

MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY



**PROGRAMME SPECIFICATION FOR
BACHELOR OF SCIENCE IN BUSINESS INFORMATION TECHNOLOGY**

March 2021

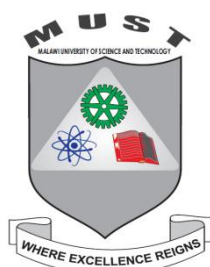
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MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY

PROGRAMME SPECIFICATION: BACHELOR OF SCIENCE IN BUSINESS INFORMATION TECHNOLOGY

1. General Information

Awarding Institution	Malawi University of Science and Technology
Programme Title	Bachelor of Science in Business Information Technology
Programme Code	BBIT
Faculty/School	Malawi Institute of Technology (MIT)
Programme Length	4 years
Credits	480
Final Award	BSc in Business Information Technology

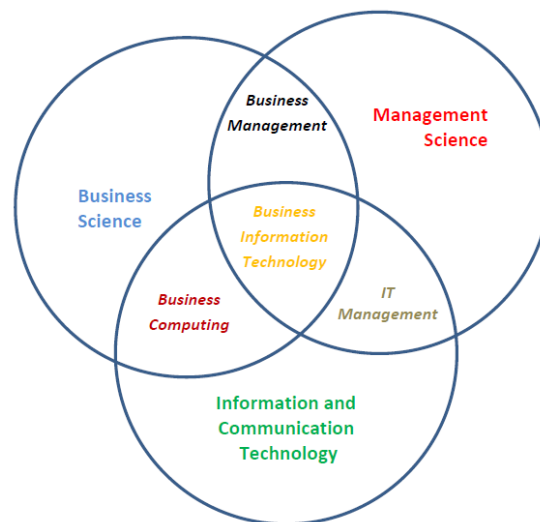
2. Rationale for the Programme

Many organisations in Malawi, both public and private, are in the process of introducing information and communication technologies (ICT) with the aim of enhancing or improving their operations. In terms of human capital, there is no reliable link between business and ICT professionals. In this 'technological world' there is a need to have some individuals at all management levels who are conversant with both business and ICT.

Through this programme, the University intends to contribute to the solid training of professionals with knowledge and skills on the management of IT-supported business systems in any kind of organisation.

Business Information Technology deals with all aspects of business, management and information technology (IT). It combines business science, management science and ICT as shown in Diagram 1. The business science focuses on issues concerning design and development of business system procedures and processes to be productive and efficient. The management science deals with setting of vision and goals, planning, implementation, deployment of resources, controlling and monitoring, coordination and evaluation of operations. The ICT component involves system analysis and design, software engineering, and systems administration.

Diagram 1: The Development of Business Information Technology



3. Educational Aims of the Programme

The main aim of this programme is to produce high calibre graduates that will effectively apply IT skills, techniques and processes in the operations and management of organizations.

4. Programme Learning Outcomes

(a) *Knowledge and Understanding*

At the end of this programme graduates should be able to demonstrate sound knowledge of:

1. The functions and operations of an organization.
2. Business and organizational systems for ICT solutions.
3. Management tools for effective decision making.
4. Application of ICT for strategic decision making.
5. Ethical and social issues related to business and ICT professional responsibilities.

(b) *Intellectual Skills*

At the end of this programme graduates should be able to:

1. Demonstrate a systematic and creative approach to problem solving in the business world.
2. Apply ICT techniques and systems in business processes.
3. Analyze business and organizational system for ICT solutions.
4. Assess and manage business risks for organizational continuity.
5. Apply ethics and professionalism in the development and management of ICT solutions.

(c) *Practical Skills*

At the end of this programme, graduates should be able to:

1. Develop ICT supported systems to contribute towards organizational effectiveness.
2. Develop effective strategic plans for organizational competitiveness.
3. Apply leadership and managerial skills to achieve results.
4. Display cultural, communication and team management skills.
5. Administer and support ICT supported business systems for organizational effectiveness and efficiency.

(d) *Key Skills*

At the end of this programme, graduates should be able to:

1. Contribute toward strategic decision making using the acquired ICT and business skills and techniques.
2. Communicate effectively and persuasively using the full range of currently available methods.

3. Manage resources and time.
4. Work in a team, which may be multi-disciplinary.
5. Learn independently, identifying own personal development needs and goals, reflecting on own performance and managing own personal development.
6. Obtain and process information from a wide range of sources for application in a business setting.

5. Teaching And Learning Approaches

Lectures, tutorials, practicals, field visits, industrial attachment, group discussions, student presentations, guest speakers and research projects.

6. Assessment Methods

Assessment will comprise coursework (using assignments, laboratory, field visits, tests, projects, and presentations), end of semester examinations.

7. Minimum mandatory attendance of lectures

For a student to be eligible to write an examination, the student must attend at least 10 weeks of teaching.

8. Criteria for Admission

Entry at Year 1: MSCE, O levels, IGCSE, GCE with Six Credits including:
Mathematics, English and Physics

Entry in Year 2:

- i. A-Level with at least a C grade in Mathematics, Physics
- ii. Advanced Diploma in ICT, Business Information Systems and Business Administration.

9. Support for Students and Their Learning

- Library resources

- IT resources (40 computers, Internet)
- Recreational facilities

10. Quality Assurance

- Internal examination moderation
- External examiners
- Stakeholders feedback
- Course evaluation by students

11. Programme sustainability

The programme will be sustained by programme tuition fees, short course and professional certifications fee and examination administration fees of these certifications.

12. Resources Non Academic Staff Complement

Position	Required Personnel	Qualification	Area of Expertise
Computer Technician	1	Advanced Diploma	Computer hardware / networking

13. Resources: Academic Staff Requirements

Position	Required Personnel	Qualification	Area of Expertise
Lecturer	3	At Least MSc	Computer Science / IT
Lecturer	2	At Least MSc	Computer Science Software Engineering
Lecturer	1	At Least MSc	Accounting and Finance
Lecturer	1	At Least MSc	Business Management
Lecturer	1	At Least MSc	Entrepreneurship
Lecturer	1	At Least MSc	Mathematics
Lecturer	1	At Least MSc	Language and Communication

Lecturer	1	At Least MSc	Statistics
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14. Programme Structure for BSc in Business Information Technology

Semester	Year 1	Year 2	Year 3	Year 4
1	Business Mathematics I (BMAT-111) Creative Thinking (INNV-111) Information Systems (INFS-110) Introduction to Business (BUSS-110) Introduction to Computer Applications (COMP-111) Language & Communication Studies I (LCOS-111)	Data Structures & Algorithms (DSAL-210) Database Systems (DSYS-210) Fundamentals of Economics (ECON-210) Information Security (ISEC-210) Object-Oriented Programming (OOPR-210) Operating Systems (OSYS-210)	Business Law (BLAW-310) Computer Networks II (CNET-312) Fundamentals of Corporate Finance (FCOF-310) Human Computer Interaction (HUCI-310) Introduction to Machine Learning (MLEN-310) Marketing (MRKT-310)	Business Intelligence (BINT-410) Business Management & Entrepreneurship (BMEN-410) Enterprise & Cloud Computing (ECCO-410) Human Resource Management (HRMG-410) Research Project (RESP-412)

2	Business Innovation (INNV-122) Business Mathematics II (BMAT-122) Discrete Mathematics (MATH-123) Introduction to Computer Programming (COMP-122) Language and Communication Studies II (LCOS-122) Organizational Behaviour (ORBE-120)	Computer Networks I (CNET-221) Fundamentals of Accounting (FOAC-220) Introduction to Statistical Analysis (STAT-220) Management Principles & Practice (MPPR-220) Systems Analysis & Design (SYAD-220) Web Development (WEBD-220)	Ethics in Business Information Technology (ETHS-320) Mobile Application Development (MAPP-320) Operations Management (OPMG-320) Project Management (PJMG-320) Research Methods in Computing (RMEC-321) Server Administration (SVAD-320)	Work Integrated Learning (WILE-420)
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15. Programme Loading for BSc in Business Information Technology

Year 1: Semester 1

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
BMAT-111	Business Mathematics I	3	1	4	10
INNV-111	Creative Thinking	3	1	4	10
INFS-110	Information Systems	3	1	4	10
BUSS-110	Introduction to Business	3	1	4	10
COMP-111	Introduction to Computer Applications	2	2	4	10
LCOS-111	Language & Communication I	2	2	4	10
					60

Year 1: Semester 2

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
INNV-122	Business Innovation	3	1	4	10
BMAT-122	Business Mathematics II	3	1	4	10
MATH-123	Discrete Mathematics	3	1	4	10
COMP-122	introduction to Computer Programming	2	2	4	10
ORBE-120	Organizational Behaviour	3	1	4	10
LCOS-122	Language & Communication II	2	2	4	10
					60

Year 2: Semester 1

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
DSAL-210	Data Structures & Algorithms	2	2	4	10
DSYS-210	Database Systems	3	1	4	10
ISEC-210	Information Security	3	1	4	10
ECON-210	Fundamentals of Economics	3	1	4	10
OOPR-210	Object-Oriented Programming	1	3	4	10
OSYS-210	Operating Systems	2	2	4	10
					60

Year 2: Semester 2

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
CNET-221	Computer Networks I	2	2	4	10
FOAC-220	Fundamentals of Accounting	2	2	4	10
STAT-220	Introduction to Statistical Analysis	2	2	4	10
MPPR-220	Management Principles and Practice	2	2	4	10
SYAD-220	Systems Analysis & Design	2	2	4	10
WEBD-220	Web Development	2	2	4	10
					60

Year 3: Semester 1

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
BLAW-310	Business Law	3	1	4	10
CNET-312	Computer Networks II	2	2	4	10
FCOF-310	Fundamentals of Corporate Finance	2	2	4	10
HUCI-310	Human Computer Interaction	2	2	4	10
MLEN-310	Introduction to Machine Learning	3	1	4	10
MRKT-310	Marketing	3	1	4	10
					60

Year 3: Semester 2

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
ETHS-320	Ethics in Business Information Technology	3	1	4	10
MAPP-320	Mobile Application Development	2	2	4	10
OPMG-320	Operations Management	3	1	4	10
PJMG-320	Project Management	2	2	4	10
RMEC-321	Research Methods in Computing	3	1	4	10
SVAD-320	Server Administration	2	2	4	10
					60

Year 4: Semester 1

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
BINT-410	Business Intelligence	2	2	4	10
BMEN-410	Business Management & Entrepreneurship	2	2	4	10
ECCO-410	Enterprise & Cloud Computing	2	2	4	10
HRMG-410	Human Resource Management	3	1	4	10
RESP-412	Research Project	0	6	6	20
					60

Year 4: Semester 2

Code	Module	Lecture (hr/wk)	Practical/Tutorial (hr/wk)	Total (hrs)	Credits
WILE-420	Work Integrated Learning				60
					60

16. Module Descriptors for BSc in Business Information Technology**YEAR ONE****BMAT-111 Business Mathematics I**

This module aims at introducing students to mathematical techniques necessary for understanding and solving business and ICT problems. It also equips students with thinking and reasoning skills. Topics to be covered include logic, set theory, permutations and combinations, functions and graphs and their application to business.

INNV-111 Creative Thinking

This module aims at enhancing students' understanding of the concepts of creative thinking and to inspire and influence them with new ways of looking at problems and resolving them. The content will include topics such as: The Nature of Creativity; The Nature of Creative Thinking; Techniques for Lateral Thinking; Creativity and Problem-solving; Biases and Creativity; Analogy and Creative Thinking; Creative Ideas in the Business World; Creativity and Personality and Creative Thinking in Action.

BUSS-110 Introduction to Business

This module will provide a foundation for understanding business functions and methods, and the management of business organizations in the modern society. It presents to students aspects of the business environment, basic economic, marketing and human resource management concepts and the management of business finances.

COMP-111 Introduction to Computer Applications

The module provides a fundamental understanding of computers and their applications focusing on their day-to-day usage. Students will be equipped with knowledge and skills on word processing, spreadsheets, and presentation using common software packages as well as the usage of the Internet. Topics to be covered include: Introduction to Computers, Numbering Systems, Using the Internet and Using common office applications.

INFS-110 Introduction to Information Systems

This module introduces concepts and technologies of Information Systems (IS). The main emphasis is on: understanding what constitutes an IS; IS acquisition processes, and how they relate to organisational operations; basic telecommunication technologies supporting business processes and e-commerce. The module also illustrates how Information Systems (IS) are: planned, developed or acquired and deployed within organisations and across the globe; used in supporting different business processes at

different levels. Thus, the module provides a background to understanding how IS can be planned, acquired, deployed and used in organisations and across the globe.

LCOS-111 Language and Communication Studies I

This module introduces students to cognitive academic language proficiency necessary for effective communication. It covers effective time management skills, understanding of variety of texts, taking fair notes from oral and written texts, writing well documented essays, effective oral presentations, and constructive participation in class and group discussions.

INNV-122 Business Innovation

This module provides the industrial and strategic context for promoting innovation. The module focuses on tools and techniques conducive to generation and improvement of new ideas, workflows, methodologies, services and/or products. Major topics of study include creative process, product development, understanding and measuring processes, and innovation and organisational culture.

BMAT-122 Business Mathematics II

This module aims at providing the students with mathematical techniques and competencies needed in the various business and ICT-related fields. Topics to be covered include matrices, index numbers, differentiation and integration and their relevant business applications.

MATH-123 Discrete Mathematics

This module aims at giving students an in-depth understanding of basic concepts in discrete mathematics. On completion of the module, students will be able to apply

counting techniques, solve recurrence relations, generating functions and problems in elementary number theory.

COMP-122 Introduction to Computer Programming

The module introduces the methodical techniques of structured programming. Major topics include: Introduction to Computer Programming and C++, Elementary Programming, Functions, Control Structures, Arrays, Dynamic Memory Allocation, Enumeration, Structures and Namespaces. By the end of the course student will have acquired computer programming skills for translating problem specification into a corresponding computer program.

LCOS-122 Language and Communication Studies II

This module equips students with effective technical and business communication skills. It covers technical writing, communication theory, use of nonverbal communication in business, effective writing skills, oral communication skills and visual communication.

ORBE-120 Organizational Behaviour

The purpose of this module is to develop students' understanding of human behaviour in an organizational context and how to manage it. Topics to be covered include: understanding the individual; personality, motivation, learning and other factors influencing individual behaviour, Group dynamics, power and influence and organizational factors affecting human behaviour.

YEAR TWO

DSAL-210 Data Structures and Algorithms

The module focuses on approaches to data abstraction and modern theory of algorithms. Particularly, the module provides content on the design and analysis of algorithms, to solve problems. Students going through the module will also gain skills on how to analyse the efficiency and complexity of algorithms. In addition, the module will equip students with skills on how to navigate abstract data structures in attempting various problems.

DSYS-210 Database Systems

This module will equip students with fundamentals of relational, object-oriented, and distributed database systems. Topics covered include: Introduction to Databases, The Entity Relationship Data Model, Database Design, Relational Calculus and Algebra, Introduction to SQL, Transaction Management and Database Security Issues.

ECON-210 Fundamentals of Economics

In this module, students develop understanding of fundamental economic principles, which allows for and encourages informed discussion of economics issues. Special emphasis is given to understanding how these concepts are applied and influenced by choices which individuals and organizations face every day. Topics include contrasting macroeconomics and microeconomics; gross domestic product; economic growth and business cycles; unemployment and inflation; aggregate supply and demand; scarcity, opportunity costs, and trade; law of supply and demand; money and exchange rates; government choices, markets, efficiency, and equity; monopoly and competition; externalities, public goods, and free riders; and globalization and trade policy.

ISEC-210 Information Security

The module focuses on the fundamentals of information security that are used in protecting both non-digital and digital information. The course includes data and information as a resource including classification, access and transmission controls, Security architecture tools, risks and vulnerabilities, Operational threat environments, physical protection, archive and retrieval of information, Information management, Monitoring security of information and information flow, Security intelligence systems, Similarities between computer and information security, Plan and implementation of Business continuity plans (BCP) and Assessment principles in Information Systems Vulnerabilities.

OOPR-210 Object-Oriented Programming

This module will provide the students with a solid theoretical understanding of, as well as practical skills in, object-oriented programming.

OSYS-210 Operating Systems

This module provides an introduction to the fundamental theories of common operating systems. Topics to be discussed include: Overview of Operating Systems, Process management, CPU Scheduling, Memory Management and I/O management. By the end of the course, students will have acquired comprehensive knowledge of building components of common operating systems and practical skills in navigating common operating systems including Linux/Unix, Windows and Android.

CNET-221 Computer Networks I

This is an introductory module that aims at teaching the fundamental principles and theoretical concepts of computer networks and applications. It also aims at imparting practical skills to configure and troubleshoot networks of moderate size. Areas covered

include introduction to layered communication models (OSI, TCP/IP), analog and digital transmission techniques, routing and switching, network design fundamentals, common Internet application protocols (HTTP, FTP, SMTP, IMAP) and the Internet governance ecosystem.

FOAC-220 Fundamentals of Accounting

This module provides students with introductory Financial Accounting skills to enable them classify and record basic business related financial transactions and also use the acquired basic concepts of Cost and Management Accounting that is relevant for managerial decision-making to meet information needs of the different users of accounting information.

STAT-220 Introduction to Statistical Analysis

This module provides students with statistical tools for quantitative analysis of problems. Major topics of study include probability, Sampling and sampling distributions, linear regression and correlation, and data analysis with software such as SPSS and R.

MPPR-220 Management Principles & Practice

This module provides a basic framework for understanding the role and functions of a manager and to explain the principles, concepts, and techniques that can be used in carrying out these functions. It is intended for those who presently hold, or desire to hold, management responsibilities in any organization or enterprise. Specific topics include planning, decision making, organizing, leading and controlling.

SYAD-220 Systems Analysis & Design

System analysis and design deal with planning the development of information systems through understanding and specifying in detail what a system should do and how the

components of the system should be implemented and work together. System analysts solve business problems through analysing the requirements of information systems and designing such systems by applying analysis and design techniques. This module deals with the concepts, skills, methodologies, techniques, tools, and perspectives essential for systems analysts.

WEBD-220 Web Development

The module aims at imparting essential knowledge to students for creating websites using key technologies of the World Wide Web. Topics covered include: Introduction to the World Wide Web, HTML Basics, Styling Webpage, Dynamic Webpages with JavaScript, HTML Form Validation, and Web Application Frameworks and Design Patterns. At the end of the module, students should have knowledge and practice needed to jumpstart a career in web development.

YEAR THREE

BLAW-310 Business Law

The module aims at providing students with basic legal principles that will enable them be knowledgeable of the legal aspects guiding business transactions and operations in Malawi and beyond. Topics that will be covered include sources of Law, Malawi Legal system, Law of contract, Law of Agency, Negotiable Instruments, Contract of Sale of Goods, competition and fair trading.

CNET-312 Computer Networks II

This module focuses on equipping students with the necessary theoretical knowledge and practical skills to design, implement and maintain complex computer networks. It assumes prior knowledge of the fundamental theory of computer networks and aims at preparing students for further training and research in the areas of computer networks

and security. Areas covered include switched network design, WAN switching protocols, wireless network planning and deployment, IPv4/IPv6 addressing, inter-AS and intra-AS routing (RIP, OSPF, BGP4), routing algorithms and convergence, transport layer issues, traffic monitoring and Internet architecture.

FCOF-310 Fundamentals of Corporate Finance

The module introduces the students to the corporate financial environment with general issues on management of working capital, sources, structure and cost of capital and capital investment appraisals and their related investment decision making.

HUCI-310 Human Computer Interaction

The module will provide students with knowledge and practical skills in the area of human computer interaction, to promote the development of systems that enhance user experience. Topics covered include: history of human computer interaction, User interaction design guidelines, Frameworks and interaction models, Emotional design, Designing and conducting user studies, User experience design for different devices, Prototyping, Universal design, Usability evaluation, Data visualisation and Future directions in human computer interaction.

MLN-310 Introduction to Machine Learning

This module aims to introduce students to basic principles and methods of machine learning to hands-on machine learning approaches. Topics covered include: Introduction to Machine Learning, Supervised Learning, Unsupervised Learning, Regression, Classification, Clustering, and Introduction to Deep Learning. By the end of the module, students will progress from abstract principles and methods of machine learning to hands-on machine learning approaches.

MRKT-310 Marketing

The module introduces students to the basic concepts of marketing as a system that will provide vision to businesses, monitor and understand the dynamic environment, generate strategic options, and develop marketing strategies based on sustainable competitive advantage. The module adopts both theoretical and practical perspectives. It will cover topics in the utilities of marketing concepts, marketing strategy, marketing mix, and marketing research.

ETHS-320 Ethics in Business Information Technology

The module will equip students with knowledge on moral issues surrounding the use of computers and information technology today, with an emphasis on ethical issues. Areas covered include; Ethics for IT Workers and IT Users, Computer and Internet Crime, Privacy and Confidentiality, Intellectual Property, Ethics of IT Organizations and Software Engineering Code of Ethics.

MAPP-320 Mobile Application Development

The module will provide students with the principles, and practical experience, in mobile application design, development, and distribution. Topics covered include: Introduction to mobile computing, mobile operating system architectures, application development frameworks and environments (Android, iOS, Windows, etc.), Mobile user experience design, Prototyping, Storing and retrieving data, Messaging, Networking, Notifications and alarms, Location-based services, Ubiquitous computing: wearables, living room, Mobile device security, Publishing, deployment, maintenance, and management of mobile applications.

OPMG-320 Operations Management

The module equips students with production and operations tools required in the production and the emphasis is on computer applications and practical problem-solving skills. The module provides a survey of the decision processes in production and

operations management and their relationship to other business functions. Topics include project planning and scheduling, inventory management, materials requirements planning, quality management, capacity planning, facilities layout, and supply chain management.

PJMG-320 Project Management

The module will provide students with the knowledge, skills and techniques required to execute projects in information technology. Students will be able to describe the characteristics and nature of projects; understand important concepts in project management. Topics covered include: IT project management, project time management, project human resource management, risk management and procurement management.

RMEC-321 Research Methods in Computing

This module will provide students with a broad understanding about research methods, design and analysis to enable them carry out research in their field. It covers research strategies, techniques, data analysis and project presentation to enable students write a proposal, collect data, analyse it and be able to present results for decision making at all levels in an organization. Students will be required to develop research proposals at the end of this module.

SVAD-320 Server Administration

This module aims to provide students with knowledge and hands-on skills necessary to install, configure and manage production Linux and Windows servers. Topics include Introduction to Server Administration, File System Organization, Server OS Installation and Configuration (Windows and Linux server), User and Group Management, Data Backups & Recovery, Managing services, Scripting, Domain Name Service, Web Server management and Automating system tasks.

YEAR FOUR

BINT-410 Business Intelligence

Business intelligence (BI) is a multi-disciplinary technique that prescribes tools, methodologies and techniques for transforming enterprise data and information into valuable insights for informed decision making and business planning. BINT-410 is a beginner course that introduces the student to the fundamental principles of business intelligence and imparts knowledge of the various business intelligence approaches, techniques and builds skill in selected BI tools. Topics covered include principles of business intelligence, data storage systems, data warehousing, business analytics, data mining techniques, process modelling, statistical modelling for business, reporting and visualization.

BMEN-410 Business Management and Entrepreneurship

This module gives students clear understanding of characteristics and operations of a business entity and the module also introduces students to the culture of entrepreneurship and the process of converting dreams into business ventures. Topics covered include people & organisation, finance and accounting for engineering managers, dynamics of business, marketing and sales, entrepreneurship.

ECCO-410 Enterprise & Cloud Computing

This module aims at imparting knowledge and skills to implement business-oriented information technologies to support enterprise operations. The student is introduced to cloud services options that can be harnessed to support an enterprise's IT infrastructure and develops an understanding of the current challenges and trade-offs when mapping different application suites to a cloud.

HRMG-410 Human Resource Management

This module will equip students with key skills and knowledge of managing the human resources in a modern organisation. It presents to students important skills and

knowledge of getting the right people with right competences to work in the organisation, ensuring these attributes are developed to take on challenges for achieving organizational goals, ensuring employees are equitably and fairly compensated for their contribution, and skills for fostering good and legal relations with the employees.

RESP-412 Research Project

This module provides an opportunity for a student to carry out an independent research project on a topic relevant to business information technology or computer security. This module builds on the RMEC-321 (which is a pre-requisite module) where students will have defined and developed a research proposal for a researchable question within the area of specialization of the degree programme.

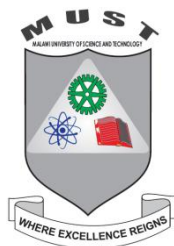
WILE-420 Work Integrated Learning

This module exposes the student to practical experience as a means of reinforcing theoretical computer science/information technology principles learned in class through an industrial attachment.

17. Module Outlines for BSc in Business Information Technology

Year One

BMAT-111 Business Mathematics I



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | | |
|-----|---------------------------|--------------------------------|
| 1. | Programme(s): | BBIT |
| 2. | Module Title: | Business Mathematics I |
| 3. | Module code: | BMAT-111 |
| 4. | Year: | 1 |
| 5. | Credit: | 10 |
| 6. | Presented to: | Senate |
| 7. | Presented by: | Malawi Institute of Technology |
| 8. | Lecture (hrs/wk): | 3 |
| 9. | Tutorial (hrs/wk): | 1 |
| 10. | Prerequisites: | n/a |
| 11. | Co-requisites: | n/a |
| 12. | Module Aims: | |

The aim of this module is to provide students with basic mathematics skills useful in solving real-life business and ICT problems.

13. Intended Learning Outcomes

By the end of the module, students will be able to:

- Justify a given statement/ claim/ theorem by using truth tables.
- Solve business problems using linear programming.
- Manipulate different operations in set theory.
- Classify numbers in different number systems within the real number system.
- Work with numbers in different bases.
- Manipulate algebraic functions and graph them.
- Set up equations and solve them.

14. Indicative Content

- a. Logic: Statements, truth values, logical equivalences, conjunction and disjunction, truth tables, negation, tautology and contradictions, implications/ conditional statements, contra-positive and converse and inverse.
- b. Linear Inequalities: interval notation and linear programming
- c. Sets: notations and terminology, subsets, union and intersection of sets,

universal set, empty set, complement of a set and application of set theory.

- d. Number systems: decimal, binary, octal and hexadecimal numbers, natural numbers, integers, rational and irrational numbers, real numbers and complex numbers.
- e. Combinations, permutations and Binomial theorem.
- f. Sequences and Series: Geometric progressions in Business and Economics
- g. Finite summation and mathematical induction.
- h. Functions and their graphs: algebraic functions, linear functions and input-output analysis, logarithmic functions, power functions and roots of equations involving functions.

15. Assessment

40% Continuous Assessment, 60% End of module examination

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, individual & group assignments and laboratory work

17. Prescribed texts:

Swokowski, E.W. (2007). *Functions and Graphs*, Adapted International Student Edition. Boston, Massachusetts: PWS Publishers.

Sullivan, M. (2011). *College Algebra and Trigonometry*. (9th Ed). New York: Dellen

Studer, M.R. (1982) *Precalculus: Algebra, Trigonometry, and Analytic Geometry*. San Francisco: Holden-Day Inc.

18. Recommended texts:

Dowling, P. (2000). *Mathematics for Economists*, Schaum's Outline Series. John Wiley and Sons.

Francis, A. (2004). *Business Mathematics and Statistics* (6th Ed). Australia: Thomson

Hirsch, L. & Goodman, A., (2002), *Understanding Intermediate Algebra: A Course for College Students*. (5th Ed). Wardsworth Group

Simon, C. P. & Blume, L., (1994), *Mathematics for Economists*, (1st Ed). W.W Norton and Company Inc.

19. Journals

Journal of Applied & Computational Mathematics *Open Access Journal*

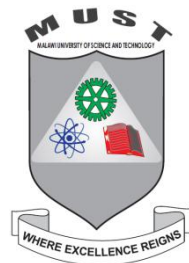
Research & Reviews: Journal of Statistics and Mathematical Sciences *Open Access*

The Journal of Business education – *Tylor and Francis online*

Journal of Mathematics in Industry *Springer*

20. **Date:** March 2016, Reviewed March 2021

INNV-111 Creative Thinking



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Creative Thinking
3. Module code:	INNV-111
4. Year:	1
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial/Laboratory (hrs/wk):	1
10. Prerequisites:	None
11. Co-requisites:	None

12. Module Aim:

This module aims at enhancing students' understanding of the concepts of creative thinking and to inspire and influence them with new ways of looking at problems and resolving them.

13. Intended Learning Outcomes

By the end of this module, the students will be able to:

- Explain the key concepts and theories of creativity.
- Differentiate creative thinking from other forms of thinking.
- Describe various factors that can affect creativity and creative thinking.
- Compare various techniques of lateral thinking and apply them to real life situations.
- Identify ways of overcoming barriers to creative thinking.

- Evaluate various techniques of lateral thinking.
- Apply skills and techniques of creative thinking in problem-solving.

14. Indicative Content

- a. The nature of creativity: common misrepresentations, theories of creativity, and measuring creativity.
- b. The nature of creative thinking: creative thinking versus critical thinking, lateral thinking versus vertical thinking, and the approach and attitude of creative thinking.
- c. Factors influencing creative thinking: tradition versus creative thinking, constraints and creative thinking, and imitation and creative thinking.
- d. Biases and creativity: Cognitive bias, decisional bias, and implications for creative thinking.
- e. Analogy and creative thinking: Understanding analogy, effective and misleading uses of analogy, and uses of analogy for creative problem-solving.
- f. Creativity and personality: personality factors in creativity, theories of personality, attributes of a creative personality, and personality analysis.
- g. Techniques for creative thinking: Brainstorming, attributes, the intermediate impossible, analogy, association, and sleeping on it.
- h. Creativity and problem-solving: Problem representation, techniques for problem-solving, limitations of problem-solving techniques, obstacles to problem-solving.
- i. Creative ideas in the business world: problems in search of solutions and solutions in search of problems.
- j. Creative thinking in action: problem definition, the process of creative thinking, and case studies.

15. Assessment

Continuous Assessment: 60% End of Course
Examination 40%

16. Teaching and Learning Methods / Activities

Lectures, tutorials, discussions and assignments

17. Prescribed texts

Sternberg, R.J. (2007). *Wisdom, Intelligence, and Creativity Synthesized*. Cambridge: Cambridge University Press.

18. Recommended texts

Adair, J. E. (2009). *The Art of Creative Thinking: How to Be Innovative and Develop Great Ideas*. London & Philadelphia: Kogan Page.

Amabile, T. M. (1996). *Creativity in Context*. Boulder, Colorado: Westview

- Press.
- De Bono, E. (1990). *Lateral Thinking: Creativity Step by Step*. New York: Harper & Row Publishers Inc.
- De Bono, E. (1992). *Serious Creativity: Using the Power of Lateral Thinking to Create New Ideas*. HarperCollins Business.
- Foster, J. (1996). *How to Get Ideas*. San Francisco: BerrettKoehler Publishers.
- Greene, L. M. (2001). *Inventorship: The Art of Innovation*. New York: John Wiley & Sons.
- Hurson, T. (2007). *Think Better: An Innovator's Guide to Productive Thinking*. New York, N. Y.: McGraw-Hill.
- Matlin, M. W. (1994). *Cognition*. (3rd Ed.). Fort Worth: Harcourt Brace Publishers.
- Michalko, M. (2006). *Thinkertoys: A Handbook of Creative Thinking Techniques*. (2nd ed.). Berkeley: Ten Speed Press.
- Moser-Wellman, Annette (2001). *The Five Faces of Genius: Creative Thinking Styles to Succeed at Work*. New York: Penguin Books.
- Nalebuff, B., & Ayres, I. (2003). *Why Not? How to Use Everyday Ingenuity to Solve Problems Big and Small*. Boston: Harvard Business School Press.
- Perkins, D. (2000). *The Eureka Effect: The Art and Logic of Breakthrough Thinking*. New York: W. W. Norton & Company.
- Root-Bernstein, R., & Root-Bernstein, M. (2001). *Sparks of Genius: the 13 Thinking Tools of the World's Most Creative People*. Boston: Houghton Mifflin Company.
- Sternberg, R. J. (1990). *Handbook of Creativity*. Cambridge: Cambridge University Press.
- Sternberg, R. J., & Lubart, T. I. (1999). *Defying the Crowd: Cultivating Creativity in a Culture of Conformity*. New York: The Free Press.

19. Journals

Thinking Skills and Creativity Journal – Elsevier
 The Journal of Creative behaviour – Wiley
 Critical and Creative Thinking: The Australian Journal of Philosophy Education

20. Date: March 2016, Reviewed March 2021

BUSS-110 Introduction to Business



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Introduction to Business
3. Module code:	BUSS-110
4. Year :	1
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	None
11. Co-requisites:	None

12. Module Aims:

The aim of the module is to introduce to students basic business principles, concepts and processes for effective organizations and equip them with knowledge of aspects of the modern business environment.

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Describe the nature of business and forms of business, its goals/objectives, business stakeholders and ethical issues in business organisations
- Explain the external and internal business environment that affect business decisions
- Explain the concept of management and its functions; relate management theory to managing modern organisations
- Identify the various business functions, activities and processes in a business

organisation; the basic principles of economics, marketing, managing human resources and business finance.

- Identify elements of a business plan
- Understand business vocabulary, terminology and concepts

14. Indicative Content

- a. Nature and Forms of Business: Business objectives and resources
Types of business; Sole trader/ownership, Partnership, Companies – Private Sector and Public Sector, Not-for-profit, Cooperative.
- b. Business Stakeholders; Employees, shareholders, Customers, community, suppliers, government, other groups, Stakeholder analysis and management, Stakeholder communication and engagement, ICT tools for stakeholder communication, The communication plan.
- c. Ethical issues in business: Nature of business ethics, Corporate social responsibility, Role of business, Stakeholder theory and agency theory
- d. The Business Environment: External environment; Political environment, Economic Environment, Social/cultural, Environment, Technological Environment, Ecological environment, Legal environment; Internal Environment.
- e. Business functions, Activities and Processes: Principles of Economics, Marketing, Human Resource Management, Business and Finance, Production Function.

15. Assessment

Coursework (10% from assignments and 30% from at least two tests): 40%;
Examinations: 60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments, oral presentations and debates.

17. Prescribed texts

Jones, G. (2007), *Introduction to Business*. Boston: McGraw Hill.
Madura, J. (2007), *Introduction to Business*. Florida: Thomson South-Western.
Mullins, L. J., (2005), *Management and Organisational Behaviour*, (7th Ed.).
Pearson Education. England

18. Recommended texts

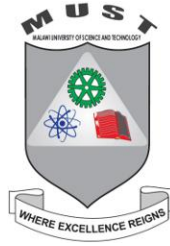
Brown, B J., & Clow, J E. (2008). *Introduction to Business*. McGraw-Hill
McHugh, N. (2008). *Understanding Business*. (8th Ed.). New York: McGraw-Hill.
Needle D. (2000). *Business in Context: An Introduction to Business and Its
Environment*. (3rd ed.). London: Business Press.
Rosenfeld R., & Wilson D.C. (1999). *Managing Organizations*. (2nd ed.). London:
McGraw-Hill.

19. Journals

Business and Economics Journal – *Open Access Journal*
Journal of Business and financial Affairs – *Open Access Journal*
Journal of entrepreneurship and organisation management – *Open Access Journal*

20.**Date:** March 2016, Reviewed March 2021

COMP-111 Introduction to Computer Applications



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|--------------------------------------|---------------------------------------|
| 1. Programme(s): | All programmes |
| 2. Module Title: | Introduction to Computer Applications |
| 3. Module code: | COMP-111 |
| 4. Year: | 1 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 2 |
| 9. Tutorial/Laboratory (hours/week): | 2 |
| 10. Prerequisites: | None |
| 11. Co-requisites: | None |
| 12. Module aim: | |

The course provides a fundamental understanding of computers and practical usage of computer applications focusing on word processing, spreadsheets and presentations using common software packages as well as the usage of the Internet.

13. Intended learning outcomes

Upon completion of this module, the student should be able to:

- Name and identify the respective components of a computer, explain how they work and use them effectively.
- Use logic operators and variables to represent simple Boolean expressions.
- Use truth tables to represent and show the results of a Boolean expression

- Use the three commonly used number systems in computing
- Convert values from one number system to another
- Use various Internet services (web, email and search engines).
- Use various computer applications: word processing, spreadsheets and presentations

14. Indicative Content

- Number Systems:** Importance of different number systems; Types of number systems - decimal, binary, hexadecimal; Conversion of number systems - decimal to binary and vice versa, decimal to hexadecimal and vice versa, binary to hexadecimal and vice versa
- Boolean Logic** - Using logic operators and variables to represent simple Boolean expressions, using truth tables to represent and show the results of a Boolean expression
- Introduction to Computers:** Data vs Information; Information Processing Cycle; Main parts of a computer (Computer Hardware); Types of computers; Input, output, storage and communication device; Computer software - distinguish between system software and application software, describe the components and functions of an operating system, software installation; Basic computer networks
- Using the Internet:** History of the Internet; Connecting to the Internet; IP addresses and domain names, web addresses; The world wide web, browsing the web, e-commerce; Internet services; IoT Fundamentals
- Introduction to Word processing:** Word processors; Basic Features of word processing - the ribbon, quick access toolbar, the ruler and backstage view; Document views and zooming; Text basics, formatting text; Line and paragraph spacing; Spellcheck; Bullets and numbering; Adding images; Tables; Headers and footers
- Introduction to Spreadsheets:** Creating a worksheet and entering data of different types, e.g. text, numbers, dates; Copying, clearing, altering or correcting content on a worksheet; Formatting numbers, dates and text with different formatting styles; Entering formulas and calculating totals to process input data and produce output; Implementing decision making using the IF and nested-IF function; Using relative and absolute addressing in spreadsheets (including named ranges); Inserting a simple chart into a worksheet. Formatting data as a table and performing operations such as sorting and filtering; Creating calculated fields in a table using structured references; Using lookup functions to combine data from different tables; Using database functions to analyse data in a table; Linking worksheets within a workbook
- Preparation and delivery of presentations:** Introduction to MS PowerPoint presentation; Creating slides; Managing presentations; Using the slide show.

15. Assessment

50% Continuous assessment (Assignments, practical and class tests) and
50% Examinations.

16. Teaching and Learning Methods/Activities

Lectures, demonstrations, Laboratory practicals, Tutorials, Assignments and
Exercises

17. Prescribed Text

Vermaat, M, E et al (2018). *Discovering Computers 2018. Digital technology, data
and devices*. Cengage Learning

18. Recommended Resources

Cox, J. and J. Lambert. (2016). Microsoft PowerPoint 2016 Step-by-Step.
Microsoft Press.

Cox, J. and J. Lambert. (2016). Microsoft Word 2016 Step-by-Step. Microsoft
Press.

Marmel, E. (2015). Teach Yourself Visually Microsoft Word 2016. John Wiley &
Sons, Inc.

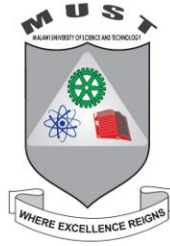
Frye, C,D. (2016). Microsoft Office Excel 2016 Step-by-Step, Microsoft Press.

McFedries, P. (2016). Teach Yourself Visually Excel 2016, John Wiley & Sons, Inc.

Boyd, B. & Antony, R. (2015). Teach Yourself Visually PowerPoint 2016. John
Wiley & Sons, Inc.

19. Date: March 2016, Reviewed March 2021

INFS-110 Introduction to Information Systems



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|-------------------------------|-------------------------------------|
| 1. Programme(s): | BBIT/BCSS/BGIS |
| 2. Module Title: | Introduction to Information Systems |
| 3. Module code: | INFS-110 |
| 4. Year: | 1 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 2 |
| 9. Tutorial/Lab (hours/week): | 2 |
| 10. Prerequisites: | None |
| 11. Co-requisites: | COMP-111 |
| 12. Module aim: | |

To introduce students to basic principles of Information Systems; how they relate to organisational policies, procedures, goals, objectives and structure; and to equip students with knowledge and skills pertaining to acquisition, development, usage and security of enterprise information systems.

13. Intended learning outcomes

Upon completion of this module, the student should be able to:

- Define Information System
- Describe how and why Information Systems are used today.
- Explain the technology, people, and organizational components of IS.

- Discuss how various types of IS support decision making in an organization
- Describe the foundations of e-Commerce and its emerging technologies
- Explain different methods of IS acquisition and development.
- Evaluate the ethical concerns that Information Systems raise in society.

14. Indicative Content

- Introduction to Information Systems: definition, why study information systems (IS), the role of IS in business
- Data, Information and Knowledge: transforming data into information
- How Systems Function: system definition and concepts, elements of a system
- IS Technologies: Types of computers; Hardware - input, output and storage media, peripherals; Software - application software, operating systems; end user and enterprise computing; cloud computing
- Networks & Telecommunications: types of computer networks, wired & wireless networks, intranet and the Internet
- Databases: importance of databases in IS, history of databases, types of databases
- Information Systems Applications: Business support systems, the decision-making process, applications at different management levels; strategic systems, intelligent systems, online processing, data mining and OLAP
- E-Commerce: e-commerce infrastructure and current issues in e-commerce
- Information Systems Planning & Acquisition: IS analysis, IS planning, software acquisition options, outsourcing, project management, IS people aspects
- System Development: system development life cycle.
- Using IS: disaster recovery and business continuity, security, privacy and social issues

15. Assessment

40% Continuous assessment (Assignments, practical and class tests) and
60% Examinations.

16. Teaching and Learning Methods/Activities

Lectures, demonstrations, Laboratory practicals, Tutorials, Assignments and Exercises

17. Prescribed Texts

Stair, R., & Reynolds, G.(2018). Fundamentals of Information Systems 9th Edition, Course Technology

Valacich, J. & Schneider, C. (2017). *Information Systems Today: Managing the Digital World, 8th edition*, Pearson.

Bourgeois, D.T., Smith J.L., Wong, S. & Mortati, J. (2019). *Information Systems for Business and Beyond*. Creative Commons: Saylor Foundation

Baltzan, P. (2021). *Business Driven Information Systems 7th Edition*. McGraw Hill

Kathy Schwalbe, K., Blanton, S., (2019). *Information Technology Project Management 9th Edition* Australia : Cengage

18. Recommended Resources

Bourgeois, D.T.(2014). *Information Systems for Business and Beyond*. Saylor Foundation

Williams, B., Sawyer, S.(2015). *Using Information Technology. 11th Edition*. McGraw Hill

Whitman, M.E., Mattord H.J., (2018). *Principles of Information Security. 6th Edition*. Australia : Cengage Learning

19. Journals

Journal of Informatics and Data Mining – *Open Access Journal*

Information Systems Journal – *Elsevier*

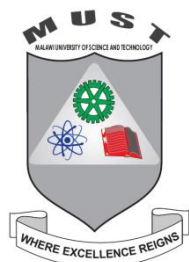
Journal of Internet and information Systems – *Academic Journals*

Journal of Information Systems – *American Accounting Journals*

Ethics and Information Technology – *Springer*

20. Date: March 2016, Reviewed March 2021

LCOS-111 Language and Communication Studies I



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

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|-----|---------------------------|--------------------------------------|
| 1. | Programme(s): | BBIT/BCHEM/BCSS/BESC/BMED/BMET |
| 2. | Module Title: | Language and Communication Studies I |
| 3. | Module code: | LCOS-111 |
| 4. | Year: | 1 |
| 5. | Credit: | 10 |
| 6. | Presented to: | Senate |
| 7. | Presented by: | Malawi Institute of Technology |
| 8. | Lecture (hrs/wk): | 2 |
| 9. | Tutorial (hrs/wk): | 2 |
| 10. | Prerequisites: | None |
| 11. | Co-requisites: | N/A |

12. **Module Aims**

To develop students' time management, library and language and communication skills necessary for academic life and beyond.

13. **Intended Learning Outcomes**

By the end the module students should be able to:

- a) demonstrate effective time management skills;
- b) demonstrate effective library information search skills;
- c) demonstrate understanding of a variety of texts;
- d) write well researched and documented essays;
- e) write notes effectively from oral and written sources;
- f) participate constructively in class and group discussions.

14. **Indicative Content**

a) **College Study Skills**

Time management, listening and note-taking, reading and note making.

Strategies for critical reading.

b) Library skills

Library cataloguing systems, types of library resources, accessing online resources

c) College Writing Skills

i. Introduction to essay writing: Types of essays (Informative essay, persuasive essay), parts of an essay.

ii. The essay: Planning, consulting sources, writing (drafting and editing), quoting, paraphrasing and summarising, citation and referencing.

iii. Summary writing.

15.	Assessment	Coursework:	40%
		Examination:	60%

16. Teaching and Learning Methods / Activities

Lecturing, tutorials, Presentations, Group discussions, Debates, Assignments, Peer Evaluation

17. Prescribed Texts

Clanchy, J. And B. Ballard. (1992). *How to write essays*. Melbourne: Longman

Clouse, B. F. (2003). *Patterns for a Purpose: A Rhetorical Reader*. 3rd Ed. New York: McGraw Hill.

Cottrell, S. (2003). *The study skills handbook*. Retrieved from www.palgrave.com

Crucius, T. W., & Channell, C. E. (2000). *The Aims of Argument: A Rhetoric and Reader* (3rd ed.). California: Mayfield.

Langan, J. (2012). *English skills with readings*. Eighth ed. New York: McGraw-Hill

18. Recommended Reading

Beer, D. and Murrey, D. (1997). *A Guide to writing as an engineer*. New York: John Wiley and Sons.

Gillet, A. (2015). Using English for academic purposes: A Guide for students in higher education. Retrieved from <http://www.uefap.com>

Hacker, D. and N. Sommers. (2011). *A Writer's reference*. 7th. ed. Boston: Harvard University.

Lynch, T. (2004). *Study listening: A Course in listening to lectures and note-taking*. Cambridge: Cambridge University Press

Trimmer, J. F. and Hairston, M. (1999). *The Riverside Reader*. 6th Ed. Boston: Houghton Mifflin.

19. Journals

Language and Communication: An Interdisciplinary Journal – Elsevier

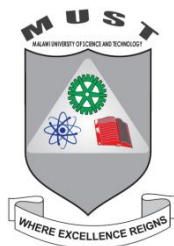
Journal of Language and Communication Studies – Covenant University

International Journal of Linguistic and Communication – American Research
Institute for Policy Development

Psychology of Language and Communication – DE GRUYTER OPEN (Open
Access)

20. Date: March 2016, Reviewed March 2021

INNV-122 Business Innovation



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Business Innovation
3. Module code:	INNV-122
4. Year:	1
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	INN-111
11. Co-requisites:	None

12. Module Aims:

The module aims at empowering students to explore practical steps to address business innovation challenges and develop the skills to infuse a culture of innovation within organisations to drive sustainable growth.

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Critique the innovation process throughout its value chain identifying and strengthening of weak links.
- Demonstrate skills of converting business improvement ideas into tangible products and/or services
- Develop cost effective processes and structures supporting innovation
- Acquainted with the principles of management of multidisciplinary human teams for innovations

- Identify factors that promote a culture of innovation in organizations
- Demonstrate how innovation can be used as a competitive strategy.

14. Indicative Content

- Innovation and creativity: Definition of terms, Linkage between creativity and innovation
- The innovation value chain: the innovation process
- New ideas generation: the creative process, brainstorming sessions
- New product development: Product design, Prototype development and testing, Process development
- Emerging technologies: Case studies of new and emerging technologies, emphasis on ICTs
- Process modelling and process measurement: Modeling a process, Creating a business process model, Business process model diagrams
Total quality management, Quality management systems design
- Innovation and organisational culture: Creating and sustaining an organizational culture, Building an innovation culture
- Learning organization: Factors defining a learning organization, Influence of learning organizations on innovation

15. Assessment

Coursework (30% from assignments and 10% from at least one test): 40%;
Examinations: 60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments and field visits

17. Prescribed texts

Praveen Gupta, (2007), *Business Innovation in 21st century*, Book Surge Publishing,

18. Recommended texts

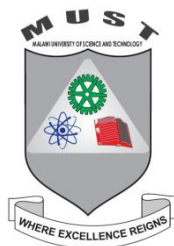
- Brynsolfsson, E., & Saunders A, (2010) *Wired for Innovation: How Information Technology is Reshaping the Economy*, Cambridge, London
- Dyer, J., Gregersen H., & Christensen, C. (2011). *The Innovator's DNA: Mastering the five Skills of Disruptive Innovators*, Boston: Harvard Business Review Press.
- Kiyosaki, R.T. (2012) *Cash flow Quadrant*, Scottsdale: Plata Publishing,
- Johnson, S. (2010) *Where good ideas come from: the Natural History of Innovation*, New York: Riverhead.
- McAfee, A. (2009), *Enterprise: New Collaborative tools for your organisations toughest challenges*, (1st Ed.), Boston: Harvard Business Press.
- Osterwalder and Pigneur (2010), *Business Model Generation*, (1st Ed.), New Jersey: Wiley Hoboken,

19. Journals

- European Journal of Business and Innovation Research (EJBIR) www.eajournals.org/journals/european-journal-of-business-and-innovation-research-ejbir/
- Journal of Creativity and Business Innovation JOURNAL CBI www.journalcbi.com/
- Journal of Entrepreneurship and Business Innovation - www.macrothink.org/journal/index.php/jebi

20.Date: March 2016, Reviewed March 2021

BMAT-122 Business Mathematics II



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

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|-----|---------------------------|--------------------------------|
| 1. | Programme: | BBIT |
| 2. | Module Title: | Business Mathematics II |
| 3. | Module code: | BMAT-122 |
| 4. | Year: | 1 |
| 5. | Credit: | 10 |
| 6. | Presented to: | Senate |
| 7. | Presented by: | Malawi Institute of Technology |
| 8. | Lecture (hrs/wk): | 3 |
| 9. | Tutorial (hrs/wk): | 1 |
| 10. | Prerequisites: | BMAT-111 |
| 11. | Co-requisites: | n/a |
| 12. | Module Aims: | |

The aim of this module is to provide students with mathematical methods for business quantitative analysis.

13. Intended Learning Outcomes

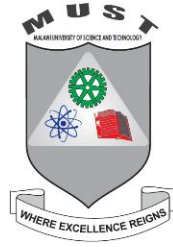
By the end of the module, students will be able to:

- Carry out operations involving matrices.
- Measure changes in economic data using indices.
- Calculate the Laspeyres and Paasche indices.
- Calculate compound interest using different methods.
- Depreciate an asset using the various depreciation techniques.
- Appraise an investment using pay-back period, net present value and internal rate of return.
- Use calculus to optimise various functions.
- Evaluate indefinite and definite integrals.
- Use integration to determine total cost and total revenue from marginal cost and marginal revenue functions.
- Calculate consumer surplus using the relationship between a definite integral and the area under a function.

14. Indicative Content

- a. Linear Algebra: Vectors, Matrices, Matrix Operations, Square Matrices, Echelon Matrices, Inverting Matrices, Linear Dependence and Rank
 - b. Index Numbers: Price indices, Number indices, Multi-item indices, Calculation of Moving averages with given periodicity and plotting on a graph.
 - c. Financial Mathematics: Simple and compound interest, Discounting and investment appraisal, Net present values (of cash flows), Internal rate of return, Annuities and perpetuities, Payback period, Amortization, Sinking fund.
 - d. Introduction to Differentiation: Limits, The Derivatives, Linear Approximation and Differentiability, Derivatives in Business and Economics.
 - e. Methods of Differentiation, The Product and Quotient Rules, The Composite Function Rule-chain Rules, Monotonic Functions and Inverse Functions.
 - f. Maxima and Minima, Critical Points, The Second Derivative, Optimisation, Convexity and Concavity.
 - g. Integration: Antiderivatives, definite integrals, business applications.
- 15. Assessment**
40% Continuous Assessment, 60% End of module examination
- 16. Teaching and Learning Methods / Activities**
Lectures, Tutorials, individual & group assignments and laboratory work
- 17. Prescribed texts:**
Sydsaeter, K., & Hammond, P. (2008). *Essential Mathematics for Economic Analysis*, (3rd Ed.). Prentice Hall
Mike, R. (2003). *Business Mathematics for Economists*. (2nd Ed.).
Francis, A. (2004). *Business Mathematics and Statistics*, (6th Ed.). Sydney: Thomson
- 18. Recommended texts:**
Barnett, R., Ziegler, M., & Byleen K. (2011). *Calculus for Business, Economics, Life Sciences, and Social Sciences*, (12th Ed.). Boston: Prentice Hall
Stewart, J. (2003). *Calculus*, (5th Ed.). Thomson Brooks/Cole.
Swokowski, E. et al, (1983). *Calculus with Analytic Geometry*, (6th Ed.). PWS Publishing company
- 19. Journals**
Journal of Applied & Computational Mathematics *Open Access Journal*
Research & Reviews: Journal of Statistics and Mathematical Sciences *Open Access*
The Journal of Business education – *Taylor and Francis online*
Journal of Mathematics in Industry *Springer*
- 20. Date:** March 2016, Reviewed March 2021

MATH-123 Discrete Mathematics



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BCSS/BBIT
2. Module Title:	Discrete Mathematics
3. Module code:	MATH-123
4. Year:	1
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	MATH-111/BMAT-111
11. Co-requisites:	
12. Module Aim:	

To introduce students to concepts in discrete mathematics and make them realize the important applications of the concepts in optimization problems and data security.

13. Intended Learning Outcomes

Upon completion of this module, the student should be able to:

- Use counting techniques to solve problems
- Apply the pigeon-hole principle to solve problems
- Solve problems involving recurrence relations and generating functions
- Explain some basic terms in graph theory
- Determine whether a given cycle is Hamiltonian

- Apply Moore's Breadth First Search (BFS) algorithm to shortest path problems
- Solve problems and to prove statements in elementary number theory

14. Indicative Content

- Counting Techniques: the product rule, the sum rule, inclusion and exclusion principle, pigeonhole principle
- Recursion and Recurrences: recurrence relations: n^{th} order recurrence relation with constant coefficients, homogeneous recurrence relations, inhomogeneous recurrence relation
- Generating functions (GF): closed form expression, properties of G.F., solution of recurrence relation using G.F, solution of combinatorial problem using G.F.
- Elementary number theory: prime numbers, factoring, testing for primality, modular arithmetic, Fermat's & Euler's theorems, GCD, Euclid's algorithm, discrete logarithm problem, Fermat's Little Theorem, Chinese Remainder Theorem
- Graphs: Definitions - Edges, vertices, even and odd degrees; Paths, Connectivity, Cycles and trees; Eulerian and Hamiltonian Paths; Finding the optimum - best tree, traveling salesman

15. Assessment

Coursework (at least two tests):	40%;
Examinations:	60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

Rosen, K.H., (2012). *Discrete Mathematics and its Applications*, New York: McGraw Hill.

Lipschutz, S., Lipson, M. (2005). *Discrete Mathematics*. Tata Mc Graw Hill.

Epp, S.S. (2003). *Discrete Mathematics with Applications*, 4th Edition. Boston: Richard Stratton

18. Recommended texts

Kolman, B., Busby, B., Ross, R. (2014). *Discrete Mathematical Structures*. Prentice Hall International.

Grimaldi, R.P., (2004). *Discrete and Combinatorial Mathematics (5th edition)*. Pearson.

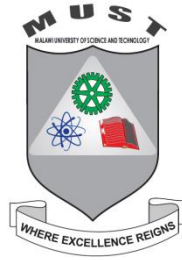
Finan, M.B. (2001). *Notes in Discrete Mathematics*. Arkansas Tech University.

Wallace, D.A.R, (1998), *Groups, Rings and Fields*. New York: Springer-Verlag

Wilson R.J. (1998), *Introduction to Graph Theory (4th Ed)*, Prentice Hall
Harris J.M, Hirst J.L, Mossinghoff M.J, (2008), *Combinatorics and Graph Theory*.
Springer Science & Business Media, USA.

19. Date: March 2016, Reviewed March 2021

COMP-122 Introduction to Computer Programming



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY

MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT/BCSS
2. Module Title:	Introduction to Computer Programming
3. Module Code:	COMP-122
4. Year:	1
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	2
9. Tutorial/Laboratory (hrs/wk):	2
10. Prerequisites:	COMP-111, MATH-111
11. Co-requisites:	None
12. Module Aims:	
To introduce students to methodical techniques of structured computer programming.	

13. Intended Learning Outcomes

On completion, the student should be able to:

- Translate a problem specification into a corresponding computer program
- Use control structures and functions to implement programs
- Define and manipulate basic data structures
- Produce design, testing and maintenance documentation for programs.

14. Indicative Content

- a) **Introduction to Computer Programming and C++:** C++ Language Versions, IDEs, Compilers, Installation
- b) **Elementary Programming:** Standard data types, Variables, Constants, Operators, Comments, Programming Errors
- c) **Control Structures:** Selection (if, else and switch), Looping (while, do-while and for), Break, Continue, Try and Catch blocks
- d) **Arrays:** Single-dimension arrays and Multi-dimension arrays
- e) **Functions:** Defining functions, Function Prototypes, Parameters vs Arguments, Variable Scope, Pass by Value vs Pass by Reference, Function Overloading
- f) **Pointers:** Addresses and Pointers, Dynamic Memory Allocation (new and delete Operators), Creating Dynamic Arrays
- g) **Structures and Namespaces:** Pointers to structures, Nesting structures, User Defined Data Types, Unions, Enumerations (enum)
- h) **Namespaces:** Use the using Syntax, Defining Namespaces, Extending the Namespace, Unnamed Namespaces, Nested Namespaces, Namespace aliases, The std Namespace, The Koenig Lookup, Overhead with namespaces

15. Assessment

- a) End of Module Examination (50%).
- b) Continuous assessment (50%)

16. Teaching and Learning Methods / Activities

Lectures, tutorials, programming assignments, presentations and projects.

17. Prescribed texts

Lippman, S.B., *C++ Primer*, (5th ed.), Reading, 2019.

Deitel, P. and Deitel H, *C++ How to Program*, (8th ed.), Prentice Hall, 2012

18. Recommended texts

Liang, S., *Introduction to Programming with C++*, Prentice Hall, 2010.

Johnston, B., *C++ Programming Today*, (2nd ed.), Prentice Hall, 2008

19. Date: March 2016, Reviewed March 2021

LCOS-122 Language and Communication Studies II



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme:	BBIT/BCHEM/BCSS/BESC/BMED/BMET
2. Module Title:	Language and Communication Studies II
3. Module code:	LCOS-122
4. Year:	1
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hours/week):	2
9. Tutorial (hours/week):	2
10. Prerequisites:	LCOS-111
11. Co-requisites:	N/A

12. Module Aim

To equip students with skills required for effective technical and business communication.

13. Intended Learning Outcomes

By the end of this module, students should be able to:

- explain the elements of the communication theory;
- analyze the role of nonverbal communication in technical communication;
- make oral and visual presentations;
- use effective listening skills in business situations;
- write effective memos and letters;
- describe the properties of technical writing;
- write reports.

14. Indicative Content

- a) **Communication Theory:** The communication process, media of communication, barriers to effective communication (types of barriers, overcoming barriers to communication).
- b) **Nonverbal Communication:** Functions of nonverbal communication, Types of nonverbal communication (Kinesics, proxemics, acoustics, tacesics, vocalics, physical environment)
- c) **Oral and Visual Communication:** Oral presentations, visual aids (types and uses, considerations for designing visual aids, presentations using visual aids e.g. PowerPoint).
- d) **Business Writing:** Principles of business writing (7Cs Principle, The KISS Principle, The PRC Triangle), business correspondence (letters, memos, emails).
- e) **Technical Writing:** Definitions, descriptions, instructions, report writing (introduction, types of reports, planning, writing and drafting reports), numbering systems, figures and tables.

15. Assessment

40% course work, 60% final exam

16. Teaching and Learning Methods / Activities

Lecturing, tutorials, Presentations, Group discussions, Debates, Assignments, Peer Evaluation

17. Prescribed Texts

Alley, M. (2003). *The craft of making scientific presentations: Critical steps to succeed and critical steps to avoid*. NY: Springer-Verlag

Beebe, M. and Masterson, R. (2000). *Communicating in small groups to an audience*. London: Longman.

Berko, R M. et al. (2000). *Communicating a social and career focus*.

Gamble, R. and Gamble, G., (2002). *Communication works*. New York: McGraw-Hill.

Al Maskari, K.M. (2013). *A Practical guide to business writing: Writing in English for non-native speakers*. West Sussex: John Wiley and Sons

18. Recommended Texts

Andrews, C.D. and Andrews, W.D. (1988). *Business communication*. London: Collier McMillan Publishers.

Beebe, S. and Masterson, J. (1997). *Communication in small groups*. New York: Longman.

Gamble, T.K. And Gamble, M.W. (2013). *Interpersonal communication: Building connections together*. LA: SAGE Publications

Griffin, E. (2012). *A First look at communication theory*. 8th edition. NY: McGraw-Hill

Gurak, L. J.and Lannon, J.M. (2010). *Strategies for technical communication in the workplace*. New York: Pearson/Longman

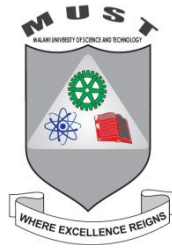
Hamilton, C. et al. (2005). *Communication for results: A Guide for business and the profession*. Belmont: Wadsworth.

Krizan, A.C., Merrier, P., Logan J., and Williams, K. (2008). *Business communication*. 7th edition. Thomson South-Western

Stewart, G. et al. (1996). *Communicating for the professions*. Cape Town: Mthunzi Nxane.

19. **Date:** March 2016, Reviewed March 2021

ORBE-120 Organizational Behaviour



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Organizational Behaviour
3. Module code:	ORBE-120
4. Year:	1
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	None
11. Co-requisites:	None

12. Module Aims:

The aim of this course is to raise the student's awareness of the centrality of organisational behaviour to understanding organisational functioning, focusing particularly on the individual and group/team level.

13. Intended Learning Outcomes:

By the end of this module, students will be able to:

- Demonstrate an understanding of theories, principles and concepts applicable to the study of organisations and management
- Evaluate and analyse how the study of organisational behaviour can aid us in improving managerial processes and practices.
- Understand how models, theories and concepts about organisational behaviour can be used in practice in different workplaces across different regions of the world.
- Critically evaluate models and theories explored throughout the module.

14. Indicative Content

- a. Introduction to Organizational Behavior: Understanding organizational behavior, Influence on behaviour in organizations, Behavioural science – a multidisciplinary approach, The psychological contract.
- b. Understanding the individual: Personality, Perception and attributes, Attitudes and culture, Motivation, Job satisfaction and work performance, Learning, Stress.
- c. Groups Dynamics and teamwork: The meaning and importance of teams, Process of group development, Characteristics of work groups, Roles for effective group performance, Characteristics of effective teams, Group conflict.
- d. The Organization: The nature of organizational goals, The functions, integration and classifications of organizational goals

15. Assessment

Coursework:	40%
Examinations:	60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

- Robbins, S.P., Judge, T.A., & Campbell, T.T. (2010). Organizational Behavior. Harlow, UK: Pearson Prentice Hall.
- Cole, G.A. (2000). Organizational Behaviour, Gosport: Ashford Colour Press.

18. Recommended texts

- Gelfand, Michele J, Erez, Miriam, & Aycan, Zeynep. (2007). Cross-cultural organizational behaviour. Annual Review of Psychology, 58, 479-514.
- Rousseau, Denise M. (1997). Organizational behavior in the new organizational era, Annual Review of Psychology, 48(1), 515-546.
- West, M. A., Guthrie, J. P., Dawson, J. F., Borrill, C. S. and Carter, M. (2006). Reducing patient mortality in hospitals: the role of human resource management. Journal of Organizational Behavior. 27(7), 983–1002.

19. Journals

Organizational Behavior and Human Decision Processes Journal
<https://www.journals.elsevier.com/organizational-behavior-and-human-decision->

processes/

Journal of Organizational Behavior Wiley Online Library
[onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1099-1379](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-1379)

Research in Organizational Behavior Journal Elsevier
<https://www.journals.elsevier.com/research-in-organizational-behavior>

Journal of Organizational Behavior on JSTOR
<https://www.jstor.org/journal/jorgabeha>

20.Date: March 2016, Reviewed March 2021

Year Two

DSAL-210 Data Structures and Algorithms



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BCSS/BBIT/BGIS
2. Module Title:	Data Structures and Algorithms
3. Module Code:	DSAL-210
4. Year:	2
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	2
9. Tutorial (hrs/wk):	2
10. Prerequisites:	COMP-122, MATH-123
11. Co-requisites:	
12. Module Aims:	

To provide students with understanding of the fundamentals of computational theory, algorithm complexity and impart practical skills to design and analyze algorithms and data structures.

13. Intended Learning Outcomes

Upon completion of this module, the student should be able to:

- Explain the properties of an algorithm in the computational context.

- b. Translate a solution to a computational problem into an appropriate algorithm
- c. Analyze time complexity of algorithms in the “best”, “average” and “worst” case scenarios
- d. Design and/or select appropriate data structures and algorithms to solve given computational problems
- e. Implement common searching and sorting algorithms using appropriate programming languages

14. Indicative Content

- a. Algorithm basics: Definition of algorithm; properties of an algorithm; time vs space complexity of an algorithm; Asymptotic Analysis; Greedy Algorithms; Divide and Conquer; Dynamic Programming
- b. Data structure basics: Built-in Data Type vs derived data types; basic operations on data structures; array data structure; linked list, stack, queue
- c. Linked list data structure: simple linked list, doubly linked list; basic operations on linked list
- d. Stack data structure: Stack representation; basic operations on a stack; expression parsing
- e. Queue data structure: Queue representation; basic operations on queue
- f. Searching algorithms: linear search, binary search, hash table
- g. Sorting algorithms: Bubble Sort, Insertion Sort, Selection Sort, Merge Sort, Shell Sort, Quick Sort
- h. Graph data structure: graph representation; basic operations on a graph; depth-first traversal vs breadth-first traversal
- i. Tree data structure: Tree representation, Tree Traversal, Binary Search Tree, AVL Tree, Spanning Tree, Heap

15. Assessment

End of Module Examination (40%). Continuous assessment (60%)

16. Teaching and Learning Methods / Activities

Lectures, tutorials, group work and individual assignments

17. Prescribed texts

Sedgewick, R., Wayne, K., (2011). *Algorithms (4th edition)*. Addison-Wesley
 Nyhoff, L. R. (2004). *ADTs, Data Structures and Problem Solving with in C++ (2nd*

edition). Pearson

18. Recommended texts

Karumanchi, N. (2011). *Data Structures and Algorithms Made Easy: Data Structure and Algorithmic Puzzles* (2nd edition). CreateSpace Independent Publishing Platform

Karumanchi, N. (2015). *Data Structure and Algorithmic Thinking with Python: Data Structure and Algorithmic Puzzles*. CareerMonk Publications

Weiss, M., A. (2013). *Data Structures & Algorithm Analysis in C++* (4th edition). Pearson

Weiss, M., A. (2011). *Data Structures and Algorithm Analysis in Java* (3rd edition). Pearson

19. Journals

Computer engineering and information technology – scitechnol

American Journal of Computer Science and Information Technology (AJCSIT) – imedpub

Journal of Network and Computer Applications - elsevier

20.Date: March 2016, Reviewed March 2021

DSYS-210 Database Systems



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|-------------------------------|--------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module Title: | Database Systems |
| 3. Module code: | DSYS-210 |
| 4. Year: | 2 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 2 |
| 9. Tutorial/lab (hours/week): | 2 |
| 10. Prerequisites: | COMP-122 |
| 11. Co-requisites: | None |

12. Module aims:

To teach the fundamental theoretical concepts of database systems and to impart the necessary practical skills to conceptualize, model and implement the major types of databases.

13. Intended learning outcomes

On completion, students should be able to:

- Describe the concepts of database systems, database architecture and data models.
- Interpret business rules and design database models.
- Design appropriate database models by applying database standards and principles to business applications.
- Demonstrate database processes applied to business applications.
- Design and implement SQL databases from conceptual data models

14. Indicative Content

- Introduction to Database:** Database History, Traditional File Processing System, Database Approach, Range of Database Application, Database System Architecture, Components of Database Environment, Database Development Process
- The Entity Relationship Data Model:** The ERD Model, Entity, Attributes, Relationships, Cardinality, ER Diagrams, ER Notation, Generalizations, Business Rules
- Database Design:** Logical Database Design, Normalization, 1NF, 2NF, 3NF, Physical Database Design, Denormalization, RDBMS (Table, Row, Field)
- Relational Calculus and Algebra:** Basic Operators (Selection, Projection, Cross-product, Set-difference and Union), Other Operations (Rename, Joins and join-like Operators - Natural join, θ -join and equijoin, Semi-join, Anti-join, Division), Aggregation, Use of Algebraic Properties for Query Optimization
- Introduction to SQL:** Data Definition Language (CREATE, ALTER, DROP, Data Manipulation Language, SELECT, INSERT, UPDATE, DELETE, JOIN), Data Control Language (GRANT, REVOKE)
- Transaction Management:** Transactions, ACID Properties, Scheduling Transactions, Concurrency, Deadlocks, Performance Locking, Crash Recovery

15. Assessment

- End of Module Examination (50%).
- Continuous assessment (50%)

16. Teaching and Learning Methods/Activities

- a. Face-to-face lectures.
- b. Tutorials.
- c. Lab sessions

17. Prescribed texts:

Hoffer, J., Venkataraman, R., & Topi, H. (2019). *Modern Database Management*, (13th ed.). Pearson Education Limited.

Elmasri, R., & Navathe, S. B. (2015). *Fundamentals of Database Systems*, (7th ed.). Pearson Education.

Silberschatz, A., Korth, H. F., & Sudarshan, S. (2020). *Database System Concepts*, (7th ed.). McGraw-hill.

18. Recommended resources:

Garcia-Molina, H. (2008). *Database Systems: The Complete Book*. Pearson Education India.

Ramakrishna R., and Gehrke J. (2003), *Database Management Systems*, (3rd ed.). McGraw Hill

Zaniolo, C., Ceri S., Faloutsos, C., Snodgrass, R. T., Subrahmanian, V. S., Zicari, R. (1997). *Advanced Database Systems (The Morgan Kaufmann Series in Data Management Systems)*, USA: Morgan Kaufmann

19. Journal

Journal of Web Development and Web Designing
matjournals.com/Journal-of-Web-Development-and-Web-Designing.html
 Journal of Web Semantics Elsevier
<https://www.journals.elsevier.com/journal-of-web-semantics/>

20. Date: March 2016, Reviewed March 2021

ECON-210 Fundamentals of Economics



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Fundamentals of Economics
3. Module code:	ECON-210
4. Year:	2
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	None
11. Co-requisites:	None

12. Module Aims:

To give students understanding of fundamental economic principles, which allows for and encourages informed discussion of economics issues. Special emphasis is given to understanding how these concepts are applied and influenced by choices which individuals and organizations face every day.

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Explain the differences between macroeconomics and microeconomics.

- Apply the concepts of scarcity, choice and opportunity costs for making smart choices.
- Describe how buyers and sellers compete and cooperate in markets in determining prices.
- Explain the relationship between supply, demand, and prices in an economy.
- Describe the important measures of aggregate performance of an economy.
- Distinguish between nominal and real economic measures.
- Discuss the economic costs of unemployment and inflation.
- Discuss the challenges in meeting macroeconomic performance targets.
- Explain the roles of money and exchange rates in influencing economic outcomes.
- Compare and contrast monopoly, perfect competition and other market structures.
- Apply the concept of marginal in economic decision-making.
- Explain the process of globalization and its implications for trade policy.

14. Indicative Content

- Fundamental Problem in Economics:** Scarcity, Choice and Opportunity Cost, Production possibility frontier and efficiency, Factors of production and factor payments, Fundamental Questions (What, How, for Who), Traditional Economic Systems (Free Market, Planned, and Mixed Economy)
- Market Mechanism:** Demand and Supply, Law of Demand and Supply, Determinants of Demand and Supply, Changes in Demand and Supply Equilibrium Price, Price Controls (Price Ceiling and Price Floors) Tax and Subsidies
- Consumer Behaviour Theory:** Utility and Law of diminishing marginal utility, Budget Constraint and Indifference Curve, Marginal Rate of Substitution and Consumer Equilibrium, Price Effects (Substitution and Income Effect), Price and Income Consumption Curves.
- Production Theory and Cost Analysis:** Production (Short-run and Long-run), Average Product and Marginal Product, Diminishing Marginal Returns and

Returns to Scale, Economies of Scale and Diseconomies of Scale.

- e. **Firms and Market Structure:** Profit Maximization and other firm objectives, Perfect Competitive, Monopoly, Monopolistic competition, Oligopoly.
- f. **Macroeconomic concepts:** gross domestic product, economic growth and business cycles.
- g. **Macroeconomic challenges:** unemployment, inflation and macroeconomic performance
- h. **Money and exchange rates**
- i. **Globalization and trade policy**

15. Assessment

Coursework : 40%;
Examinations : 60%

16. Teaching and Learning Methods / Activities

Lectures, tutorials, individual and group presentations, assignments, and exercises

17. Prescribed texts

Lipsey R. and Chrystal, A. (2015). *Economics*, (13th Ed.). Oxford University Press

Mankiw, N. G. (2018) *Principles of Microeconomics*, (8th Ed.). CENGAGE

Mansfield, E and Yohe, G.W (2003) *Microeconomics: Theory and Applications*, (11th Ed.). W.W. Norton and Company

18. Recommended texts

Krugman, P and Wells, R (2014). *Microeconomics*, (3rd Ed.). Worth Publishers

Samuelson, P.A and Nordhaus, W.D. (2009) *Economics*, (19th Ed.). McGraw-Hill

Mc Connell, C, Bruce, S. & Flynn, S. (2011). *Economics*, (19th Ed.). London: Mc Graw-Hill.

O'Sullivan, A, Sheffrin, S. M. & Perez, S.J. (2013) *Microeconomics: Principles and Tools*. (9thEd.). Prentice Hall.

19. Journals

American Economic Journal: Microeconomics by American Economic Association.

URL: <https://www.aeaweb.org/journals/mic>

Microeconomics and Macroeconomics by Scientific and American Publishing. URL:

<http://www.sapub.org/journal/aimsandscope.aspx?journalid=1073>

20. **Date:** March 2016, Reviewed March 2021

ISEC-210 Information Security



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

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|--------------------------------------|--------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module Title: | Information Security |
| 3. Module code: | ISEC-210 |
| 4. Year: | 2 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 2 |
| 9. Tutorial/Laboratory (hours/week): | 2 |
| 10. Prerequisites | |
| 11. Co-requisites | |
| 12. Module aim: | |

To introduce the student to the fundamentals of information security that is used in protecting both digital information and non-digital information in organizations.

13. Intended learning outcomes

Upon completion of this module, the student should be able to:

- Discuss the advantages, disadvantages, threats and vulnerabilities associated with various IT environments
- Apply concepts, principles and techniques relating to the security of information such as confidentiality, integrity, and availability
- Explain the challenges and scope of information security
- Explain malicious software issues such as those introduced by software-based viruses and worms

- Describe the basic process of risk assessment and mitigation in the context of overall IT security management
- Select appropriate IT security products in line with enterprise security policies and requirements

14. Indicative Content

- Introduction to Information Security: Definition of Information security; Information security vs Cyber security; Importance of Information security; Critical characteristics of information; CIA triad, The CNSS Security Model (McCumber Cube).
- Information Security Threats and Attacks: Risks and Vulnerabilities; Classes of attacks
- Document security: physical protection, archive, retrieval, and classification systems.
- Information management (access, identification, authorisation controls. Ensuring availability, accuracy, and confidentiality of information).
- Risk management in information security: Risk analysis, assessment, management and contingency planning for information security.
- Information Security Technology: Access Control; Access Control Mechanisms; Biometrics; Firewalls; Content Filters; Protecting Remote Connections; Remote Access; Virtual Private Networks (VPNs)
- Business Continuity and Disaster Recovery Planning: Planning and implementation of a disaster recovery plan for an organisation; Business continuity plans (BCP)

15. Assessment

40% Coursework (tests, exercises, group and individual assignments), 60% Final Examinations

16. Teaching and Learning Methods/Activities

- Lectures
- Tutorials
- Presentations
- Group discussions

17. Prescribed Texts

Boni, W., Kovacich, G.L. (2000). *Netspionage: the Global Threat to Information*. Boston MA: Butterworth Heinemann.

Whitman, M.E., Mattord, H.J. (2012). *Principles of information security* (4th ed.). Boston: Thomson Educational

18. Recommended Resources

Erbschloe, M. & Vacca, J.R. (2001). *Information warfare*. New York: McGraw-Hill.

Hutchinson, W. & Warren, M. (2001). *Information warfare: Corporate Attack and Defence in the Digital Age*. Oxford: Butterworth-Heinemann.

Schneier, B. (2000). *Secrets and lies: digital security in a networked world*. New York: John Wiley and Sons.

19. Journals

International Journal of Information Security - Springer

International Journal of Computer Science and Network Security - IJCSNS

International Journal of Computer Science – iaeng

International Journal of Information and Computer Security – InderScience

20. Date: March 2016, Reviewed March 2021

OOPR-210 Object-Oriented Programming



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT/BCSS/BGIS
2. Module Title:	Object-Oriented Programming
3. Module code:	OOPR-210
4. Year:	2
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hours/week):	2
9. Tutorial/ (hours/week):	2
10. Prerequisites:	COMP-122
11. Co-requisites:	None
12. Module aim:	

To introduce students to object-oriented programming principles and techniques.

13. Intended learning outcomes

Upon completion of this module, the student should be able to:

- Describe the principles of object-oriented programming.
- Use UML diagrams during analysis and planning phases of object-oriented solutions development.
- Analyse and solve a problem and write object-oriented programs for the solution.
- Apply advanced object oriented concepts including inheritance and polymorphism in program solutions
- Solve problems that need file and exception handling in object oriented programming.

- f) Understand and apply search and sort and methods in object-oriented solutions.
- g) Create an event driven programming solution, such as a GUI, using object oriented programming.

14. Indicative Content

- a. Introduction to object-oriented programming language: object-oriented programming vs structured programming; four fundamental principles of object-oriented programming (abstraction in terms of classes and objects, encapsulation, inheritance and polymorphism); modelling software objects based on properties of real-world objects; modelling classes using UML class diagrams.
- b. Designing and using classes to create objects in a program: class vs object; elements or members of a class; non-derived attributes and derived attributes; constructors and methods in a class; instance variables and static/class variables in a class; parameterised and default constructors; this keyword; instance methods and static/class methods in a class; void and non-void methods; parameterised methods; get/accessor methods and set/mutator (encapsulation); toString method; access levels in a class (private, public, protected, package) (encapsulation); strict naming conventions when writing an object-oriented program; creating objects from a driver class.
- c. Reusing code from existing classes through inheritance, composition, abstract classes and interfaces: superclasses and subclasses; representing inheritance using UML class diagrams; method overriding and method overloading (polymorphism); representing composition using UML class diagrams; Implementing composition in a program; abstract class vs interface; implementing abstract classes and interfaces in programs
- d. Collections of objects in data structures: static array vs dynamic arrays of objects; traversal, searching and sorting of objects; Implementation and use of the Comparable interface.
- e. File handling in an object oriented program: writing objects to a file (serialization) vs reading objects from a file (deserialization)
- f. Building Graphical User Interfaces using classes and objects: WIMP interface; foundation classes; GUI component classes; GUI layout classes; Event classes; exception handling on data entered in GUI programs

15. Assessment:

40% Continuous assessment (Assignments, practical, group assignments and class tests), 60% Final Examinations

16. Teaching and Learning Methods/Activities

Lectures, demonstrations, Laboratory classes/practicals, Tutorials, Assignments and Exercises

17. Prescribed Texts

Liang, Y.D. (2020). *Introduction to Java Programming and Data Structures*, Comprehensive Version. Pearson.

Farrell, J. (2019). *Java Programming*. Cengage.

18. Recommended Resources

Bennet, S., McRobb., S. and Farmer, R. (2010). *Object-Oriented System Analysis and Design using UML*. (4th Ed.). New Jersey: McGraw-Hill Education.

Lafore, R. (2002). *The Fundamental Concepts of Object-Oriented Programming*. Sams Publishing

Baesens, B., Backiel, A., and Broucke, S. (2015). *Beginning Java Programming: The Object-Oriented Approach*. Indianapolis: John Wiley & Sons, Inc.

19. Journals

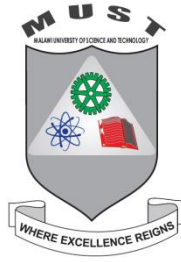
Computer engineering and information technology – scitechnol

Journal of Informatics and Data Mining - imedpub

American Journal of Computer Science and Information Technology (AJCSIT) – imedpub

19. Date: March 2016, Reviewed March 2021

OSYS-210 Operating Systems



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|---------------------------|--------------------------------|
| 1. Programme(s): | BBIT/BCSS/BGIS |
| 2. Module Title: | Operating Systems |
| 3. Module Code: | OSYS-210 |
| 4. Year: | 2 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hrs/wk): | 2 |
| 9. Tutorial/Lab (hrs/wk): | 2 |
| 10. Prerequisites: | COMP-122 |
| 11. Co-requisites: | None |

12. Module Aims:

The aim of this course is to introduce the student to the fundamentals of operating systems. The class will be presented using a mix of theory and hands-on exercises. Some/most of the programming assignments will be done on Linux machines using C.

13. Intended Learning Outcomes

On completion, the student should be able to:

- Describe the central role of an operating system in a computer.

- b) Describe how the operating system manages processes.
- c) Describe how the operating system manages memory.
- d) Describe how the operating system manages I/O devices.
- e) Describe how the operating system manages files.
- f) Practically navigate and operate in a GUI based operating system and also a command-line operating system.

14. Indicative Content

- a) **Introduction to Operating Systems:** General architecture of a computer (software/hardware); Definition of an Operating System; Functions of an Operating System; Classification of operating systems based on their interface, user friendliness, functionality, computing environment.
- b) **Process management:** program vs process; structure of a process; process states; process/CPU Scheduling - I/O burst cycle, Context Switching, Scheduling (Short Term, Long Term), Scheduling Criteria, Algorithms (FCFS, SJF, Priority Scheduling, RR); operations on processes; threads; Interprocess communication; process synchronization - Critical Section Problem, Mutual Exclusion, Races, Deadlocks and Starvation.
- c) **Memory Management:** Low Memory and High Memory; Base and Limit Registers; Memory Address Binding; Logical vs Physical Address Space; contiguous memory allocation and non-contiguous memory allocation; Segmentation, Paging and Virtual Memory, Page Replacement algorithms.
- d) **I/O Device Management:** I/O hardware and I/O software;
- e) **File Management:** Files (Attributes, Operations, File types, Structure, Access methods), Directory Structure, Protection, File System Implementation (Allocation methods, Free Space Management)
- f) Navigation and operation in a command-line operating system.

15. Assessment

- a) End of Module Examination (50%).

b) Continuous assessment – Quizzes + Tests + Assignments + Labs (50%)

16. Teaching and Learning Methods / Activities

Lectures, tutorials, programming assignments, presentations and projects.

17. Prescribed texts

Peterson, J. L., & Silberschatz, A. (2018). *Operating system concepts*, (10th ed). Addison-Wesley Longman Publishing Co., Inc.

Tanenbaum, A. S., & Bos, H. (2015). *Modern operating systems*, (4th ed). Pearson.

Stallings, W. (2018). *Operating systems: internals and design principles*, (9th ed). Boston: Prentice Hall.

18. Recommended texts

Deitel, H. M., Deitel, P. J., & Choffnes, D. R. (2004). *Operating systems*. Delhi.: Pearson Education: Dorling Kindersley.

Tanenbaum, A. S., & Woodhull, A. S. (2006). *Operating systems: design and implementation*, (3rd ed). Englewood Cliffs: Prentice Hall.

Lister, A., Eager, B., & Eager, R. D. (2016). *Fundamentals of operating systems*. Macmillan International Higher Education.

19. Date: March 2016, Reviewed March 2021

CNET-221 Computer Networks I



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|--------------------------------------|--------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module Title: | Computer Networks I |
| 3. Module Code: | CNET-221 |
| 4. Year: | 2 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 3 |
| 9. Tutorial/Laboratory (hours/week): | 2 |
| 10. Prerequisites: | |
| 11. Co-requisites: | |
| 12. Module aim: | |

To introduce the student to the theoretical background of computer networks and impart basic skills in network design, operation, configuration and troubleshooting.

13. Intended learning outcomes:

Upon completion of this module, the student should be able to:

- Explain theoretical concepts that are fundamental to the operation of computer networks
- Discuss common layered communication architectures (OSI, TCP/IP) and associated abstract concepts
- Design, install and configure computer networks
- Systematically and analytically troubleshoot common network problems

- e) Discuss the current architecture of the Internet, its operation, protocols and associated standards, and the process that is involved to develop its operational policies and new protocols

14. Indicative Content:

- a) Introduction to data communications, fundamentals of analog and digital transmission, and communication media
- b) OSI reference model: protocols and services, modularity, encapsulation, protocol data units, communication algorithms
- c) TCP/IP protocol architecture: TCP/IP layers and the Internet, IPv4, IPv6 addressing, basic network configuration (Windows, Linux)
- d) Routing and switching: introduction to layer 2 protocols, switching and switching devices, layer 3 protocols, introduction to static and dynamic routing, common routing protocols (RIP, OSPF, BGP), routing devices
- e) History and evolution of the Internet: the ARPANET, RFCs and standards, the World Wide Web, IPv4, IPv6, Internet 2.0, Internet of Things
- f) Common internet application protocols and architectures: HTTP, FTP, DNS, SMTP, IMAP and POP3;
- g) The Internet governance ecosystem: standards bodies, Internet resource policies (IPv4, IPv6, DNS)

15. Assessment:

40% Coursework (exercises, tests, group and individual assignments, projects), 60% Final Examinations

16. Teaching and Learning Methods / Activities

- a) Lectures
- b) Tutorials
- c) Practical lab sessions
- d) Industry visits

17. Prescribed texts:

Tanenbaum, A., Wetherall, D. (2011). *Computer Networks*, 5th Edition. Pearson Prentice Hall.

18. Recommended resources:

White, C.M, (2013). *Data Communications and Computer Networks, A Business User's Approach*, 7th Edition. Course Technology.

Peterson, L.C., Davie, B.S. (2012). *Computer Networks: A Systems Approach*. Morgan Kaufmann.

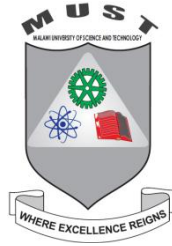
Oppenheimer, P. (2011). *Top-down Network Design*, 3rd Edition. Cisco Press.

19. Journals

Journal of Computer Science and Networking – omicsonline
International Journal of Computer Science and Network Security – IJCSNS
Journal of Network and Computer Applications - elsevier

19. Date: March 2016, Reviewed March 2021

FOAC-220 Fundamentals of Accounting



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Fundamentals of Accounting
3. Module code:	FOAC-220
4. Year:	2
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	2
9. Tutorial (hrs/wk):	2
10. Prerequisites:	None
11. Co-requisites:	None
12. Module Aims:	

The aim of this module is to provide students with introductory Financial Accounting skills to enable them classify and record basic business related financial transactions and also use the acquired basic concepts of Cost and Management Accounting that is relevant for managerial decision-making to meet information needs of the different users of accounting information.

13. Intended Learning Outcomes

On completion of this module; students should be able to:

- Explain the principles and concepts on which accounting is based and apply the Accounting Equation and double entry rules to business transactions;
- Prepare the books of original entry to capture business transactions and post transactions to the ledgers;
- Prepare trial balance and financial statements for businesses.

- d) Learn accounting errors; their respective treatment and correction;
- e) Prepare bank reconciliation statements;
- f) Learn the meaning, definition, significance of cost accounting, its relationship with financial accounting and management accounting;
- g) Learn classification of cost elements during production and absorb them; and
- h) Prepare budgets.

14. Indicative Content

I: Financial Accounting

- a. Introducing Accounting and its economic and legal environments, Users of accounting information and their information needs, Principles, concepts and conventions underlying the preparation of financial statements;
- b. Accounting Routine: Source documents; Books of original entry; Posting and ledgers; Trial balance and Treatment of Accounting Errors;
- c. Preparation of financial statements for businesses: Income statement and Statement of financial position;
- d. Bank reconciliation statements.

II: Cost and Management Accounting

- e. Introduction to cost and management accounting: Difference between Cost, Financial and Management accounting, Cost and Management Accounting terms, Cost classifications;
- f. Costing techniques: Job, Batch, Process, Service costings;
- g. Absorption Costing: Accounting for Materials, Labour costs, Direct Expenses and Overheads; and
- h. Budget preparation: Budgetary preparation process, Subsidiary and master budgets, Cash budgets and Management Reports.

15. Assessment

Coursework:	40%
Examinations:	60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, assignments

17. Prescribed Texts

Drury, C., (2017). *Cost and Management Accounting, (10th Ed.)*. London: Cengage Learning

Horngren, C. et al, (2021). *Cost Accounting: A managerial emphasis (17th Ed.)*. London: Pearson Education

Wood, F. & Sangster A. (2018). *Business Accounting 1 (IFRS Edition), (14th Ed.)*. London: Financial Times/ Prentice Hall,

18. Prescribed Reading Lists

Dyson, R. (2017). *Accounting for non-accounting students, (9th Ed.)*. Essex. Prentice Hall

Hand, L., Isaaks, C. and Sanderson, P. (2005). *Introduction to Accounting for non Specialists. (1st Ed.)*. North Yorkshire: Thomson Learning

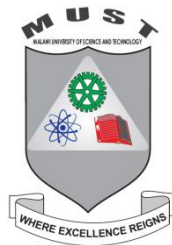
Pizzey, A. (2001). *Accounting and Finance, 5th Edition*, London: Continuum.

Weetman, P. (2010). *Financial Accounting: An Introduction. (5th Ed.)*. London: Financial Times Management

Weetman, P., (2010). *Management Accounting. (2nd Ed.)*. Prentice Hall

19. Date: March 2016, Revised March 2021

STAT-220 Introduction to Statistical Analysis



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

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|-----|--------------------------------------|--------------------------------------|
| 1. | Programme(s): | BBIT/BCSS |
| 2. | Module Title: | Introduction to Statistical Analysis |
| 3. | Module code: | STAT-220 |
| 4. | Year: | 2 |
| 5. | Credit: | 10 |
| 6. | Presented to: | Senate |
| 7. | Presented by: | Malawi Institute of Technology |
| 8. | Lecture (hrs/wk): | 3 |
| 9. | Tutorial/Laboratory (hrs/wk): | 1 |
| 10. | Prerequisites: | MATH-111 and MATH-122/BMAT-122 |
| 11. | Co-requisites: | None |

12. **Module Aims**

This course aims to provide basic probability and statistics concepts and analysis skills that can be used in various applications.

13. **Intended Learning Outcomes**

On completion of this module, students should be able to:

- Differentiate data types.
- Describe data collection techniques.
- Apply data collection techniques to collect and manage data in business
- Analyze data using descriptive methods.
- Apply probability principles (Rules) to different business scenarios
- Conduct hypothesis Testing of business related problems.

14. **Indicative Content**

- Data types: Quantitative data (Continuous and Discrete data, interval and ratio data), Qualitative data (Nominal and Ordinal data).

- b) Data sampling techniques: probabilistic and non-probability sampling methods.
- c) Descriptive data Analysis. measures of centrality, variation, skewness, Kurtosis, standard values: graphs: stems-leaf plots, Boxplots, Ogive, Frequency distribution, histograms, bar-charts, Pie charts, linear graphs, Scatter plots, linear correlation.
- d) Introduction to Counting techniques (factorial, Permutations, Combinations).
- e) Probability: Basic probability principles/ rules, Bayes theorem.
- f) Random variables and their properties: Bernoulli, Binomial, Discrete Uniform, Uniform continuous, Poisson, and Normal distribution.
- g) Inferential statistics: Statistical estimation (Interval and Point estimation), Hypothesis testing: Chi-square test of association and Goodness of fit test, Hypothesis test for single population mean and population proportion (Normal test, t-test).
- h) Linear regression and Correlation: Scatter plots, correlation coefficient, simple linear regression.
- i) Practical data analysis and hypothesis testing with R/STATA/SPSS.

15. Assessment

Coursework: 40% (20% practical assignment and 20% from at least two tests)

Examination: 60%.

Teaching material: desktop computers, STATA, R, SPSS.

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, Computer lab practical, individual and group assignments.

17. Prescribed texts

Clarke G.M and Cooke D (2011). 5th Edition. A Basic Course in Statistics. Wiley

Beaver B.M (2009). Introduction to Probability and Statistics. Blook.

Daniels L., & Minot N. (2020). *Statistics and Data Analysis using Stata: From Research design to Report Writing*. SAGE publications.

Beaver B.M (2009). Introduction to Probability and Statistics. Blook.

18. Recommended texts

Woodbury G. (2015). Introduction to Statistics. Duxbury.

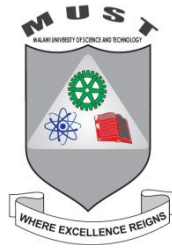
Dalgaard P (2008). Introductory Statistics with R. Springer.

Greasley, P. (2008). *Quantitative Data Analysis using SPSS*. McGraw Hill.

Ross, S. (2009). *Introduction to Probability and Statistics for Engineering and Scientists*. Elsevier.

19. Date: March 2016, Reviewed March 2021

MPPR-220 Management Principles and Practice



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Management Principles and Practice
3. Module code:	MPPR-220
4. Year:	2
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	ORBE-120
11. Co-requisites:	None

12. Module Aims:

The overall aim of this course is to introduce students to schools of management thoughts, main functions of management and other managerial processes to enable students become effective managers.

13. Intended Learning Outcomes:

By the end of the course students should be able to:

- explain the meaning of management in a dynamic environment
- discuss the principles of management and practice
- analyse the development of early management thought and its behavioral limitations
- apply managerial functions and roles to various organizational situations

14. Indicative Content

- a. Introduction to Management: Definition of Management, The functions of

- management, Levels of management, Roles and skills of a manager
- b. Management Theory: Classical Theories of Management, Behavioral approach Systems theory, Contingency approaches, Modern theories
- c. Planning: The planning Process, Importance of planning, Types of plans, Decision making and problem solving
- d. Organizing: The meaning and nature of organizational structure, The design of organizational structure, The division of work, Centralization vs decentralization principles of organization, Formal organizational relationship
- e. Leading: Power and leadership, Motivating employees, Diversity management
- f. Controlling: What is Control and Why Engage In It?, The control process, Contemporary issues in control

15. Assessment

Coursework: 40%

Examinations: 60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

Robbins, S.P., Judge, T.A., & Campbell, T.T. (2010). Organizational Behavior. Harlow: Pearson Prentice Hall.

Boone Louis E., David L. Kurtz. (1987) Management, illustrated, Random House, Business Division,.

18. Recommended texts

Gelfand, Michele J, Erez, Miriam, & Aycan, Zeynep. (2007). Cross-cultural organizational behavior. Annual Review of Psychology, 58, 479-514.

Rousseau, Denise M. (1997). Organizational behavior in the new organizational era. Annual Review of Psychology, 48(1), 515-546.

West, M. A., Guthrie, J. P., Dawson, J. F., Borrill, C. S. and Carter, M. (2006). Reducing patient mortality in hospitals: the role of human resource management. Journal of Organizational Behavior. 27(7), 983–1002.

19. Date: March 2016, Reviewed March 2021

SYAD-220 Systems Analysis and Design



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY

MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT/BCSS/BGIS
2. Module Title:	Systems Analysis and Design
3. Module code:	SYAD-220
4. Year:	2
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	1
9. Tutorial (hrs/wk):	3
10. Prerequisites:	None
11. Co-requisites:	None

12. Module Aim

To introduce software engineering techniques necessary for a system analyst to understand and specify in detail what an information system should do and how the components of the system should be implemented and work together.

13. Intended Learning Outcomes

On completion of this module, a student should be able to:

- Describe phases of the System Development Life Cycle (SDLC).
- Distinguish various system development methodologies.
- Select an appropriate system development methodology for developing a system.

- Create a system proposal including requirements definition, use cases, logical process models and logical data models for a real-life business problem.
- Create a system specification including architecture report, hardware and software specification, interface design, physical process model, database and file specification and physical data models for a real-life business problem.
- Distinguish structured analysis and object-oriented analysis
- Use appropriate CASE tools in system analysis and design.

14. Indicative Content

- a. System Development Life Cycle (SDLC): planning, analysis, design and implementation; System development methodologies: waterfall, agile, parallel, prototyping, throwaway prototyping, extreme programming; selecting appropriate methodology, CASE tools.
- b. Planning phase: Project initiation; Feasibility analysis - operational feasibility, technical feasibility and schedule feasibility; Project work plan.
- c. Analysis phase: Requirements gathering techniques (interviews, questionnaires, group workshops); Requirements statements; Requirements analysis models – Use case analysis (use case elements, use case description and creation of use case diagram), Data flow diagrams (context diagram, level 0 diagram, level 1 diagram, level 2 diagram), Logical data modeling (entity relationship diagrams, normalizing entity relationship model); Object-oriented modeling (object-oriented analysis versus structured analysis, Unified Modeling Language tools and techniques including use case diagram, class diagram, sequence diagram, activity diagram and state diagram); Initial design (system proposal)
- d. Design phase: Transitioning from analysis to design; Architecture design (elements of an architecture design, selecting appropriate architecture design, creating architecture design, hardware and software specification); User Interface design (use scenarios, interface Structure, interface standards, interface prototype, evaluating user interface); Data storage design (moving from logical to physical data models, database design, data models, data

storage and access, data control); Program design (moving from logical to physical models, designing the program and program specification, object-oriented program design versus structured program design)

15. Assessment

Coursework (10% from assignments and 30% from at least two tests): 40%;

Examinations: 60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

Dennis, A., Wixon, B.H., & Roth, R.M. (2015). *System Analysis and Design*. (6th Ed.). New York: John Wiley & Sons, Inc.

Dennis, A., Wixon, B.H., & Tergaden, D. (2015). *System Analysis and Design. An Object-Oriented Approach with UML* (5th Ed.). New York: John Wiley & Sons, Inc.

Shelly, G.B., & Rosenblatt, H.J. (2010). *System Analysis and Design*. (8th Ed.). Boston: Course Technology.

Kendall, K.E., & Kendall, J.E. (2011). *System Analysis and Design*. (8th Ed.). New York: Person Education, Inc.

18. Recommended texts

Bennet, S., McRobb., S. and Farmer, R. (2010). *Object-Oriented System Analysis and Design using UML*. (4th Ed.). New Jersey: McGraw-Hill Education.

Bajaj, A., & Wrycza, S. (2009). *System Analysis and Design for Advanced Modeling Methods: Best Practices*. (1st Ed.). New York: Information Science Reference

19. Journals

Journal of Information Systems Management by Taylor and Francis – URL: <https://www.tandfonline.com/doi/abs/10.1080/07399018908960136>

20. Date: March 2016, Reviewed March 2021

WEBD-220 Web Development



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

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|-------------------------------|--------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module Title: | Web Development |
| 3. Module code: | WEBD-220 |
| 4. Year: | 2 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 2 |
| 9. Tutorial/lab (hours/week): | 2 |
| 10. Prerequisites: | COMP-122 |
| 11. Co-requisites: | None |

12. Module aims:

To provide students theoretical and practical knowledge of essential technologies for web development.

13. Intended learning outcomes

On completion students should be able to:

- Demonstrate sound knowledge of modern web technologies
- Demonstrate practical knowledge of front-end and back-end web development languages, frameworks and design patterns
- Be able to design aesthetic and usable web-based interfaces that fulfil specific user requirements

- Demonstrate understanding of the various web publishing options and be able to make informed choices during the publishing process

14. Indicative Content

- Introduction to the World Wide Web:** History of the web, HTTP(S), HTML, the Web Client/Server Model, Domain Name System (DNS),
- HTML Basics:** Components and Structure of a Website (Tags and Attributes), Setting Up a Template, Links, Formatting Text, Images, Tables, Putting HTML Page on the Internet, Test HTML5 Webpage, Basic Styling in Web pages
- HTML Form Validation:** Selecting Proper Input Types, HTML Input Types, Using HTML and JavaScript for Form Validation
- Styling Webpage:** Introduction to Cascading Style Sheets, Cascading Style Sheets Features, CSS Core Syntax, Style Sheet and HTML, Style Rule Cascading and Inheritance, Text Properties, CSS Box Model, and CSS Frameworks
- Dynamic Webpages with JavaScript:** The JavaScript language; JavaScript, Syntax, Variables and Data Types, Statements, Operators, Literals, Functions, Control Structures, Callbacks and Closures, Objects, Arrays, Built-in Objects, Event-Driven Programming, JavaScript Debuggers, and JavaScript Frameworks
- Web Application Frameworks and Design Patterns:** MVC, Factory, Facades, Dependency Injection and Inversion of Control, Object Relational Mapping
- Web Hosting, Web Publishing

15. Assessment

End of Module Examination (50%).

Continuous assessment (50%)

16. Teaching and Learning Methods/Activities

Face-to-face lectures, Tutorials, lab sessions

17. Prescribed texts:

Niederst Robbins, J. (2018). *Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics*. O'Reilly Media.

Duckett, J. (2014). *Web Design with HTML, CSS, JavaScript and jQuery*. Wiley Publishing, Inc.

Haverbeke, M. (2018). *Eloquent Javascript: A Modern Introduction to Programming*.

No Starch Press.

18. Recommended resources:

Robson, E., & Freeman, E. (2012). *Head First HTML and CSS*. O'Reilly Media, Inc.

Megosinarso, R. (2014). *Step by Step Bootstrap 3, A Quick Guide to Responsive Web Development Using Bootstrap 3* (1st ed.). Twitter Inc.

Brown, E. (2016). *Learning JavaScript: JavaScript Essentials for Modern Application Development*. O'Reilly Media, Inc.

19. Journal

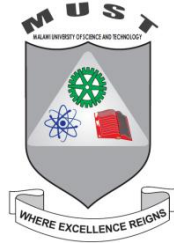
Journal of Web Development and Web Designing
matjournals.com/Journal-of-Web-Development-and-Web-Designing.html

Journal of Web Semantics Elsevier
<https://www.journals.elsevier.com/journal-of-web-semantics/>

20. Date: March 2016, Reviewed March 2021

Year Three

BLAW-310 Business Law



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|-----------------------|--------------------------------|
| 1. Programme(s): | BBIT |
| 2. Module Title: | Business Law |
| 3. Module code: | BLAW-310 |
| 4. Year: | 2 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hrs/wk): | 3 |
| 9. Tutorial (hrs/wk): | 1 |
| 10. Prerequisites: | None |
| 11. Co-requisites: | |
| 12. Module Aims: | |

To provide students with the underlying basic principles that underpins specific types of contracts and commercial instruments by building knowledge from the general principles and concepts to specific areas of Law

13. Intended Learning Outcomes:

By the end of the module students should be able to:

- Analyse the principles and concepts that apply to different types of contracts and commercial instruments
- Demonstrate competence in managing commercial aspects of the business within law.
- Advise on risks, rights and obligations in transacting business.

14. Indicative Content

- a. Sources of Law
- b. Malawi Legal Systems
- c. Contract Law
- d. Law of Agency
- e. Negotiable Instruments
- f. Contract of Sale of Goods
- g. Competition and Fair Trading

15. Assessment

Coursework: 40%

Examinations: 60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

Sauti-Phiri, C., (1989). *General Principles of Malawi Law*. Blantyre: Malawi College of Accountancy.

Goode, R.M., (1985). *Commercial Law*. (New ed.). London: Pelican.

Kiralfy, A.K.R., (1984). *The English Legal System*. (7th ed.). London: Sweet and Maxwell.

18. Recommended texts

Abbott, D., (1983). *A Guide to Negotiable Instruments*. (7th Ed.). London: Butterworth.

Schmitoff, C.H., & Sarre D.A.G., (1987). *Charlesworth's Mercantile Law* (14th edition). London: Stevens and Sons.

Treitel, G.M., (1984). *Outlines of the Law of Contract*. (3rd edition). London: Butterworth.

19. Date: March 2016, Reviewed March 2021

CNET-312 Computer Networks II



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|--------------------------------------|--------------------------------------|
| 1. Programme(s): | BCSS/BBIT |
| 2. Module Title: | Computer Networks II |
| 3. Module code: | CNET-312 |
| 4. Year: | 3 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology (MIT) |
| 8. Lecture (hours/week): | 2 |
| 9. Tutorial/Laboratory (hours/week): | 2 |
| 10. Prerequisites: | CNET-221 |
| 11. Co-requisites: | |
| 12. Module aim: | |

To equip the student with the necessary theoretical knowledge and practical skills to design, implement, maintain and troubleshoot complex networks.

13. Intended learning outcomes:

Upon completion of this module, the student should be able to:

- Explain advanced theoretical concepts of computer networks
- Appraise network communication protocols, algorithms and applications given a specific set of business goals
- Design, install and maintain complex local and wide area networks using a variety of network technologies
- Conduct trade-off analysis to optimize both technical and business design goals for complex networks

- Explain how the Internet operates, its core protocols, associated economics and, social and legal issues

14. Indicative Content:

- Network design approaches: needs analysis, logical design, physical design, testing, optimization and documentation
- Switching: traditional LAN architectures, three-tier hierarchical model, , spanning-tree protocol, VLANs, layer-3 switching devices
- Wireless networks: basic antenna theory, wireless standards, point-to-point links, wireless network planning and deployment, wireless site surveys, link budget calculation, wireless link modeling and simulation
- WAN switching protocols: packet and circuit switching, protocols (Frame relay, HDLC, ATM and PPP)
- Internetworking: Layer 3 devices, link state vs distance vector routing mechanisms, inter-AS and intra-AS routing, path vector routing, convergence, OSPF, BGP operation, IPSec, QoS, interior and exterior BGP configuration
- Traffic monitoring and analysis: protocols and tools, traffic shaping
- Internet architecture: the end-to-end principle, Internet design principles (modularity, heterogeneity, resilience, scalability, distributed management),

15. Assessment:

50% Coursework (tests, exercises, group and individual assignments), 50% Final Examinations

16. Teaching and Learning Methods/Activities

- Lectures
- Tutorials
- Practical lab sessions
- Industry visits

17. Prescribed texts:

Tanenbaum, A., Wetherall, D. (2011). *Computer Networks*, 5th Edition. Pearson Prentice Hall.

Kurose, J.F., Ross, K.W. (2013), *Computer Networking: A Top Down Approach*, 6th Edition. Addison Wesley.

Beard, C., Stallings, W. (2015). *Wireless Communication Networks and Systems*. Pearson Prentice Hall.

18. Recommended resources:

White, C.M, (2013). *Data Communications and Computer Networks, A Business User's Approach*, 7th Edition. Course Technology. Cengage Learning

Peterson, L.C., Davie, B.S. (2012). *Computer Networks: A Systems Approach*. Morgan Kaufmann.

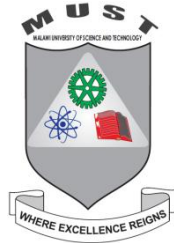
Oppenheimer, P. (2011). *Top-down Network Design*, 3rd Edition. Cisco Press.
Carpenter, B. (ed.) (1996). *RFC 1958: Architectural Principles of the Internet*. IETF.
Stalings, W. (2005). *Wireless Communications and Networks*, 2nd Edition.
Pearson Prentice Hall.

19. Journals

International Journal of Computer Science and Network Security - IJCSNS
International Journal of Information and Computer Security - inderscience
Journal of Network and Computer Applications - elsevier
International Journal of Sensor Networks and Data Communications - omicsonline

20.Date: March 2016, Reviewed March 2021

FCOF-310 Fundamentals of Corporate Finance



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|-----------------------|---|
| 1. Programme(s): | BBIT |
| 2. Module Title: | Fundamentals of Corporate Finance |
| 3. Module code: | FCOF-310 |
| 4. Year: | 4 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hrs/wk): | 2 |
| 9. Tutorial (hrs/wk): | 2 |
| 10. Prerequisites: | Accounting I and II, Cost and Management Accounting |
| 11. Co-requisites: | None |
| 12. Module Aims: | |

To develop and provide students with the basic principles and skills in corporate finance for decision making at a corporate level.

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Appreciate the role of corporate finance of funds
- Evaluate the different sources of finance
- Describe the elements and concept of working capital management
- Calculate the cost of equity and debt capital

14. Indicative Content

- a. Introduction to corporate finance: Objective and scope of corporate finance, Interface of corporate finance with other functional areas
Principal agent theory

- b. Sources of finance: Short term and long-term sources of finance
External versus internal sources of finance
- c. Management of working capital: Elements of working capital,
Management of inventories, Management of payables, Management
of receivables Management of cash
- d. Capital structure and costs of capital: The concept of cost of capital
Cost of equity, Cost of debt, The weighted average cost of capital
- e. Capital investment appraisal and decision making: Why capital
investment appraisal?, Investment appraisal methods and decision
making

15. Assessment

Coursework: 40%;
Examinations: 60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, and assignments

17. Prescribed Resources

Atrill P., & McLaney E., (2010). *Accounting and Finance for non Specialists*. (7th Ed.). London: Pearson Education

Arnold G., (2012). *Corporate Financial Management*, (5th Ed.). London: Pearson Education

Brealey, R., Myers, S. & Marcus, A. (2014). *Fundamental of Corporate Finance*, (8th Ed.). New York. *McGraw-Hill*

18. Prescribed Reading Lists

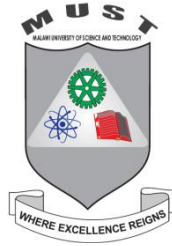
Pike, R. Neale, B. & Linsley, P (2015). *Corporate Finance and Investment*. (8th Ed.). New York: Prentice Hall

Hand, L., Isaacs, C. & Sanderson, P. (2005). *Introduction to Accounting for non*

Specialists. (1st Ed.).North Yorkshire: Thomson Learning

19. Date: March 2016, Reviewed March 2021

HUCI-310 Human Computer Interaction



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Human Computer Interaction
3. Module code:	HUCI-310
4. Year:	2
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	2
9. Tutorial (hrs/wk):	2
10. Prerequisites:	None
11. Co-requisites:	None

12. Module Aims

To provide students with knowledge and practical skills in the area of human computer interact, and to promote the development of systems that enhance user experience

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Recognize the importance of user friendly systems interfaces
- Apply guidelines for developing a user interface
- Design and conduct user studies
- Design for user experiences on different computing devices
- Apply different tools and methodologies in prototyping solutions
- Evaluate the usability of user interfaces
- Discuss issues relating to universal design

- Appreciate future directions in human-computer interaction

14. Indicative Content

- Introduction and history of human computer interaction
- User interaction design guidelines
- Frameworks and interaction models
- Emotional design
- Designing and conducting user studies
- User experience design for different devices (desktop, mobiles, the webs, wearables, television sets)
- Prototyping
- Universal design
- Usability evaluation
- Data visualisation
- Future directions in human computer interaction

15. Assessment

Coursework (25% from assignments and 25% from at least two tests): 50%;

Examinations: 50%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

Preece, J., Sharp, H., & Rogers, Y. (2015). *Interaction Design: beyond human-computer interaction*, (4th Ed.). Wiley

Cooper, A., Reimann, R., Cronin, D., & Noessel, C. (2015). *About Face: The Essentials of Interaction Design*. Wiley

Shneiderman, B. & Plaisant, C. (2009). *Designing the User Interface: Strategies for Effective Human-Computer Interaction* (5th Ed.). Pearson

18. Recommended texts

Dix, A., Finlay, J.E., Abowd, G.D., Beale, R., (2003). *Human-Computer Interaction*, (3rd Ed.). Prentice Hall

Norman, D. (2013). *The Design of Everyday Things: Revised and Expanded Edition*. Basic Books.

Krug, S. (2014). *Don't Make Me Think, Revisited: A Common Sense Approach to*

19. Journals

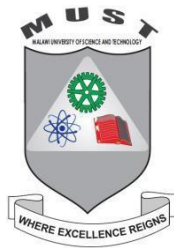
[ACM Transactions on Computer-Human Interaction](#) (ACM). *ACM TOCHI seeks to be the premier archival journal in the multidisciplinary field of human-computer interaction.*

[AIS Transactions on Human-Computer Interaction](#) (Association of Information Systems). *THCI is a high-quality peer-reviewed international scholarly journal on Human-Computer Interaction, emphasizing applications in business, managerial, organizational, and cultural contexts.*

[Behaviour and Information Technology](#) (Taylor & Francis). *BIT focuses on the human aspects of information technology, on which much of our developed world depends*

20.Date: March 2016, Reviewed March 2021

MLEN-310 Introduction to Machine Learning



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY

MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|--------------------------|----------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module Title: | Introduction to Machine Learning |
| 3. Module code: | MLEN-310 |
| 4. Year: | 3 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hrs/wk): | 2 |
| 9. Tutorial/Lab(hrs/wk): | 2 |
| 10. Prerequisites: | COMP-122, STAT-220 |
| 11. Co-requisites: | None |

12. Module Aims:

To introduce students to machine learning tools and techniques and their application.

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Develop an understanding of what is involved in learning models from data.
- Understand a wide variety of machine learning algorithms.
- Demonstrate understanding of basic principles, methods and applications of machine learning.
- Implement machine learning techniques suitable for the applications under consideration.

- Apply principles and algorithms to evaluate models generated from data.

14. Indicative Content

- Introduction and Basic Concepts:** What is AI, History of Machine Learning, Programs vs Learning algorithms, Types of Learning (Supervised Learning, Unsupervised Learning, and Reinforcement Learning)
- Data Exploration:** What is Data, Basic Data Types (Numerical Data, Categorical Data, Time-Series Data, and Text), Descriptive Stats (Mean, Standard Deviations, Variances, Unique Values), Exploratory Data Visualization, Missing Data
- Regression:** Introduction to Regression, Linear Regression, Non-linear Regression, Simple and Multiple regression, and their applications, Regression Evaluation Metrics
- Classification:** Introduction to Classification, Classification Algorithms (KNN, Decision Trees, Logistic Regression and SVM), Pros and Cons of the Classification Algorithms, Classification Accuracy Metrics (Confusion Matrix)
- Clustering:** Introduction to Clustering, Types of clustering, including Partitioned-based Clustering, Hierarchical Clustering, and Density-based Clustering and Clustering Algorithms.
- Deep Learning:** Definition of Deep Learning, Neural networks, Applications of Deep Learning

15. Assessment

- End of Module Examination – Practical + Written (50%).
- Continuous assessment (50%)

16. Teaching and Learning Methods / Activities

Lectures, lab/tutorials, and assignments

17. Prescribed Textbooks

Theobald, O. (2017). *Machine Learning for Absolute Beginners: a Plain English Introduction*. Scatterplot Press.

Witten, I. H., Frank, E., Mark, A., Orallo, H., Quintana, R., Ramírez, F., & Ye, N. (2017). *Data Mining: Practical Machine Learning Tools and Techniques*, (4th ed.). Elsevier Science.

Conway, D., & White, J. (2012). *Machine Learning for Hackers*. O'Reilly Media, Inc.

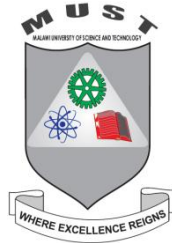
18. Recommended Textbooks

Burkov, A. (2019). *The Hundred-Page Machine Learning Book (Vol. 1)*. Canada: Andriy Burkov.

Harrington, P. (2012). *Machine Learning in Action*. Manning Publications Co.

19. Date: March 2021

MRKT-310 Marketing



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Marketing
3. Module code:	MRKT-310
4. Year:	3
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	None
11. Co-requisites:	None
12. Module Aims	

The aim of the module is to provide students with the basic concepts of marketing. It is envisaged that this academic knowledge will provide students with a Marketing Tool Kit which can be usefully incorporated into broader business decisions within organizations.

13. Intended Learning Outcomes

By the end of this module learners should be able to:

- Explain the development of marketing.
- Demonstrate understanding of marketing terminology and concepts.
- Discuss the role and contributions of marketing within an organization
- Describe the impacts of marketing actions on society and the need for marketers to act in an ethical and socially responsible manner.

- Demonstrate knowledge of the individual components of a marketing mix
- Identify the organisational processes involved in the planning, implementation and control of marketing activities

14. Indicative content

- Explain the development of marketing as: an exchange process, a philosophy of business, a management function
- Describe the different marketing concepts: Production concept, Product concept, Selling concept, Marketing concept, Societal marketing
- Marketing strategy: STP, Identifying market segments, Selecting target segments Positioning, Repositioning
- Product and portfolio management: Product concepts, What is a product?, Product classification, Elements of a product, Portfolio management, Product life cycle model, BCG model, New product development, Adoption of innovation
- Understanding consumer and organizational buying behaviour: Consumer Buying behaviour, Organizational buying behaviour
- Price & Pricing strategies: The role of price in the marketing mix, Overview of the pricing process, Price strategy
- Promotion and the communication process: The role of promotion, The elements of promotion, The promotional mix, The communication process, Measuring the success of communication/promotion
- Place (Distribution channels): Basic channel functions, Types of marketing channels, Channel strategy decisions
- Services and non services marketing: Defining service marketing, Understanding the market for services, Planning strategy and tactics for service marketing
- Marketing research and analysis: The role of marketing information, The marketing research process
- Using the marketing plan: stages of the planning process: Situation analysis, Objective setting, Strategy development, Tactics (marketing mix),

Implementation, Control

15. Assessment

Coursework : 40%;

Examinations: 60%

16. Teaching and Learning Methods / Activities

- Lectures: class based instructions
- Tutorials.
- Course work for continuous assessment.
- Independent learning; self directed study.

17. Prescribed texts

Kotler, P. & Armstrong, G. (2012) *Principles of Marketing*.(14th Ed.). Upper Saddle River, Pearson Prentice Hall

Jobber, D. (2010) *Principles and Practice of Marketing*.(6th Ed.). McGraw-Hill

18. Recommended texts

Bearden, B. et al. (2007) *Marketing Principles and Perspectives*. (5th Ed.). McGraw-Hill

Kurtz, D. & Boone, L.E., (2006) *Principles of Marketing*. Thomson South-Western

Perrenault, W.D. Jr&McCarthy, E.J. (2003) *Essentials of Marketing: A Global Managerial Approach*.(9th Ed.). New York: McGraw-Hill

19. **Date:** March 2016, Reviewed March 2021

ETHS-320 Ethics in Business Information Technology



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Ethics in Business Information Technology
3. Module code:	ETHS-320
4. Year:	4
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hours/week):	3
9. Tutorial/Laboratory (hours/week):	1
10. Prerequisites:	None
11. Co-requisites:	None
12. Module aims:	

The aim of this module is to equip students with knowledge on moral issues surrounding the use of computers and information technology today, with an emphasis on ethical issues

13. Intended learning outcomes

On completion of this module students should be able to:

- Demonstrate knowledge of current models of information and computer ethics.
- Apply ethical theories to interpret personal and group behavior when using a variety of information technology tools.
- Evaluate the nature of ethical choices made by self and others when serving various roles that expose social and multicultural differences.
- Construct written arguments in a variety of formats on the evolving nature of ethical norms relating to new technologies.

- Analyse social and ethical challenges in technology design and use
- Discuss different perspectives on the social and ethical responsibility of the information technology designer and user
- Apply different methods to explore and discuss theoretical concepts and social and ethical challenges

14. Indicative Content

- a. Ethics for IT Workers and IT Users
- b. Computer and Internet Crime
- c. Privacy and Confidentiality
- d. Intellectual Property
- e. Ethics of IT Organizations
- f. Software Engineering Code of Ethics

15. Assessment

50% Continuous assessment (Assignments, practical and class tests)
50% Examinations

16. Teaching and Learning Methods/Activities

Lectures, demonstrations, Laboratory classes/practicals, Tutorials, Assignments and Exercises

17. Recommended Resources and Prescribed Reading Lists

Reynolds, G. (2012). *Ethics in Information Technology* (4th Ed.). Boston: Course Technology.

18. Journals

Ethics and Information Technology Springer
www.springer.com › Home › Computer Science › Software Engineering
Journal of Cases on Information Technology (JCIT)
<https://www.igi-global.com/journal/journal-cases-information-technology/1075>

19. Date: March 2016, Reviewed March 2021

MAPP-320 Mobile Application Development



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT/BGIS
2. Module Title:	Mobile Application Development
3. Module code:	MAPP-320
4. Year:	3
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	2
9. Tutorial (hrs/wk):	2
10. Prerequisites:	None
11. Co-requisites:	None
12. Module Aims	

To provide students with the principles, and practical experience, in mobile application design, development, and distribution

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Discuss design considerations for mobile application development
- Designing and develop mobile applications using an application development framework
- Critique mobile applications and related design approaches
- Work within the capabilities and limitations of a range of mobile computing devices
- Utilize rapid prototyping techniques to design and develop mobile interfaces
- Implement mobile applications using appropriate software development

environments

- Explain key issues in mobile security
- Publish, deploy, maintain, a mobile application

14. Indicative Content

- a. Introduction: Introduction to mobile computing, mobile operating system architectures, application development frameworks and environments (Android, iOS, Windows, etc.)
- b. Mobile user experience design
- c. Prototyping
- d. Storing and retrieving data
- e. Messaging
- f. Networking
- g. Notifications and alarms
- h. Location-based services
- i. Ubiquitous computing: wearables, living room
- j. Mobile device security
- k. Publishing, deployment, maintenance, and management of mobile applications

15. Assessment

Coursework (20% from assignments and 30% from at least two tests): 50%;
Examinations: 50%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

Griffiths, D. And Griffiths, D. (2017). *Head First Android Development: A Brain-Friendly Guide 2nd Edition*. O'Reilly Media

Boyer, R., (2018). *Android 9 Development Cookbook: Over 100 recipes and solutions to solve the most common problems faced by Android developers, 3rd Edition*. Pack Publishing.

Levin, M. (2014). *Designing Multi-Device Experiences: An Ecosystem Approach to User Experiences across Devices*

18. Recommended texts

Jones, M., Marsden, G. (2006). *Mobile Interaction Design* (4th edition). John

Wiley & Sons

19. Journal

Wireless and Mobile Technologies Science and Education Publishing

www.sciepub.com/journal/WMT

IBIMA Publishing Journal of Mobile Technologies, Knowledge and Society

ibimapublishing.com/journals/journal-of-mobile-technologies-knowledge-and-society/

Journal of Mobile Technology in Medicine mHealth Research

www.journalmtm.com/

Date: March 2016, Reviewed March 2021

PJMG-320 Project Management



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Project Management
3. Module code:	PJMG-320
4. Year:	3
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hours/week):	2
9. Tutorial (hours/week):	2
10. Prerequisites	None
11. Co-requisites	None
12. Module aim:	

This module will provide students with a knowledge, skills and techniques required to execute projects in information technology.

13. Intended learning outcomes:

On completion of this module the student should be able to:

- Appreciate the need for IT project management.
- Appreciate the roles of a Project manager and how to execute each of the roles.
- Describe the characteristics and nature of IT projects.
- Understand the common concepts in project management e.g. time, cost, quality and risk management.
- Understand the procurement process.

14. Indicative Content

- a. Introduction to Project management: What is a project?
What is project management?, Advantages of project management

Examples of IT projects, Project framework, Role of a project manager, software for project management

- b. Applications of IT in project management: Link between IT and project management, Project phases and project life cycle, Closing projects.
- c. Project scope management: What is Project scope management? Creating the work break down Structure, Scope verification, Scope control,
- d. Project schedule management: Importance of project schedule management, Resource estimation, Events duration, estimating, schedule development
- e. Project human resource management: What is project human resource management, How to manage people, Human resource planning, How to manage a team, How to acquire a Project team
- f. Project communications management: Introduction to communications management, Communications Planning, Performance reporting, how to improve project, Communications.
- g. Project risk management: Importance of project risk management
Risk management planning, Qualitative risk analysis and quantitative risk analysis.
- h. Project Procurement Management: What is Project Procurement management, Tools and techniques for planning purchases, Procurement management plan.

15. Assessment: 40% Continuous Assessment (Assignments & Tests).
60% Examination.

16. Teaching and Learning Methods/Activities:
Lectures, group discussions and Tutorials

17. Recommended Resources

Gray, C. & Larson, E. (2008). *Project Management: The Managerial Process*. McGraw-Hill/Irwin.

Project Management Institute (2017). *A Guide to the Project Management Body of Knowledge. Pmbok Guide*. 6th Edition. PMI.

18. Prescribed Reading Lists

Meredith, J., & Mantel, S., (2008). *Project Management: A Managerial Approach*. Wiley and Sons.

Kerzner, H. (2009). *Project Management: A Systems Approach to Planning, Scheduling and Controlling*. Wiley and Sons.

Schmidt, T. (2009). *Strategic Project Management Made Simple: Practical Tools for Leaders and Teams*. Wiley and Sons.

Horine, G. (2009). *Absolute Beginner's Guide to Project Management*. Que Publishers.

19. Journals

Project Management Journal | PMI

<https://www.pmi.org/learning/publications/project-management-journal>

International Journal of Project Management Elsevier

<https://www.journals.elsevier.com/international-journal-of-project-management>

The Journal of Modern Project Management –

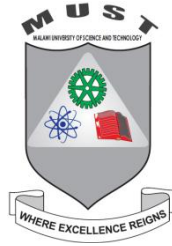
www.journalmodernpm.com/

Project Management Journal Wiley Online Library

onlinelibrary.wiley.com › Business & Management › Project Management

20. Date: March 2016, Reviewed March 2021

OPMG-320 Operations Management



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Operations Management
3. Module code:	OPMG-320
4. Year:	3
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	PJMG320
11. Co-requisites:	None
12. Module Aims:	

To provide the students with knowledge in the management of operations in manufacturing and service organizations and expose them to the application of computational and analytical techniques used in production operations management related decisions.

13. Intended Learning Outcomes:

By the end of the module students should be able to:

- apply skills and techniques for analysis and decision making for operating systems acquired
- relate the subject processes, activities and knowledge with other organizational management functions
- manage activities or operations using scientific models of planning and problem solving
- understand, apply and continuously evaluate recent trends in operations

- formulate productive and competitive strategies for operating systems

14. Indicative Content

- Location Planning
- Capacity Planning
- Facilities Layout
- Aggregate Planning
- Inventory Control
- Materials Requirements Planning
- Scheduling
- Service Operations Management
- Quality Management

15. Assessment

Coursework:	40%
Examinations:	60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments

17. Prescribed texts

Haizer, J., Barry, R., (2013) *Principles of Operations Management*. London: Prentice Hall.

Krajewski, R., & Malhotra, (2007). *Operations Management: Processes and Value Chains*, Prentice-Hall (8th Ed.).

Beckman, S., (2008) *Operations Strategy: Competing in the 21st Century*. London: McGraw Hill.

Morris, C., (2009). *Quantitative Approaches in Business Studies*. London: Pitman Publishing Ltd.

Schroeder, R.G., (2010) *Operations Management: Contemporary Concepts and Cases*. London

Water, C.D., (2006) *Operations Strategy*. London: Thomson Learning.

18. Recommended texts

Oakland, J., (2000), *Total Quality Management: Text with cases*. Oxford: Butterworth Heinemann.

Slack, N., (2009) *Operations Management*. London: Prentice Hall,

Stevenson, W., J. (2005), *Production and Operations Management*. Irwin:

McGraw-Hill Inc.

19. Date: March 2016, Reviewed March 2021

RMEC-321 Research Methods in Computing



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|---------------------------|--------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module Title: | Research Methods in Computing |
| 3. Module code: | RMEC-321 |
| 4. Year: | 4 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 1 |
| 9. Tutorial (hours/week): | 3 |
| 10. Prerequisites: | |
| 11. Co-requisites: | |
| 12. Module Aim: | |

To provide the student with enough background in research concepts and theories as well as proposal writing skills in computing

13. Intended Learning Outcomes

Upon completion of this module, module the student should be able to:

- Familiarize themselves with a scientific research process in computing
- Apply different research methods in computing
- Evaluate the novelty and contribution of a research idea
- Perform a literature survey and outline the work needed to produce a research proposal
- Identify assumptions, limitations and premises of different research approaches and methods
- Discuss ethical aspects of research designs and dissemination mechanism in

computing

14. Indicative Content

- a. Introduction to Scientific Research - definition of research, goals of research, principles of the scientific method, scientific research process, mistakes in scientific research.
- b. Research Methodologies in Computing - research method vs research methodology; research methodologies - formal methodology, case study, action research, design science research/constructive research, experimental methodology, model methodology;
- c. Research methods: quantitative research methods vs qualitative research methods; qualitative research methods - one-to-one interviews; quantitative research methods - survey and correlational research; other research methods also applicable to computing - algorithmic analysis, cognitive walkthrough, critical analysis of literature, end-user study, forensic analysis, heuristic evaluation, mathematical modelling, mathematical proof, proof by demonstration, simulation, static analysis, think aloud, usability testing, and Wizard of Oz; techniques for analyzing data
- d. Writing a research proposal - Introduction, Problem statement, Aims and objectives, Preliminary literature review, Research methodology, Ethical considerations, Budget, Appendices and References
- e. Writing a dissertation - Introduction, Literature Review, Methodology, Results, Discussion and Conclusion. Other sections of a dissertation - Abstract, Table of Contents, List of Figures and Tables, Bibliography and Appendices.
- f. Case studies
- g. Intellectual Property

15. Assessment

30% Course work (tests, exercises, presentations, group and individual assignments)

70% Research Proposal assessed based on a rubric. However, if research proposal is done in a group, then the individual grade in research shall be calculated using the formula $((\text{student participation in project as determined by supervisor on a scale of 0 to 10})/10) * \text{group research proposal grade}$.

16. Teaching and Learning Methods / Activities

- 1) Lectures
- 2) Seminars

3) Online learning

17. Prescribed Texts

Recker, J. (2013). *Scientific Research in Information Systems: A Beginner's Guide (Progress in IS)*. Springer

Bhattacharjee, A. (2012). Social science research: Principles, methods, and practices. URL: http://scholarcommons.usf.edu/oa_textbooks/3/ License: CC BY-NC-SA: Attribution-NonCommercial-ShareAlike

18. Recommended Resources

Holz, H. J., Applin, A., Haberman, B., Joyce, D., Purchase, H., & Reed, C. (2006). Research Methods in Computing: What are they, and how should we teach them?. In Working group reports on ITiCSE on Innovation and technology in computer science education (pp. 96-114).

Roodt, G., & Fouche, C. (2004). Guidelines for writing a research proposal. Johannesburg, South Africa: University of Johannesburg.

Sudheesh, K., Duggappa, D. R., & Nethra, S. S. (2016). How to write a research proposal?. Indian Journal of Anaesthesia, 60(9), 631–634.

Hayes, G. R. (2011). The relationship of action research to human-computer interaction. ACM Transactions on Computer-Human Interaction (TOCHI), 18(3), 1-20.

Järvinen, P. (2007). Action research is similar to design science. Quality & Quantity, 41(1), 37-54.

Piirainen, K. A., & Gonzalez, R. A. (2013). Seeking constructive synergy: design science and the constructive research approach. In International conference on design science research in information systems (pp. 59-72). Springer, Berlin, Heidelberg.

Dresch, A., Lacerda, D. P., & Miguel, P. A. C. (2015). A distinctive analysis of case study, action research and design science research. Review of Business Management, 17(56), 1116.

Rudestam, K. E., & Newton, R. R. (2001). Surviving your dissertation: A comprehensive guide to content and process (2nd ed.). Thousand Oaks: Sage.

19. Journals

International Journal of Computer Science – iaeng

Computer science and information technology – imedpub
International Journal of Innovative Research in Computer and Communication
Engineering - rroj

20. Date: March 2016, Reviewed March 2021

SVAD-320 Server Administration



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY

MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|--------------------------------------|--------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module title: | Server Administration |
| 3. Module code: | SVAD-320 |
| 4. Year: | 3 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hours/week): | 1 |
| 9. Tutorial/Laboratory (hours/week): | 3 |
| 10. Prerequisites: | None |
| 11. Co-requisites: | None |
| 12. Module aims: | |

To provide the student with knowledge and practical skills required to install, configure and provision production servers.

13. Intended learning outcomes

By the end of this module, the student should be able to:

- Describe the duties and responsibilities of a server administrator
- Demonstrate knowledge of characteristics of server hardware and software
- Identify server software options based on technical and commercial factors
- Use operating system tools to source, install and configure server software on

Linux/Unix and Windows platforms

- e. Provision server users
- f. Automate routine server administration tasks
- g. Monitor, analyse and fine-tune server hardware and software
- h. Demonstrate knowledge of modern virtualization and containerization technologies
- i. Plan and implement disaster recovery strategies

14. Indicative Content

- a. Principles of server administration - duties, responsibilities and ethical issues
- b. Server hardware - understanding server hardware features - storage, processing, redundancies (RAID, power, network), form factors, hardware installation
- c. Server software - sourcing, FOSS vs proprietary, package management systems, installation and configuration on Linux/Unix and Windows platforms
- d. Server installation and provisioning - user account provisioning, web servers, email servers, DNS servers, file servers
- e. Automation - introduction to server side scripting
- f. Server resource virtualization - virtualization technologies, type-1 and type 2 hypervisors, containerization
- g. Disaster recovery - implementing simple server backups,
- h. Server security - server threat landscape for Linux/Unix and Windows, server hardening techniques, security best practices

15. Assessment

60% Continuous assessment (Assignments, practical and class tests)
40% Examinations

16. Teaching and Learning Methods/Activities

Lectures, demonstrations, Laboratory practicals, Tutorials, Assignments and Exercises

17. Prescribed Reading Lists

Uday Sawant, Oliver Pelz, Jonathan Hobson & William Leemans (2019). Linux Powerful Server Administration: Recipes for CentOS 7, RHEL 7, and Ubuntu Server Administration. Packt Publishing

Bekim Dauti (2019). Windows Server 2019 Administration Fundamentals, 2nd Ed. Packt Publishing.

18. Recommended Resources

Evi Nemeth, Garth Snyder & Trent R. Hein, 2006. Linux Administration Handbook, 2nd Ed. Prentice Hall

Wale Soyinka, 2008. Linux Administration: A beginners Guide, 5th Ed. McGraw-Hill, Osborne, USA

Bran Desmond, Joe Richards, Robbie Allen & Alistair Lowe-Noris, 2013. Active Directory: Design Deploying and Running Active Directory, 5th Ed. O'Reilley Media, Inc.

Steve Silver, 2012, Web Server Administration (Web Warrior Series), Cengage Learning.

James Turnbull, 2005. Hardening Linux, Apress.

Donald A. Tevault (2020). Mastering Linux Security and Hardening, 2nd Ed. Packt Publishing.

19. Date: March 2016, Reviewed March 2021

Year Four

BINT-410 Business Intelligence



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|---------------------------|--------------------------------|
| 1. Programme(s): | BBIT |
| 2. Module title: | Business Intelligence |
| 3. Module code: | BINT-410 |
| 4. Year: | 4 |
| 5. Credits: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lecture (hrs/wk): | 3 |
| 9. Tutorial/Lab (hrs/wk): | 1 |
| 10. Prerequisites: | None |
| 11. Co-requisites: | None |

12. Module Aims

To introduce the student to the fundamental principles of business intelligence and impart knowledge of business intelligence techniques and skills to use selected business intelligence tools.

13. Intended Learning Outcomes

Upon completion of this module, the student should be able to:

- Demonstrate understanding of business intelligence and its place in enterprise planning and decision making

- b) Demonstrate practical data modeling, transformation and warehousing skills
- c) Apply the various business intelligence and analytics techniques using proper tools
- d) Demonstrate practical reporting and visualization skills using prescribed BI tools

14. Indicative Content

- a) Principles of business intelligence - BI as decision support system, understanding the BI ecosystem (business intelligence vs business analytics vs data analytics), BI scenarios
- b) Enterprise data storage - data governance, data storage systems (relational databases, NoSQL, big data platforms)
- c) Data warehousing for business intelligence - OLAP vs OLTP, dimensional modelling, extract-transform-load (ETL), de-normalization, data marts, data warehousing tools
- d) Business intelligence techniques - statistical modeling, machine learning, descriptive and prescriptive modelling, predictive modeling (business analytics), text mining and sentiment analysis, reporting and visualization
- e) Working with business intelligence tools

15. Assessment

50% Coursework

50% Examinations

16. Teaching and Learning Methods

Lectures, tutorials, projects, lab practical, group work and individual assignments

17. Prescribed Text

Grossmann, W., Rinderle-Ma, S. (2015). *Fundamentals of Business Intelligence*. Springer.

Sharda, R., Delen, D., Turban, E. (2017). *Business Intelligence, Analytics, and Data Science: A Managerial Perspective*. Pearson.

Moss, L.T., Atre, S. (2003). *Business Intelligence Roadmap: The Complete Project Lifecycle for Decision Support Applications*. Addison Wesley.

18. Recommended Resources/Reading Lists

Sherman, R. (2015). *Business Intelligence Guidebook: From Data Integration to Analytics*. Morgan Kaufmann

Alexander, M. (2016). *Microsoft Excel Power Query and Power Pivot for Dummies*. John Wiley & Sons.

Ferrari, A., Russo, M. (2017). *Analyzing Data With Microsoft Power BI and Power Pivot for Excel*. Microsoft Press.

Kimball, R., Ross, M., (2013). *The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modelling*, 3rd Ed. John Wiley & Sons, Inc.

Provost, F., Fawcett, T (2013). *Data Science for Business: What You Need to Know About Data Mining and Data-Analytic Thinking*. O'reilly Media.

19. Date: March 2021

ENTR-410 Business Management and Entrepreneurship



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

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|-----|----------------------|--|
| 1. | Programme | BBIT/BCSS |
| 2. | Module Title: | Business Management and Entrepreneurship |
| 3. | Module Code: | ENTR-410 |
| 4. | Year: | 4 |
| 5. | Credit: | 10 |
| 6. | Presented to: | Senate |
| 7. | Presented by: | Malawi Institute of Technology |
| 8. | Lecture (Hrs/week): | 2 |
| 9. | Tutorial (Hrs/week): | 2 |
| 10. | Prerequisites: | None |
| 11. | Co-requisites: | None |
| 12. | Module Aim: | |
- To inculcate the culture of entrepreneurship and introduce the student to key aspects of financial management in business, and .characteristics and operations of a business entity.
13. **Intended Learning Outcomes**
- Upon completion of this module, the student should be able to:
- Assess the factors contributing to the success or failure of new investment ventures.
 - Explain the nature and characteristics of an entrepreneur and entrepreneurship.
 - Explain the importance of innovation and creativity in entrepreneurship.

- Examine and interpret financial statements.
- Produce a viable business plan.
- Demonstrate understanding of business dynamics, marketing and sales principles and strategies.

14. Indicative Content

- (a) People & Organisation: Organisation, teamwork, communication, human needs, and motivation of employees
- (b) Finance and accounting for engineering managers: Profit and loss accounts, cash flow and liquidity control, balance sheets, product costing and cost management, key financial ratios, budgeting and budgetary control; financial management and investment: risk and return valuation of assets; investment risk and return measures, investment appraisal techniques and taxation.
- (c) Dynamics of business: Types of businesses, business plan, business ethics and social responsibility, legal and regulatory environment, competing in local and global markets.
- (d) Marketing and Sales: Developing relationships, Forecasting and targeting, distribution and product selection.
- (e) Entrepreneurship: Nature, concepts and context of entrepreneurship, innovation and creativity, financing an entrepreneurial venture, negotiation, issues and preparation for business start-up, e-business.

15. Method of Assessment:

Examination 60%
Coursework 40%

16. Teaching and Learning Methods

Lectures and tutorials

17. Prescribed Texts

Deakins, D and Freel, M. (2009). *Entrepreneurship and Small Firms*. Maidenhead: McGraw-Hill Higher Education.

Webb, P and Webb, S. (1999). *Small Business Handbook: An Entrepreneur's Guide to Starting a Business and Growing a Business*. London: Financial Times Pitman Pub.

18. Recommended Texts

Swanson, J.A and Baird, M.L., (2003). *Engineering Your Start-up: A Guide for the High- tech Entrepreneur*. Belmont, CA: Professional Publications.

Timmons, J.A. (2006). *New Venture Creation: Entrepreneur for the 21st Century*.
London: McGraw-Hill.

19. Journals

International Journal on Business Management and Entrepreneurship (IBME) -
asdfjournals

19. Date: March 2016, Reviewed March 2021

ECCO-410 Enterprise and Cloud Computing



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|--------------------------------------|--------------------------------------|
| 1. Programme(s): | BBIT/BCSS |
| 2. Module Title: | Enterprise and Cloud Computing |
| 3. Module code: | ECCO-410 |
| 4. Year: | 4 |
| 5. Credit: | 10 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology (MIT) |
| 8. Lecture (hours/week): | 2 |
| 9. Tutorial/Laboratory (hours/week): | 2 |
| 10. Pre-requisites: | CNET-312, SVAD-320 |
| 11. Co-requisites | |
| 12. Module aims: | |

To impart theoretical knowledge and practical skills necessary to implement business-oriented information technologies to support enterprise operations.

13. Intended learning outcomes:

Upon completion of this module students should be able to:

- Analyze existing enterprise IT systems and identify needs
- Manage enterprise IT services
- Design and secure enterprise-level data centers
- Assess cloud services options and make informed choices based on business and performance trade-offs

14. Indicative Content:

- a. Enterprise systems – Enterprise resource planning systems, planning systems, customer relationship management systems, management information systems, integrated systems
- b. Data center fundamentals – architectures, application architectures, design principles (topologies, redundancy, availability) protocols, virtualization, co-location, load balancing, security
- c. Cloud computing architectures and deployment models – IaaS, PaaS and SaaS, Public, private, hybrid and community deployment models, choosing cloud services
- d. Service Management in Cloud Computing: Service management standards, service level agreements (SLAs), billing & accounting, traditional vs. cloud, economics of scaling: managing data

15. Assessment:

40% Course work (tests, exercises, group and individual assignments), 60% Final Examinations

16. Teaching and Learning Methods/Activities

Face-to-face lectures, tutorials, practical lab sessions, industry visits

17. Prescribed Texts:

Shroff, G. (2010). *Enterprise Cloud Computing: Technology, Architecture and Applications*. Cambridge University Press.

Earl, T., Puttini, R. and Mahmood, Z. (2013). *Cloud Computing: Concepts, Technology & Architecture*. ServiceTech Press.

18. Recommended Resources:

Kavis, M. J., et al. (2014) *Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, and IaaS)*. John Wiley and Sons

Orban, S. (2018). *Ahead in the Cloud: Best Practices for Navigating the Future of Enterprise IT 1st Edition*. CreateSpace Independent Publishing Platform.

Rafaels, R. (2018). *Cloud Computing: Complete Guide on Cloud Computing Technology and Methodologies to Migrate to the Cloud 2nd Edition*. CreateSpace Independent Publishing Platform

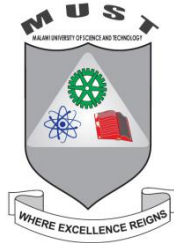
19. Journals

International Journal of Information Security - springer

International Journal of Computer Science – iaeng
Journal of Informatics and Data Mining – imedpub
Computer science and information technology - imedpub

20.Date: March 2016, Reviewed March 2021

HRMG-410 Human Resource Management



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

1. Programme(s):	BBIT
2. Module Title:	Human Resource Management
3. Module code:	HRMG-410
4. Year:	4
5. Credit:	10
6. Presented to:	Senate
7. Presented by:	Malawi Institute of Technology
8. Lecture (hrs/wk):	3
9. Tutorial (hrs/wk):	1
10. Prerequisites:	ORBE-210
11. Co-requisites:	None
12. Module Aims:	

The aim of this module is to equip students with basic knowledge and understanding of managing an organisations most important resource, the people working there in order to achieve effective performance.

13. Intended Learning Outcomes

On completion of this module, students should be able to:

- Describe the nature of human resource management and its role in ensuring efficiency and effective performance in organisations.
- Discuss the HRM activities for ensuring that the organisation has the right people requirements at all times, attracting the right knowledge, skills and attitudes.
- Analyse effective methods of developing abilities and competences of the workforce for adapting in dynamic environment
- Describe mechanisms for enhancing performance of employees and the organisation and their rationale

- Discuss legal implications of managing employees

14. Indicative Content

- Introduction to Human Resource Management: Nature of HRM Definitions, objectives and characteristics, Development of HRM, Models of HRM, Contract of employment, Employment contract, Psychological contract, Roles in HRM: Line manager, HR practitioner, Distinguish HRM and Personnel Management, Reservations about HRM
- Attracting Human Resources: Human Resource Planning, Nature of Human Resource planning – objectives, Human Resource Planning Process, Recruitment and Selection, Define recruitment and selection, Recruitment and selection process, Induction
- Development of Human Resources: Learning and Development, Learning: Theories of Learning; Behavioral, Cognitive, experiential learning, learning Style, Training Process, Development: Career Planning; management Development, Learning organisation and organisation learning
- Maintaining Human Resources: Performance Management, Reward Management
- Managing the employment Relationship: Nature of Employment Relations, Parties to ER, Theories of ER: Unitary, Pluralist, Radical, Trade unions: roles, types of TU, ER Processes, Collective Bargaining, Employee Participation; involvement, empowerment, engagement, ER procedures, Disciplinary Procedures, Grievance Procedures, Third-party interventions

15. Assessment

Coursework (10% from assignments and 30% from at least two tests): 40%;
Examinations: 60%

16. Teaching and Learning Methods / Activities

Lectures, Tutorials, group work and individual assignments, oral presentations and

debates.

17. Prescribed texts

Armstrong M., (2009), *Armstrong's Handbook of Human Resource Management Practice*.(11th Ed.).London: Kogan Page.

Torrington, D., Hall, L., Taylor, S., (2008), *Human Resource Management*(7th Ed.).England: Pearson Education.

18. Recommended texts

Armstrong, M., (2006), *A Handbook of Human Resource Management Practice*(10th Ed.).London: Kogan Page.

Mathis, R. L.,& Jackson, J. H.,(2011) *Human Resource Management*(13thEd.).

Mejia, L. R. G., Balkin, D. B., Cardy, R. L., (2012) *Managing Human Resources*, 7th Edition. Boston.

19. Date: March 2016, Reviewed March 2021

RESP-412 Research Project



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

- | | |
|-----------------------|--------------------------------|
| 1. Programmes: | BBIT/BCSS |
| 2. Module Title: | Research Project |
| 3. Module Code: | RESP-412 |
| 4. Year: | 4 |
| 5. Credit: | 20 |
| 6. Presented to: | Senate |
| 7. Presented by: | Malawi Institute of Technology |
| 8. Lectures (Hrs/Wk): | 0 |
| 9. Practical: | 6 |
| 10. Prerequisites: | RMEC-321 |
| 11. Co-requisites: | None |
| 12. Module Aim | |

To provide an opportunity for each student to carry out an independent research project on a topic relevant to business information technology or computer security. This module builds on the RMEC-321 (which is a pre-requisite module) where students will have defined and developed a research proposal for a researchable question within the area of specialization of the degree programme.

13. Intended Learning Outcomes

By the end of this module should be able to:

- Apply practical and analytical skills present in the programme as a whole to a research topic that addresses a real need, and demonstrate innovation and/or creativity
- Apply knowledge of research philosophy and methods to undertake empirical research involving collection of primary data (where appropriate)

- Develop an artefact, where appropriate, serving the purpose of the research.
- Undertake secondary analysis of existing data and information (where appropriate)
- Perform a literature review Critically analyse significant bodies of literature in the chosen topic area particularly in the context of the research findings
- Communicate research process and findings well-presented written format (dissertation) ,Integrate the subjects learnt.
- Deliver an oral presentation of the project and to provide appropriate answers to questions.

14. Indicative Content

The project can be on a topic relevant to business information technology or computer security, depending on programme. The research project can either involve designing an artefact to solve a problem with a research context (e.g. a software system) or on research. Preference, however, is designing an artefact to solve a problem, within a research context.

15. Assessment

30% Project Presentation

70% Research Project Write-up (Dissertation)

The student project write-up/dissertation will be assessed (using a rubric) on their general understanding of the subject matter and the background literature, the clarity of their objectives, the appropriateness of the methodology, the validity of the data collected, and the relevance of the conclusions to their data; or for a design project, the innovativeness, practicality as well as the cost-effectiveness of the design.

If project write-up/dissertation is done in a group, then the individual grade shall be calculated using the formula $((\text{student participation in project write-up as determined by supervisor on a scale of 0 to 10})/10) \times \text{group research project grade}$.

16. Teaching and Learning Methods

Lecture supervision and independent project study

Students can work on a single project or team up with other students to form groups. Students will be supervised by the Research Methodology lecturer and an

expert in the field who would meet with the students on a weekly basis.

17. Prescribed Text

Dawson, CW, 2009, Projects in Computing and Information Systems: a student's guide, 2nd edition, Pearson Prentice Hall

Bell, J. (2007). Doing Your Research Project. Buckingham: Open University Press.

Saunders, M., Lewis, P. & Thornhill, A. (2007). Research Methods for Business Students. Madrid: Prentice Hall.

18. Recommended Texts

Holz, H. J., Applin, A., Haberman, B., Joyce, D., Purchase, H., & Reed, C. (2006). Research Methods in Computing: What are they, and how should we teach them?. In Working group reports on ITiCSE on Innovation and technology in computer science education (pp. 96-114).

Piirainen, K. A., & Gonzalez, R. A. (2013). Seeking constructive synergy: design science and the constructive research approach. In International conference on design science research in information systems (pp. 59-72). Springer, Berlin, Heidelberg.

Dresch, A., Lacerda, D. P., & Miguel, P. A. C. (2015). A distinctive analysis of case study, action research and design science research. Review of Business Management, 17(56), 1116.

Rudestam, K. E., & Newton, R. R. (2001). Surviving your dissertation: A comprehensive guide to content and process (2nd ed.). Thousand Oaks: Sage

19. Date: March 2016, Reviewed March 2021

WILE-420 Work Integrated Learning



MALAWI UNIVERSITY OF SCIENCE AND TECHNOLOGY MALAWI INSTITUTE OF TECHNOLOGY

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|-----|-------------------------------|--------------------------------|
| 1. | Programme(s): | BBIT/BCSS |
| 2. | Module Title: | Work Integrated Learning |
| 3. | Module code: | WILE-420 |
| 4. | Year: | 4 |
| 5. | Credit: | 60 |
| 6. | Presented to: | Senate |
| 7. | Presented by: | Malawi Institute of Technology |
| 8. | Practical (hrs/wk): | 8 |
| 9. | Tutorial/Laboratory (hrs/wk): | None |
| 10. | Prerequisites: | |
| 11. | Co-requisites: | |
| 12. | Module Aim: | |

The aim of this module is to expose the student to practical experience as a means of reinforcing theoretical computer science/information technology principles learned in class.

13. Intended Learning Outcomes

On completion of this module, the student should be able to:

- a. Identify organisational and human resource management;
- b. Apply interpersonal communication skills in a work related context.
- c. Relate computer science/information technology concepts to their work during training.
- d. Develop soft skills like leadership, problem-solving, and corporate communication in a work environment.
- e. Enhance the application of knowledge and skills in the working place.

14. Indicative Content

- a) Application of computer science/information technology principles: use of appropriate analytic, design and evaluation methods.
- b) Work organization and prioritization
- c) Self-appraisal
- d) Problem identification and solving techniques
- e) Progress on defined tasks
- f) Interaction with workforce and response to technical instruction and support.
- g) Technical presentation abilities both written and oral, their judgment and value.
- h) Flexibility of working as an individual or as a team member.

15. Assessment

A student on industrial attachment will be assessed as follows:

- | | | |
|------|---|-----|
| i. | Industrial Supervisor evaluation | 15% |
| ii. | Industrial Tutor's evaluation (from School) | 10% |
| iii. | Student's log-book, which will show details of day to day experiences in the industry | 25% |
| iv. | Student's final report | 50% |

For a student to pass he/she must obtain at least 40% of the allotted grades in each of the subsections (i-iv).

16. Learning and Teaching Methods

Various (dependent on individual companies)

17. Prescribed texts

None

18. Recommended texts

None

19. Date: March 2021