and their management; importance in society and study of their form. The unit is structured around four key sub-themes: Organisational Behaviour; Business Statistics for IT Managers, and Financial Accounting for IT Managers; Organizational change and learning.

ICT 5112 Strategic Information Systems (42 Hrs)

Strategic and tactical operation concepts: challenges, techniques and technologies associated with the management of information technology in the modern business environment. Linkage of IT to business strategy and business process re-engineering; information technology concepts; systems development process; information system planning; project management and control; IT acquisition, budgeting and deployment; performance evaluation and audit; and operations management; privacy and security.

ICT 5113 Data and Knowledge Management (42 Hrs)

Data and knowledge management challenges and best practices; corporate data and knowledge modeling and management. Organization of data and knowledge, selection of suitable representation methods and tools, access to stored data and knowledge through retrieval and

search techniques. data integrity, DBMS, data warehousing and data mining, knowledge acquisition and sharing, and knowledge management strategy.

ICT 5114 Decision Making with Computer (42 Hrs)

Decision making with computer challenges and best practices; overview of principal quantitative techniques used in solving financial, marketing, and operations problems in the private and public sectors. Decision under uncertainty, Markov chain, linear programming, classical optimization, dynamic programming, and integer programming.

ICT 5115 Information Security Audit and Controls (42 Hrs)

IT security and control: accounting and auditing perspective, impact of technology on business and business applications. Controls management and impacts on business objectives. Tools and techniques used to identify and test controls. Relevant technology and system issues: security and control related to e-commerce, the internet, and computer auditing. Hands on labs using commercially available Computer-Assisted Audit tool.

YEAR ONE: SEMESTER TWO

ICT 5121 Project Management in IT (42 Hrs)

Project management (PM) principles and practices in IT; Portfolio management; tools such as Charters, FEMA, Gantt Charts, PERT Charts, Work Breakdown Structures (WBS), Critical path analysis, Budget simulation, Timeline simulation, Project crashing, and Project plans, in order to increase the likelihood of project success. Project Risk and Cost Management: Leadership Type; Behavioral Strengths and Motivators; Managing personal growth, Time and accountability; Managing team conflict; Improving team productivity; Planning and Problem-Solving using collaboration; Relationships with stakeholders. Project risk and cost management: Project planning; Cost management; Managing budget and progress; Risk management; Portfolio management; ROI. Project integration: Quality and risk; Quality control and assurance; Reliability. Ethical and legal issues in PM: Breach of Contract, Judicial remedies, and Alternative dispute resolution mechanisms.

ICT 5122 Business Processes Analysis and Information Systems Auditing
(42 Hrs)

Introduction: Business Processes Analysis and Information Systems Auditing concepts; Essential aspects of business processes: structural and object-oriented analysis techniques. Importance of business IS controls in contemporary IT governance. Aspects of IS control frameworks. Computer-Assisted Audit Tools and Techniques (CAATTs) for IS controls in business processes. Conducting IS audits logistics through the IS audit life cycle. Managing business processes and optimizing process effectiveness in addition to efficiency for enhance delivery.

ICT 5123 IT Entrepreneurial Process **(42 Hrs)**

Introduction; entrepreneur process, standards and best practices. The Technology Start Up: from Idea to Reality: find, evaluate, and develop an opportunity by overcoming the forces that resist the creation of something new. Basic tools necessary to identify a real business opportunity to start, plan, fund, manage, sustain and grow a technology enterprise. The process has four distinct phases: identification and evaluation of the opportunity, development of the business plan, determination of the required resources, and management of the resulting enterprise. Business disaster management: disaster recovery and business continuity process.

ICT 5124 Managing Service Operations **(42 Hrs)**

Development of analytical thinking skills: development of services, evaluation and implementation for strategies for a wide range of service producing organizations. Economics of customer loyalty and approaches to building customer loyalty; formulation and implementation of service strategies and the strategic service vision for greater business success; management of the operational behavior of customers in service delivery; design of sustainable service models that successfully incorporate a customer's operating role; analyzes of customer data to inform managerial decision making; and management of changes in service settings.

ICT 5125 Research Methods **(42 Hrs)**

Formulating a research question or research problem, determining research design; assessing data collection methods, determining a sampling framework, types of data analyses and interpreting data. Discuss knowledge of different strategies for undertaking research projects within the computing and information systems fields. Use of surveys, case studies, experiments and action research as strategies to support clearly defined research hypotheses.

MBM 5123 Financial Management**(42 hrs)**

Introduction: financial management theory and financial statement analysis. Objectives and functions of financial management: time value of money, concept of risk and return. Capital Budgeting: Data requirements; evaluation techniques, pay back, internal rate of return, net present value, capitalization & capital structure, computation of specific and weighted cost of capital. Working capital management: determination of working capital cash management, receivables management and inventory management. Financial Decision: Relationship between dividend policy and value of a firm, dividend policy in practice, factors affecting dividend policy, legal and procedural aspects of dividend policy.

YEAR TWO: SEMESTER ONE**ICT 5211 Introduction to Global IT Outsourcing****(42 Hrs)**

Survey of Global IT Outsourcing (GIO): significant trends in IT outsourcing; new forces redefining IT outsourcing, the challenges in GIO, the new rules, and how to be ready for it yet. GIO and infrastructure services for outsourcing. The economics of multi-tower IT sourcing. Strategy for transforming technology and applications: mobile devices, social media, and cloud-based applications; and strategies for financial-based business process management (BPM) service outsourcing industry,

ICT 5212 Information Assurance**(42 Hrs)**

Basic principles and security concepts related to information systems: workstation security, system security, communications security, and information security via database technology. Legal infrastructure: DMCA, the Telecommunications Act, and wire fraud and other ethical issues. Security methods: controls, and procedures; the economics of cyber crime; criminal procedure; and forensics. Information tools: cryptography as a tool, software development processes, and protection. Information security: CIA, risks, threats, vulnerabilities and countermeasures. Risk assessment and identification of business critical processes. Security standards and codes of practice; System security policies, Software access controls. Physical (hardware) security and cryptography. Organisational aspects of information security.

ICT 5213 Enterprise Systems Architecture**(42 Hrs)**

Enterprise systems architecture concepts: emerging issues for Enterprise Systems Architecture, infrastructural issues in e-business, Electronic commerce retailing and corporate finance; Intranets and supply chain management; remote banking, procurement and purchasing, online

ICT 5216 Decision Support Systems for IT Managers (42 Hrs)

Introduction; Conceptual analytical skills and decision-making techniques: problem finding and problem solving for strategic decision making. Model-based decision support systems; contemporary systems thinking with computing technologies. Problem solving techniques and their application to computer-based decision support systems.

ICT 5217 Business Process Management (42 Hrs)

Business process management (BPM) concepts and IT services skills: business process and technology management. Business process management: modelling business solutions, the actual business and its goal, processes, talent development, resources and the rules that govern their interactions through systems thinking and simulation. Process modelling in business and industry in delivering bespoke, component and tailor made process improvement models (systems).

ICT 5218 IT Law (42 Hrs)

Strategic techniques for making decisions which have legal implications, legal framework involved in planning and executing business transactions or initiatives, grasp of the legal opportunities and risks. Legal issues and risks involved in developing and launching new products, ventures and business models in relation to government regulations and compliance, protecting and commercializing company intellectual properties (IP). Law-sensitive issues: legal exposure to company and company personal, privacy and location surveillance, digital signature, copyright and outsourcing best practices. IT law and business operations; handling of digital fraud, digital evidence collection, preservations and its presentation to courts. Introduction to Kenya Legal System; Contract Law; Torts Law; internet impact on legal systems; IT Laws in business operations in Kenya. IT Policy concepts.

ICT 5219 Global Outsourcing Strategy (42 Hrs)

Global Outsourcing Strategy (GOS); overview of sound decisions on global sourcing strategy, services outsourcing, Information Technology outsourcing. Global Services Sourcing Landscape: Past, Present, and Future. Developing Managerial Competence in Global Sourcing: Strategy and Management; Economic and management theories and examples from managerial best practices. Challenges of global sourcing and costs, risks, rewards, and strategies involved. Historical and economic perspectives on outsourcing and offshoring; Trade-offs among global sourcing models: Domestic Outsourcing, Offshore outsourcing, Domestic In-sourcing Captive Models; Types of global outsourcing services: IT, BPO, Infrastructure; Developing an outsourcing

strategy; Sourcing in different geographies; The vendor landscape: local/multinational, niche players/generalists; Legal Issues: Contracts, Taxes, IP, Privacy, Compliance; Critical success factors in managing outsourcing relationships; Managing distributed work teams: overcoming distance, time, and culture; Innovating through global sourcing. Case studies.

ICT 5231 Costs, Benefits and Risks in Outsourcing (42 Hrs)

Outline the major aspects of outsourcing with a focus on IT and IT enabled services outsourcing (including KPOs and BPOs). Conditions in which outsourcing makes sense and conditions where short term cost gains are offset by long term systemic issues. Voluntary and involuntary outsourcing for both consumers of IT and IT enabled services and producers of IT and IT enabled services. Variables that impact outsourcing, impacts of outsourcing from business as well as social perspectives in modern business setup. Strategies for developing and managing seamlessly delivery of services from a global outsourcing network of centers to meet a client's business objectives, cultural and language needs and cost reduction goals. Case studies.

ICT 5232 Ubiquitous and Pervasive Computing (42 Hrs)

Ubiquitous and Pervasive Computing: design issues for ubiquitous computing; integration and processing of sensor-based input; wireless infrastructures; security and user-interfaces; integrated, multimodal input and output and application areas. Survey the emerging hardware and software landscape, issues concerned with interfacing and exploiting cloud computing and a pervasive infrastructure. Examples of innovative service types and the economic and business model, underlying the development and their support. Cloud computing concepts. Consumer-oriented service in areas such personal health and well-being, environmental and disaster monitoring, energy and carbon footprint minimisation and personal and national planning for sustainable growth.

YEAR TWO: SEMESTER TWO

ICT 5221 Project

(42 Hrs)

Each student will conduct his or her research with the approval and under the direction of the designated Departmental Course Coordinator. Prerequisites: Successful completion of all core ITM courses.