



Diploma in Web Based Software Engineering

PROSPECTUS 2023

**Faculty of Computing and Technology
University of Kelaniya**

Vision

To become a centre of excellence in creation and dissemination of knowledge in Computing and Technology for sustainable development.

Mission

The Faculty of Computing and Technology strives for excellence in computing and technology through innovation and dissemination of knowledge and capacity building for socio-economic development of the nation.

1. Introduction

According to the SLASSCOM more than 300 IT companies are in Sri Lanka where 85,000 professionals are employed. The annual exports reached US\$ 1billion in 2017 and targets to achieve US\$ 5 billion of exports, provide 200,000 direct jobs and catalyse 1,000 start-ups by 2022. In order to meet this target more human resources with software development skills are needed by the IT industry. The Faculty of Computing and Technology has received offers from foreign Companies, particularly from Japan, who are willing to recruit Diploma holders that possess the industry related skills in Software Engineering.

In addition to the IT industry, other businesses also need ICT professionals for effective use of software systems, ICT skills have become critical for success in today's business environment. Software fosters innovation in business. Innovation results in smarter apps, improved data storage, faster processing, and wider information distribution. Innovation makes businesses run more efficiently. And innovation increases value, enhances quality, and boosts productivity. Software systems in recent years have led to a wide variety of systems that industry is now using to make and implement decisions. By and large, these systems have been developed from scratch for specific purposes and differ significantly from standard electronic data processing systems.

Therefore, many companies now seek to employ their own professionals conversant of software engineering who are able to design, develop and maintain software according to the changing needs of the business. Even though there are a few Software Engineering Degree programmes, the human capital demand in Software Engineering field has not been met by the Universities. Therefore, there is a great potential for Diploma holders in Web-based Software Engineering with the relevant industry skills in the job market. Furthermore, the industry lacks professionals with analytical skills who are able to apply the scientific method to problem solving, which is not catered for by Diploma in IT programmes offered by other institutions. We propose to fulfill this need by offering the

Diploma in Web-based Software Engineering by the Faculty of Computing and Technology, University of Kelaniya.

The Diploma in Web-based Software Engineering proposed by the Faculty of Computing and Technology, University of Kelaniya aims to prepare professionals who are able to design, develop and maintain substantially complex programming systems, environments and applications. Students will be trained specifically on industry oriented software development skills such as, requirements gathering and elicitation, system analysis and modelling, software and hardware optimization and quality assurance of software using computer-aided tools. Students will work individually and as members of teams in web-based software development projects. The programme emphasizes on problem based learning that includes real world problem solving in almost all the course modules.

There is high demand for Diploma courses that have sufficient depth in programming skills from students who have followed ICT at the GCE Advanced Level. These students can hone their software related skills and identify suitable career paths by following this Diploma in Web-based Software Engineering.

Students who follow the Diploma in Web-based Software Engineering will have the opportunity to learn industry standard web programming languages so they may adapt to any challenge that may arise in their career. The programme has been developed in accordance to the ACM-IEEE curriculum guideline for Software Engineering. The standard for Software Engineering stresses programming concepts and syntax across major languages currently in demand. Students who complete the program will be able to pick up a job using any programming language, the confidence to learn and practice new languages immediately.

1.1 Learning Outcomes of the Diploma in Web Based Software Engineering Programme

Every Web-based Software Engineering Diploma holder of the Faculty of Computing and Technology, University of Kelaniya will be;

- A keen, honest, responsible, emotionally mature, confident, motivated life-long learner with sound knowledge on the principles, concepts and practices of the area of Software Engineering;
- Capable of applying the knowledge efficiently and effectively to identify, analyze and find applicable solutions to the problems encountered in applying Software Engineering to solve well-defined problems;
- Skilled in communicating information effectively and convincingly to diverse audiences;
- Recognize, evaluate, and apply technological tools (software and hardware) to support software processes in diverse environments;
- Develop critical thinking tools to evaluate information and media accuracy, relevance, and propriety;
- Build capacity to adapt to and work with, diverse web-based software engineering tools across multiple platforms to create and support development of high-quality software.

Equipped with above attributes, a diploma holder will be able to make significant contribution towards national development by serving in the software industry, designing and analysing software models and support software project management tasks by maintaining web-based repositories, developing documentation for software quality and testing etc.

1.2 Duration of the Programme

One year.

1.3 Medium of the Programme

English

2. Entry Qualification

- Have passed the General Certificate of Education (Advanced level) or an equivalent qualification, or
- A foundation course equivalent to SLQF level 2 after a minimum of 12 years of schooling followed by passing an aptitude test, or
- Completion of NVQF level 4 or accredited work experience or accredited prior learning followed by a corresponding cognitive bridging Programme of minimum 30 credits as determined by the academic authority of the HEI concerned may also be considered as equivalent qualification for admission to SLQF level 3 in a particular field of specialization.

2.1 Admission Process

A Written Aptitude Test will be conducted to select suitable candidates.

2.2 Proposed Student Intake

40 Students / year

3. Units offered for the Proposed Web Based Software Engineering Diploma

This course of study consists of twelve (12) compulsory units.

Diploma in Web Based Software Engineering				
	Course Unit	Pre-requisites	Credits	Status
Year I Sem I	DISE 11012 Introduction to Software Engineering	G.C.E. (A/L)	2	C
	DISE 11022 Requirement Analysis and specification	G.C.E. (A/L)	2	C
	DISE 11033 Software Modeling & Design Principles	G.C.E. (A/L)	3	C
	DISE 11043 Introduction to Web Programming	G.C.E. (A/L)	3	C
	DISE 11052 Web Based User Interface Designing	G.C.E. (A/L)	2	C
	DISE 11063 Data Communication and Networking	G.C.E. (A/L)	3	C
Year I Sem II	DISE 12013 Object Oriented Programming with PHP	DISE 11043	3	C
	DISE 12023 Database Management Systems	DISE 11043	3	C
	DISE 12032 Software Quality Assurance	G.C.E. (A/L)	2	C
	DISE 12041 Introduction to Information Security	DISE 11063	1	C
	DISE 12052 Project Development Theories and Professional Practices	G.C.E. (A/L)	2	C
	DISE 12064 Web based project (Individual)	All Compulsory course units	4	C

4. Scheme of Assessment

1. The candidates who are enrolled for the course of study should answer for eleven (11) question papers. Time of the paper will depend on the credit weight of the course unit. Some course units may have practical exam as well. The examination will be held at the end of each course unit.
2. By the end of the course unit DISE 12064 those candidates should submit a project report and face an oral presentation.
3. A candidate should complete the examinations with the maximum of three (03) years.

5. Grading System

Marks obtained in respect of a course unit will be graded according to the following grading system. A grade point value as indicated below is assigned to each grade.

Range of Marks	Grade	Grade Point Value
85 - 100	A+	4.0
70 - 84	A	4.0
65 - 69	A-	3.7
60 - 64	B+	3.3
55 - 59	B	3.0
50 - 54	B-	2.7
45 - 49	C+	2.3
40 - 44	C	2.0
35 - 39	C-	1.7
30 - 34	D+	1.3
25 - 29	D	1.0
00 - 24	E	0.0

Grade Point Average

Grade Point Average (GPA) is the credit-weighted arithmetic mean of the Grade Point Values (GPVs), which is determined by dividing the total credit-weighted Grade Point Value by the total number of credits. GPA shall be computed to the second decimal place.

Example: A student who has completed one course unit with two credits, three course units each of three credits and two course units each of 1 credit with grades A, C, B, D, C+ and A+ respectively would have the GPA of 2.48 as calculated below.

$$\frac{2 \times 4.0 + 3 \times 2.0 + 3 \times 3.0 + 3 \times 1.0 + 1 \times 2.3 + 1 \times 4.0}{2 + 3 + 3 + 3 + 1 + 1} = \frac{32.3}{13} = 2.4846$$

Grade Point Average = 2.48

Grade point values and credit values of all registered course units in a study programmed of a student shall be taken into account when calculating the final GPA, unless stated otherwise.

6. Eligibility for the award of Diploma in Web Based Software Engineering Pass

For the award of Diploma in Web Based Software Engineering, a student must

1. Obtain grades of “C”, or better in all course units/30 credits.
2. Obtain a minimum cumulative GPA of 2.00 from all the course units.
3. Complete the relevant requirements within a period of three consecutive attempts since first registration.

Merit Pass

For the award of Diploma in Web Based Software Engineering with merit, a student must complete following conditions;

1. Obtain grades of “B”, or better in all course units/30 credits.
2. Has a minimum cumulative GPA of 3.7 from all the course units.
3. Complete the relevant requirements at the first sitting.

Distinction Pass

For the award of Diploma in Web Based Software Engineering with distinction, a student should complete following conditions;

1. Obtain grades of “A”, or better in all course units/30 credits.
2. Has a minimum cumulative GPA of 4.0 from all the course units.
3. Complete the relevant requirements at the first sitting.

Repeat Examination

A student who obtain a grade below “C” in a particular course unit may repeat the examination in respect of the course unit for the purpose of improving the grade; however, the best grade obtainable in this instance is “C”. unless he or she may apply under medical category within the frame of three consecutive attempts

7. Detailed Syllabi of the programme

7.1 Annex 1

DISE 11012 - Introduction to Software Engineering

Year I - Semester I			
Course Code:	DISE 11012		
Course Name:	Introduction to Software Engineering		
Credit Value:	2		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	30	-	70

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Describe the principles behind software engineering processes and the strengths and weaknesses of various software processes.

prepare simple analyses, designs, implementations and test suites for small systems.

Course Content: (Main topics, Subtopics)

1. Software Processes

Professional software development, Software engineering ethics, Software processes activities, Software life-cycle and process models, coping with change, rational unified process;

3. System modelling

Context models, Interaction models, Structural models, Behavioral models, Functional modeling and Information flow, DFDs, ERDs;

4. Architectural design

Architectural design decisions, Architectural views, Architectural patterns, and Application architectures;

5. Software Design & Implementation

Fundamental design concepts and principles, design patterns, structured design,

6. Software testing

Basic introduction of software testing process, Unit Testing, Integration testing, Acceptance Testing

7. Software evolution

Evolution processes, Software maintenance, Legacy systems.

Teaching /Learning Methods:

A combination of lectures, tutorials and assignment.

Assessment Strategy:

End of semester examination and assignments.

Continuous Assessment

40%

Final Assessment

60%

Details: quizzes %, mid-term %, other %
(specify)

Assignments – 40%

Theory
(%)

60%

Practical
(%)

Other (%)
(specify)

References/Reading Materials:

Sommerville, I., (2010), Software Engineering, 9th edition, Addison Wesley.

Pressman, R. S., and Ince, D., (2001), Software Engineering: A Practitioner's Approach, 5th Edition, McGraw Hill.

Ghezzi, C., Jazayeri, M., and Mandrioli, D., (2002), Fundamentals of Software Engineering, Prentice Hall.

DISE 11022 - Requirement Analysis and specification

Year I - Semester I			
Course Code:	DISE 11022		
Course Name:	Requirement Analysis and specification		
Credit Value:	2		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	30	-	70

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Use analysis techniques regarding high-level problem statements that would be key to starting design work.

Compare multiple techniques to elicit requirements from stakeholders, choosing from among alternative methods as appropriate for different situations.

Know the strengths and weaknesses of methods used to elicit requirements and develop a model and a specification with functional and non-functional requirements to meet the needs of a development group.

Evaluate how the user elicitation and modeling methods of Interaction Design are used to develop user-centered systems.

Course Content: (Main topics, Subtopics)

Basics of requirements engineering

Definition of requirements engineering, importance of requirements engineering, place of requirements engineering in development process, types of requirements: functional requirements, non-functional requirements, quality attributes, main requirements engineering activities, documents and processes.

Requirement's inception and elicitation

Product vision and project scope, traditional elicitation approaches (interviews, stakeholders' study, workshops, ...), scenario/use case approaches, prototyping, requirements negotiation and risk management

Requirement’s analysis and specification - modeling techniques

Inception vs. specification, techniques for writing high-quality requirements, documentation standards (e.g., IEEE 830-1998), goal-oriented modeling, Structured analysis and other techniques, UML v2 and URN notations, external qualities management, contract specification

Requirement’s verification, and validation

Detection of conflicts and inconsistencies, completeness, techniques for inspection, verification and validation, feature interaction analysis and resolution

Requirements management

Traceability, priorities, changes, baselines, tool support (e.g., DOORS)

Teaching /Learning Methods:

A combination of lectures, tutorials and assignment.

Assessment Strategy:

End of semester examination and assignments.

Continuous Assessment 40%	Final Assessment 60%
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Details: quizzes %, mid-term %, other % (specify) Assignments – 40%	Theory (%) 60%	Practical (%)	Other (%) (specify)
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References/Reading Materials:

Brian Berenbach, et al, Software & Systems Requirements Engineering in Practice, (ISBN 978-0-07-160547-2)

Jeffrey O. Grady, (2006), System Requirement Analysis, Amsterdam; Boston: Elsevier Academic Press.

Murali Chemuturi, Requirements Engineering and Management for Software Development Projects, ISBN 978-1-4614-5377-2.

DISE 11033 - Software Modeling & Design Principles

Year I - Semester I			
Course Code:	DISE 11033		
Course Name:	Software Modeling & Design Principles		
Credit Value:	3		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	45	-	105

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Summarize and explain relevant design principles.

Use object-oriented programming methodology to design and implement larger programs.

use a modelling language as a means to communicate realistic problems and their solutions.

Demonstrate understanding of the connection between modelling languages and programming languages, for example by implementing design models.

Use design patterns and other known solutions to design problems.

Evaluate the suitability of different design alternatives based on object-oriented design principles, and identify design flaws in programs.

Course Content: (Main topics, Subtopics)

Object Oriented Analysis and Design

Introducing UML notations, OOD principles and patterns, Use cases, Iterative Development, Agile Modeling, and an Agile UP Iterative, Evolutionary, and Agile Unified Processing (UP), Iterative and Evolutionary Development, Risk-Driven and Client-Driven Iterative Planning, Agile Manifesto and Principles, Agile Modeling, Agile UP Object Modeling with UML

Use-case Diagrams: Identify Actors, Scenarios, and Use Cases, Three Kinds of Actors, Class Diagrams: Identify classes, identify relationships, Communicative/

Interactive Diagrams: Sequence and Activity Diagrams.

Teaching /Learning Methods:

A combination of lectures, tutorials and assignment.

Assessment Strategy:

End of semester examination and assignments.

Continuous Assessment

40%

Details: quizzes %, mid-term %, other %
(specify)

Assignments – 40%

Final Assessment

60%

Theory (%)

60%

Practical
(%)

Other (%)
(specify)

References/Reading Materials:

Larman, Craig, (2005), Applying UML and patterns: an introduction to object-oriented analysis and design and iterative development 3. ed.: Upper Saddle River, N.J.: Prentice Hall PTR, cop.

Gamma, Erich, (1995), Design patterns: elements of reusable object-oriented software, Reading, Mass.: Addison-Wesley, cop.

DISE 11043 - Introduction to Web Programming

Year I - Semester I			
Course Code:	DISE 11043		
Course Name:	Introduction to Web Programming		
Credit Value:	3		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	45	45	60

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Develop skills in analyzing the effective and usable web sites.

Create, design web sites by applying sound design principles and professional practices.

Implement enterprise scale web sites using standard tools and techniques.
enrich web pages with multimedia objects and tools.

Course Content: (Main topics, Subtopics)

Introduction to web programming

Web Page Layout Techniques, web design principles and theories, usability and effectiveness of websites.

HTML

HTML basics, elements, attributes; HTML Syntax: Headings, Paragraphs, Styles, Formatting, Links, Images, Responsive Entities, Tables, Forms.

HTML5: API, Canvas, SVG, Data Storage, Audio and Video, Geo-Location, Web Workers, Web sockets, Messaging API.

Styling content with CSS

CSS3 Introduction, Syntax and attributes.

Bootstrap

Introduction to Bootstrap, Components and Plugins.

JavaScript

JavaScript Introduction, Basics, Output, Variables, Operators, Arithmetic, Data Types, Assignment, Functions, Objects, Scope, Events, Strings and String Methods, Numbers and Number Methods, Dates, Forms (API and Validation), Objects, Functions, DOM, Browser BOM, Frameworks; Introduction to JQuery.

Teaching /Learning Methods:

A combination of lectures, tutorials, practical and assignment.

Assessment Strategy:

End of semester examination, practical and assignments.

Continuous Assessment

30%

Final Assessment

70%

Details: quizzes %, mid-term %, other %
(specify)

Assignments – 30%

Theory
(%)
50%

Practical
(%)
20%

Other (%)
(specify)

References/Reading Materials:

Jennifer, N.R., (2018), Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics, 5th edition, O'; Reilly Media.

Jon, D., (2014), Interactive Front-End Web Development, 1st edition, John Wiley & Sons.

Luke, W., Laura, T., (2016), PHP and MySQL Web Development, 5th edition, Addison-Wesley Professional.

DISE 11052 - Web Based User Interface Designing

Year I - Semester I			
Course Code:	DISE 11052		
Course Name:	Web Based User Interface Designing		
Credit Value:	2		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	30	15	55

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

create user interfaces based on basic human perception principles.

critique existing user interface and screen designs.

create effective navigation schema and screen compositions for interactive and web projects.

demonstrate knowledge of information design, interaction design, and presentation design.

create an interactive wireframe.

create a prototype with a sequence of informative visuals

Course Content: (Main topics, Subtopics)

Introduction to UI Design

Introduction of UI designing, industry-standard methods of UI design approach, key theories and frameworks underlie the design, user-interface design process, different design scenarios.

Human Computer Interaction

Foundations of Human–Computer Interaction, The Design Process, Implementation Support

User Research and Design

Techniques of user research and early UI design exploration, analyze and deliver user research in forms that support UI design, including personas, use cases, tasks, and scenarios,

Prototyping and Design

Design and prototype user interfaces to address the users and tasks identified in user research, different types of prototyping techniques,

Evaluating User Interfaces

techniques for user interface evaluation (action analysis, walkthroughs, and heuristic evaluation etc.), Usability testing.

Teaching /Learning Methods:

A combination of lectures, tutorials, practical and assignment.

Assessment Strategy:

End of semester examination, and assignments.

Continuous Assessment
40%

Final Assessment
60%

Details: quizzes %, mid-term %, other %
(specify)
Assignments – 40%

Theory (%)
60%

Practical
(%)
-

Other (%)
(specify)

References/Reading Materials:

The Elements of User Experience: User-Centered Design for the Web and Beyond
(2nd Edition) (Voices That Matter) 2nd Edition.

Dix, A., Finlay, J., Abowd, G.D., & Beale, R. (2004). Human computer interaction
(3rd ed.). Prentice Hall. ISBN 0-13-046109-1.

Benyon, David (2010), Designing interactive systems: a comprehensive guide to
HCI and interaction design.

DISE 11063 - Data Communication and Networking

Year I - Semester I			
Course Code:	DISE 11063		
Course Name:	Data Communication and Networking		
Credit Value:	3		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	45	-	105

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Identify different types of computer networks in use and their development, analyze, design and implement different network topologies, architectures, protocols and algorithms, apply application layer protocols effectively.

Course Content: (Main topics, Subtopics)

Introduction to Data Communication and Networking

Components of a data communication system, Data Representations, Different type Networks, Network Topologies, The Internet, Protocols, Standards and Administration.

Network Models

Introduce Layered-Architecture, OSI Model, TCP/IP Protocol Suite and Addressing.

Physical Layer

Data and Signals, Analog and Digital Transmission and Transmission media, Bandwidth Utilization by Multiplexing and Spreading, and Switching.

Data Link Layer

Error detection and Correction, Data Link Layer Control (DLC), Media Access Control (MAC), Wired LANs: Ethernet, Introduce other Wired and Wireless networks.

Network Layer

Network Layer Protocols, Unicast and Multicast Routing, IP Addressing with IPv4 and ICMPv4, Subnetting.

Transport Layer

Transport Layer Protocols and their properties.

Application Layer

Client-Server model, Standard Client Server Protocols; Peer-to-Peer Paradigm;

Application level protocols for File transfer, Electronic mail, Network management, Hypertext transfer and World Wide Web.

Networking and Internetworking Devices

Teaching /Learning Methods:

A combination of lectures, tutorials and assignment.

Assessment Strategy:

End of semester examination and assignments.

Continuous Assessment

40%

Final Assessment

60%

**Details: quizzes %, mid-term %, other %
(specify)**

Assignments – 40%

Theory (%)

60%

**Practical
(%)**

Other (%)

(specify)

References/Reading Materials:

Forouzan B. A., (2012), Data Communications and Networking, McGraw Hill, 5th Edition.

Stallings W., (2010), Data and Computer Communications, Pearson Education Inc., 9th Edition.

Tanenbaum A.S. and Wetherall David J., (2010), Computer Networks, Prentice-Hall International, 5th Edition.

Halsall F., (1996), Data Communications, Computer Networks, and Open Systems, Addison Wesley, 4th Edition.

DISE 12013 - Object Oriented Programming with PHP

Year I - Semester II			
Course Code:	DISE 12013		
Course Name:	Object Oriented Programming with PHP		
Credit Value:	3		
Compulsory/Optional	Compulsory	Prerequisite: DISE 11043	
Hourly Breakdown	Theory	Practical	Independent Learning
	45	45	60

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Apply the knowledge of the theory of object-oriented systems, distinguish how an object-oriented programming language upholds object-oriented concepts, effectively use PHP as object-oriented programming language design, apply and evaluate solutions for broadly defined software problems.

Course Content: (Main topics, Subtopics)

Object Oriented Programming Principles

Class, Object, Inheritance, Polymorphism, Abstraction, Encapsulation

Introduction to PHP

PHP Introduction, Syntax and Programming Basics, PHP Forms and XML

OOP Concepts in PHP

Object creation, calling functions, function overriding and overloading, constants, different types of accessing levels, Interfaces, abstract classes, static vs final.

(1-3 sub modules: using text editor)

Introduction to Frameworks (Laravel or any suitable PHP framework)

Frameworks, MVC, Laravel Introduction, Request/Response procedure, OOP in PHP with Laravel

Teaching /Learning Methods:

A combination of lectures, tutorials, practical and assignment.

Assessment Strategy:

End of semester examination, practical, and assignments.

Continuous Assessment

30%

Final Assessment

70%

Details: quizzes %, mid-term %, other %
(specify)

Assignments – 30%

Theory (%)

50%

Practical (%)

20%

Other (%)
(specify)

References/Reading Materials:

Robin Nixon, Head First PHP & MySQL: A Brain-Friendly Guide, 1st Edition, O'Reilly.

Matt Stauffer (2016), Up and Running: A Framework for Building Modern PHP Apps, O'Reill.

Peter Lavin (2006), Object-Oriented PHP: Concepts, Techniques, and Code.

William Sanders (2013), Learning PHP Design Patterns O'Reilly.

DISE 12023 - Database Management Systems

Year I - Semester II			
Course Code:	DISE 12023		
Course Name:	Database Management Systems		
Credit Value:	3		
Compulsory/Optional	Compulsory	Prerequisite: DISE 11043	
Hourly Breakdown	Theory	Practical	Independent Learning
	45	45	60

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

familiarize with the basic concepts of a database system
design a relational database using the normalization approach
query the database using MySQL (PHP myAdmin)
understand the security control measures of a database system

Course Content: (Main topics, Subtopics)

Introduction to database systems
Database system concepts and architecture, three tier architecture and mapping.
Data Modeling
Entity-Relationship (ER) model and Enhanced Entity-Relationship (EER) model
Relational model
Introduction to the relational model, Relational constraints, Normalization approach for relational database design (first, second, third and BCNF normal forms), Foreign keys, Advantages and disadvantages of the normalization approach;
Logical database design
ER to relational mapping and EER to relational mapping.
Data Manipulation using SQL
Constraints in SQL, Basic queries, Complex queries, insert, delete and update statements.
Exceptions and Assertions
Views, Access control based on granting and revoking privileges, challenges of database security.
PHP/MYSQL
PHP with Mysql databases, AJAX with PHP.

Teaching /Learning Methods:

A combination of lectures, tutorials, practical and assignment.

Assessment Strategy:

End of semester examination, practical, and assignments.

Continuous Assessment

30%

Final Assessment

70%

Details: quizzes %, mid-term %, other %
(specify)

Assignments – 30%

Theory (%)

50%

Practical

(%)

20%

Other (%)

(specify)

References/Reading Materials:

Ramez Elmasri and Shamkant B. Navathe, (2016), Fundamentals of Database Systems, Addison-Wesley Longman Publishing Co., Inc, 7th edition.

Abraham Silberschatz A., Korth H.F. and Sudarshan S., (2010), Database System Concepts, McGraw Hill, 6th edition.

Raghu Ramakrishnan , and Johannes Gehrke, (2003), Database Management Systems, McGraw Hill, 3rd Edition

Date, C.J., (2004), Introduction to Database Systems, Addison Wesley, 8th edition.

Robin Nixon, Head First PHP & MySQL: A Brain-Friendly Guide, 1st Edition, O'Reilly.

DISE 12032 - Software Quality Assurance

Year I - Semester II			
Course Code:	DISE 12032		
Course Name:	Software Quality Assurance		
Credit Value:	2		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	30	15	55

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Apply the techniques learned to improve the quality of their own software development,

Prepare a software quality plan for a software project - to include sections on change management, configuration management, defect elimination, validation and verification and measurement.

the role of software quality assurance in improving the software development process

Explain the capabilities of both humans and computers from the viewpoint of human information processing

Apply an interactive design process and universal design principles to designing HCI systems.

mainstream testing techniques, understand their main strengths and weaknesses, and determine when they are appropriate.

Course Content: (Main topics, Subtopics)

Software quality concepts and culture

Software quality fundamentals, Software quality management process, Practical considerations

Validation and Verification

General software testing principles; White-box testing based on code analysis;

Black-box, specification-based testing; Testing object-oriented programs;

Inspections and reviews; Safety analysis; Statistical testing and reliability analysis;

Fault tolerance; Defensive programming.

Use of Verification Tools

Teaching /Learning Methods:

A combination of lectures, tutorials, practical and assignment.

Assessment Strategy:

End of semester examination, and assignments.

Continuous Assessment
40%

Final Assessment
60%

Details: quizzes %, mid-term %, other %
(specify)
Assignments – 40%

Theory (%)
60%

Practical
(%)
-

Other (%)
(specify)

References/Reading Materials:

Glenford J. Myers, Corey Sandler, Tom Badgett., The Art of Software Testing, 3rd Edition.

Dix, A., Finlay, J., Abowd, G.D., & Beale, R. (2004). Human computer interaction (3rd ed.). Prentice Hall. ISBN 0-13-046109-1.

Preece, J., Rogers, Y., & Sharp, H. (2015). Interaction design: Beyond human-computer interaction (4th ed.) John Wiley & Sons Ltd. ISBN 978-1-119-02075-2.

DISE 12041 - Introduction to Information Security

Year I - Semester II			
Course Code:	DISE 12041		
Course Name:	Introduction to Information Security		
Credit Value:	1		
Compulsory/Optional	Compulsory	Prerequisite: DISE 11063	
Hourly Breakdown	Theory	Practical	Independent Learning
	15		35

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

Appreciate the need for good security management

Identify information security threats and countermeasures

Acquire background for providing security for networks, information and applications

Course Content: (Main topics, Subtopics)

Introduction to Information Security

Information assurance concepts (confidentiality, integrity, and availability), Nature of threats (e.g., natural, intentional, and accidental), Encryption, digital signatures, message authentication, and hash functions, Common cryptographic protocols (applications, strengths, and weaknesses), Nontechnical security issues (e.g., social engineering).

Computer and Network Security

Network security threats and attacks, Use of cryptography for network security, Protection and defense mechanisms and tools.

Teaching /Learning Methods:

A combination of lectures, tutorials, and assignment.

Assessment Strategy:

End of semester examination, and assignments.

Continuous Assessment

40%

Final Assessment

60%

Details: quizzes %, mid-term %, other % (specify)

Assignments – 40%

Theory (%)

60%

Practical (%)

-

Other (%) (specify)

References/Reading Materials:

Stallings, W., (2010), Cryptography and Network Security, Prentice-Hall, 5th Edition.

Bishop, M., (2005), Introduction to Computer Security, Addison-Wesley, Pearson Education, Inc.

Stallings, W., (2010), Network Security Essentials: Applications and Standards, Prentice-Hall, 4th Edition.

DISE 12052 - Project Development Theories and Professional Practices

Year I - Semester II			
Course Code:	DISE 12052		
Course Name:	Project Development Theories and Professional Practices		
Credit Value:	2		
Compulsory/Optional	Compulsory	Prerequisite: GCE(A/L)	
Hourly Breakdown	Theory	Practical	Independent Learning
	30		70

Course Aim/Intended Learning Outcomes:

On successful completion of this Course unit, students should be able to:

define project management design, development, and deployment
 manage project cost, quality, and delivery.
 engage and lead effective project management teams in your organization

Course Content: (Main topics, Subtopics)

Project Management Overview
 Introduction to project management, Role of PM, PM skills, Industry trends in project management, Project organization concepts.
 Estimations
 Cost management, Time management.
 Project planning
 Human resource management, Project communication, stakeholder management, procurement management.

Teaching /Learning Methods:

A combination of lectures, tutorials, and assignment.

Assessment Strategy:

End of semester examination, and assignments.

Continuous Assessment 40%	Final Assessment 60%		
Details: quizzes %, mid-term %, other % (specify) Assignments – 40%	Theory (%) 60%	Practical (%) -	Other (%) (specify)

References/Reading Materials:

Gary L. Richardson (2015), Project Management Theory and Practice, Second Edition.
 Gray & Larson. Project Management, the managerial process (6th edition), ISBN13:9780078096594..

DISE 12064 - Web based project (Individual)

Year I - Semester II			
Course Code:	DISE 12064		
Course Name:	Web based project (Individual)		
Credit Value:	4		
Compulsory/Optional	Compulsory	Prerequisite: All Compulsory course units	
Hourly Breakdown	Theory	Practical	Independent Learning
	-	-	200
<p>Course Aim/Intended Learning Outcomes: On successful completion of this Course unit, students should be able to: demonstrate an understanding in planning and carrying out a substantial web based project in the field of Information and Communication Technology express themselves both in verbal and written forms. demonstrate the ability of developing new techniques/methods/tools required to solve a complex real-world problem.</p>			
<p>Course Content: (Main topics, Subtopics) A study and/or an implementation of a solution for a complex real world problem under assigned academic.</p>			
<p>Teaching /Learning Methods: A combination of self-study, Seminars, Presentations, Intermediate reports and Project report.</p>			
<p>Assessment Strategy: Project Report, Intermediate reports, and Oral presentations.</p>			
Continuous Assessment 100%		Final Assessment -	
Details: quizzes %, mid-term %, other % (specify) Proposal – 10% Viva – 20% Presentation - 30% Report – 40%		Theory (%)	Practical (%) -
			Other (%) (specify)
<p>References/Reading Materials: Reading list and material relevant for each selected topic to be provided by the supervisors.</p>			

9.Fees

Application Fee: Rs. 750.00

Total Course Fee: Rs.80000.00

1st Instalment: Rs. 45,000.00

2nd Instalment: Rs. 35,000.00

9.1 Diploma Programme fees

Selected candidates will have to pay the above fees in full before the commencement of the course. However, a provision will be made on request to pay the tuition fees in two instalments in the first year (50% at registration and balance 50% within nine months from registration).

Once paid, fees will not be refunded.