

University of Mauritius
CDAC School of Advanced Computing

CD 402 Diploma / BSc (Hons) Information Technology (Part-Time)

1. OBJECTIVES

This Programme is geared towards producing IT professionals, with a clear understanding of various concepts and principles of the field. This part-time programme is designed to provide a balanced blend of theoretical concepts and their applications with substantial focus on the practical sessions, the programme intends primarily to ensure “learning by doing“. Practical modules and programming sessions will reinforce the classroom learning experience.

This programme has been designed to cater to the needs of working people interested in acquiring IT qualifications. On completing the requirements of the degree programme, students are expected to acquire adequate skills for the design and development of efficient IT based applications and solutions.

This programme will be run by the C-DAC School of Advanced Computing, a joint initiative of the Centre for Development of Advanced Computing (C-DAC), India, and the University of Mauritius. The Diploma/Degree is awarded by the University of Mauritius.

2. GENERAL MINIMUM ENTRY REQUIREMENTS

In accordance with the University’s General Entry Requirements for admission to undergraduate programmes.

3. PROGRAMME REQUIREMENTS

A pass in Mathematics at School Certificate / ‘O’ Level **and** at least 2 G.C.E. ‘A’ Level passes including Mathematics or Computing.

General and Programme Requirements - Special Cases

The following may be deemed to have satisfied the general and programme requirements for admission:

- (i) Applicants who do not satisfy any of the requirements as per Sections 2 and 3 above but who submit satisfactory evidence of having passed examinations which are deemed by the Senate to be equivalent to any of those listed.
- (ii) Applicants who do not satisfy any of the requirements as per Sections 2 and 3 above but who in the opinion of Senate submit satisfactory evidence of the capacity and attainments requisite to enable them to pursue the programme proposed.
- (iii) Applicants who hold a full practising professional qualification obtained by examination.

Mature Students

‘Mature Students’ shall be those candidates having full School Certificate, and

- (i) who do not satisfy the General Entry Requirement and who are (preferably) at least 25 years of age and who have at least 5 years relevant work experience, or

- (ii) who satisfy the General Entry Requirement and who are (preferably) at least 25 years of age, but are lower in terms of their computer list ranking at the UoM; and who have at least 5 years relevant work experience.

4. PROGRAMME DURATION

Degree	Normal 4 years P/T (8 semesters)	Maximum 6 years P/T (12 semesters)
--------	--	---

SEMESTER DURATION

15 weeks (Excluding Examination Period)

5. CREDITS PER SEMESTER

Maximum 24 credits, Minimum 6 credits

6. MINIMUM CREDITS REQUIRED FOR AWARD OF:

MODULES	CREDITS	
	Diploma	Degree
Core	57	97
Project(Compulsory)	3	9
Total	60	106

7. ASSESSMENT

Each module will carry 100 marks and will be assessed as follows (unless otherwise specified):

- i) Continuous assessment carrying a range of 20% to 30% of total marks except for a programme where the structure makes for other specific provision(s). Continuous assessment may be based on laboratory work and/or assignments and would include at least 1 class test.
- ii) Written examination of 2-hour duration carrying a range of 70% to 80%.
- iii) An overall total of 40% is required for a student to pass a module.

8. TERMINATION OF REGISTRATION

A person shall cease to be a registered student of the University if

- a) his/her CPA remains below 40% for two consecutive registered semesters; or
- b) the maximum duration allowed for completion of the programme of studies has been exceeded.

Any student whose registration has been terminated should not be admitted on the same programme until a period of two years after termination of registration.

9. PROGRAMME STRUCTURE

LEVEL 1 SEMESTER 1

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
DAC 1102	C-DAC	MATHEMATICS FOR IT	3	0	3
CSE 1010e	UoM	INTRODUCTION TO IT	2	0	3
CSE 1102	UoM	INTRODUCTION TO DIGITAL LOGIC	3	0	3
DAC 1101	C-DAC	FUNDAMENTALS OF PROGRAMMING USING C	2	2	3
CSE 1103	UoM	INTRODUCTION TO FORMAL LOGIC	3	0	3

SEMESTER 2

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
MATH 1241	UoM	MATHEMATICAL STATISTICS & PROBABILITY 1	3	0	3
CSE 1206	UoM	STRUCTURED SYSTEMS ANALYSIS & DESIGN	3	0	3
CSE 2206	UoM	COMPUTER SYSTEM ARCHITECTURE	3	0	3
CSE 2105	UoM	HUMAN COMPUTER INTERACTION	3	0	3

LEVEL 2 SEMESTER 3

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
CSE 2108	UoM	DISCRETE MATHS	3	0	3
DAC 2202	C-DAC	OPERATING SYSTEMS	3	0	3
DAC 2105	C-DAC	DATABASE TECHNOLOGIES	2	2	3
DAC 1202	C-DAC	OBJECT ORIENTED PROGRAMMING	2	2	3

SEMESTER 4

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
DAC 1201	C-DAC	BUSINESS COMMUNICATION	3	0	3
DAC 2211	C-DAC	MULTIMEDIA SYSTEMS	2	2	3
CSE 2110	C-DAC	OBJECT ORIENTED TECHNIQUES	2	2	3
DAC 2107	CDAC	SOFTWARE ENGINEERING	3	0	3

**LEVEL 3
SEMESTER 5**

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
DAC 2201	C-DAC	E-BUSINESS	3	0	3
DAC 2205	C-DAC	DATA TRANSMISSION AND NETWORKING TECHNOLOGIES	3	0	3
DAC 2101	C-DAC	DATA STRUCTURES & ALGORITHMS	3	2	4
DAC 2112	C-DAC	VB.NET PROGRAMMING	2	2	3

SEMESTER 6

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
DAC 2206	C-DAC	MINI PROJECT			3
DAC 1203	C-DAC	WEB TECHNOLOGIES	2	2	3
CSE 3203	UoM	MANAGEMENT INFORMATION SYSTEMS	3	0	3
DAC 3102	C-DAC	PRINCIPLES OF SOFTWARE PROJECT MANAGEMENT	3	0	3

**LEVEL 4
SEMESTER 7**

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
DAC 3104	CDAC	ASP.NET PROGRAMMING	2	2	3
DAC 3105	CDAC	JAVA PROGRAMMING	2	2	3
DAC 3203	CDAC	CYBER LAWS	3	0	3
CSE 3207	UoM	INFORMATION SYSTEMS SECURITY	3	0	3
DAC 3000	CDAC	FINAL YEAR DEGREE PROJECT*		3	

* CREDITS TO BE EARNED AT THE END OF SEMESTER 8

SEMESTER 8

CODE	UoM/C-DAC MODULES	MODULE	Hrs/Wk L	Hrs/Wk P	CREDITS
DAC 3101	CDAC	NETWORK PROGRAMMING	2	2	3
CSE 3107	UoM	DISTRIBUTED SYSTEMS	3	0	3
DAC 3202	C-DAC	CURRENT TRENDS IN IT & COMPUTING	3	0	3
DAC 3000	C-DAC	FINALYEAR DEGREE PROJECT		6	9

10. OUTLINE SYLLABUS

SEMESTER 1

DAC 1102 MATHEMATICS FOR IT

Calculus of one and several variables, Complex numbers, Matrices, Solve algebraic equations, Number and logical systems, Nature of statistical data and plan, Collection, interpretation and presentation of data.

CSE 1010e INTRODUCTION TO IT

Introduction to Computers; Hardware and Software; Input, Output and Storage; Organization of Data; Systems Analysis and Design; Data Communications; Computers and Society; Future of Computing.

CSE 1102 INTRODUCTION TO DIGITAL LOGIC

Data representation; Number systems; Boolean Algebra and Logic Simplification; Regular Structures; Combinational Circuits.

DAC 1101 FUNDAMENTALS OF PROGRAMMING USING C

Pseudo code; structured Programming Techniques; Program structure; Simple data types; Control structures; Modularity; Programming in C language; Introduction to C++.

CSE 1103 INTRODUCTION TO FORMAL LOGIC

Propositional Logic; Syntax, Semantics, Truth tables, Simplification Rules, Normal Forms & Proofs; First Order Logic: Syntax, Semantics and Proofs.\

SEMESTER 2

MATH 1241 MATHEMATICAL STATISTICS AND PROBABILITY I

Elementary Probability; Conditional Probability; Discrete and Continuous Distributions; The Central Limit Theorem; Introduction to Linear Regression; Estimation and Hypothesis Testing.

CSE1206 STRUCTURED SYSTEMS ANALYSIS AND DESIGN

Introduction to SSAD; Software life cycles; Structured systems analysis and design: concepts and techniques.

CSE 2206 COMPUTER SYSTEM ARCHITECTURE

Stored Program Computer, Advancements in Architectures, Pipelined Systems, Implementation of Pipelining, RISC, RISC v/s CISC, Comparative Architectures.

CSE 2105 HUMAN COMPUTER INTERACTION

Introduction to HCI; Components of HCI; Humans and Technology; User Interface design; Interface Evaluation Techniques.

SEMESTER 3

CSE 2108 DISCRETE MATHS

Sets, Proofs; Relations; Functions; Recurrences; Series; Combinations; Graphs; groups; rings; field.

DAC 2202 OPERATING SYSTEMS

Introduction to Operating System, Processes, Memory Management, File Systems. Network and Distributed OS, General OS Architecture, Scheduling and Synchronization, Virtual Memory and Paging, OS Security, Common OS, Windows, Linux. Preparation for Certified Linux Administrator.

DAC 2105 DATABASE TECHNOLOGIES

Database Concepts, Client/Server Computing, RDBMS Technologies, Codd's Rules, ER Diagrams, Data Flow Diagrams, Concurrency control, Overview of Oracle, SQL*Plus, DDL,DML and DCL, Tables, Indexes and Views, Clusters, sequences and Snapshots, PL/SQL, Cursors, Stored Procedures, Triggers.

DAC 1202 OBJECT ORIENTED PROGRAMMING

Fundamentals of OO Programming , Classes and Objects , Attributes and Methods , Interfaces , Abstractions , Encapsulation , Inheritance , Operator and Function Overloading , Polymorphism , Programming in C++; Variables and Constants , Expressions and Statements , Classes , Derived Classes, Virtual Functions Templates, Exception Handling, Streams, Introduction to Java programming.

SEMESTER 4**DAC 1201 BUSINESS COMMUNICATION**

Practice in the fundamentals of Grammar, Usage, Sentence, Structure, Mechanics, Diction and Paragraph Writing, Technical Report Writing, Introduction to Basic Accounting Concepts for use in Business Software Application, Basic Software Documentation skills

DAC 2211 MULTIMEDIA SYSTEMS

Multimedia components PC based multimedia tools, multimedia I/O devices and interfaces; Basics of multimedia programming, Operating system support for multimedia tools and applications; Multimedia data, multimedia databases, MM DB design and querying.

CSE 2110 OBJECT ORIENTED TECHNIQUES

Introduction to Object Oriented Analysis and Design; Classes; Objects; Inheritance; Encapsulation; Polymorphism; OO Programming; OO Methodologies.

DAC 2107 SOFTWARE ENGINEERING

Software Terminology, Software process; Software requirements and specification; Process Models; Software Architectures; Object Oriented System Design; Reliability; Software metrics; IEEE Standards for Software Engineering

SEMESTER 5**DAC 2201 E-BUSINESS**

Overview of E-Business; The E-Business domain; E-Business models; E-business strategies; E-business planning – (operational, financial, marketing planning); E-business infrastructure; Understanding the international marketplace; internet security considerations; CRM; SCM; Knowledge management.

DAC 2205 DATA TRANSMISSION AND NETWORKING TECHNOLOGIES

Data Transmission: Data Types, Transmission Media, Multiplexing and Multiple Access; Networks: Protocol and Components, LAN, WAN, WPAN, Networking Technologies: Wired-PSTN, ISDN, DSL, ATM, Wireless- WLAN, GSM, CDMA, GPRS, WAP, Bluetooth, ZigBee, UWB

DAC 2101 DATA STRUCTURES & ALGORITHMS

Introduction to abstract data types and a study of the concepts of data structures, their usefulness, implementation and applications. Arrays, Stacks, Queues, Recursion, Linked Lists, Trees, Graphs, Design. Algorithms design and analysis for sorting and searching. Hashing, Heaps, Balanced trees, 2-3 Trees, File Processing.

DAC 2112 VB.NET PROGRAMMING

Introduction to the visual programming paradigm and OOP paradigm; Introduction to Visual Programming Language and Environment – The .NET Framework; The Visual Basic.NET

Language Fundamentals–Statements, functions, operators, the IF statement and CASE, Looping and Counting, The controls, the Menu Design, MDI applications, MDI Child and MDI Parent forms, Modules and class, Error-Handling, Debugging, Sequential Files and Filestream class, Databases concepts, ADO.NET Architecture, Data Adaptor, Data Reader, Connection, Command, Dataset Concepts, Binding Context objects, Database Application with ADO.NET using Wizard and Programmatically, Database Queries with SQL, Database Reports Development

SEMESTER 6

DAC 2206 MINI PROJECT

Students need to develop an application based on their learning from previous semesters.

DAC 1203 WEB TECHNOLOGIES

Brief history of the Internet; How the internet works; Internet protocols; Web servers; Introduction to Web Programming; HTML; DHTML; VBscript; JavaScript; Introduction to server side Programming; ASP and JSP, Introduction to Java programming.

CSE 3203 MANAGEMENT INFORMATION SYSTEMS

Fundamentals of Information systems; Information systems for business operations; Decision Support systems; Information systems for strategic advantage; Managing Information technology; Planning and implementing change; Business process reengineering; Executive Information systems.

DAC 3102 PRINCIPLES OF SOFTWARE PROJECT MANAGEMENT

Strategy; Scope; Planning; Control; scheduling and tracking; Quality issues; Testing; People Management; Costing; Implementation; Documentation; post-implementation issues.

SEMESTER 7

DAC 3104 ASP.NET PROGRAMMING

ASP.NET Web application elements and process mode, Changes between ASP and ASP.NET, Creating ASP.NET Web application & its user interface, Implementing event handlers by using code-behind files, Validation controls, Creating and using user controls, How ASP.NET Web forms are processed, Creating an application and a session state, XML Web services and their functions, creating XML Web services, Planning and implementing migration of ASP Web pages to ASP.NET.

DAC 3105 JAVA PROGRAMMING

Java fundamentals, Data types and variables, Operators, Control statements, Arrays, Classes and objects, Abstraction, Inheritance and polymorphism, Interface and Package, Exception handling, Files and streams, Threads, Java Library, Java Applets.

DAC 3203 CYBER LAWS

Laws related to Information and Communication Technologies, Intellectual Property, Regulatory Framework, Copyrights and Patents; Privacy; Cyber crimes and computer misuse.

CSE 3207 INFORMATION SYSTEMS SECURITY

Basic Concepts such as Authentication; Cryptographic Sealing and Certification; Security Planning; Analysis of Security Threats; Security Controls; Design Issues of Security Systems; Implementation of Security Systems.

DAC 3000 FINAL YEAR DEGREE PROJECT

SEMESTER 8

DAC 3101 NETWORK PROGRAMMING

Client-server model; Internet Protocol; IP Name and Address conventions; Virtual Networks; Transport layer; Basic TCP usage; Socket programming (using C and Java); Raw Sockets; Datalink Access; Routing Sockets; HTTP, MIME, and the URL; Broadcasting and Multicasting.

CSE 310 DISTRIBUTED SYSTEMS

Characteristics and Design Issues; Remote Procedure Calls; Distributed Operating Systems; Introduction to Middleware; Distributed File Systems; Shared Data and Concurrency Control.

DAC 3202 CURRENT TRENDS IN IT & COMPUTING

An overview of the new trends and technologies currently in use: Emerging Mobile and Wireless Technologies, Ubiquitous Computing, Embedded Systems, Bioinformatics, Intelligent Systems and Artificial Life, Virtual Reality, Entertainment Systems and Computer Games, Semantic Web, Parallel Computing and High Performance Computing, Computer Security, Computer Vision and Robots Sensing, Tangible User Interactions.

DAC 3000 FINAL YEAR DEGREE PROJECT