JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY

COURSE OUTLINE

Unit Code & Name	ICS 2209: Design and implementation of Computer Applications
Prerequisite	BCT 2103: Software Applications-II BIT 2109: 0bject Oriented Programming-I
Cohort	BCS Y2S2, September – December 2024
Lecturer	Maxwell Okumu
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Purpose
The goal of this course is to equip students with knowledge and skills needed to develop Microsoft .NET-based applications by using Visual Basic .NET.

Learning outcomes
Upon successful completion of this course, the student should be able to:
1. Educate students on how Object Oriented techniques are used in VB.NET.
2. Design and program Windows applications using Microsoft .NET and Visual Studio
3. Write object-oriented code using Visual Studio language syntax
4. Analyze user requirements and design classes, user interfaces and databases
5. Build SQL Server or Access databases and access them using ADO.NET

Course Description
Programming fundamentals in VB.NET; Working with data types, identifiers, variables, constants, expressions and conversions. Control Structures; Selection structures - IF statements, CASE statements, repetition structures; For...Next loops, Do-While...Loops, Arrays. Exception handling and debugging; Try...Catch...Finally error handling. Documenting your code. Constructing Windows Applications; Windows application basics, creating forms and positioning controls, navigating with menus, automating code with the toolbox and properties window. Windows forms; Event handling, property values, dialog forms. User requirements and designing desktop applications; Mapping application features to programming code, Constructing the three logical layers. Connecting to relational databases, ADO.NET.

Teaching Methodology
Lectures, practical and tutorial sessions in Computer Laboratory, individual and group assignments, exercises and project work

Instructional Materials
Overhead projector and computer, handouts, white boards, textbooks, Microsoft Visual Studio 2010/ 2012/ 2013/ 2015/2019

Course Schedule

WEEK	DETAILS	HOURS
Week 1	Introduction to DOT NET Environment, Object-Oriented Programming Terminology Visual Basic Integrated Development Environment	5
Week 2, 3	Constructing Windows Applications; Windows application basics, creating forms and positioning controls, Event handling and Event Handlers.	5
Week 4	User interface: Principles of a User Interface, Elements of the Graphical User Interface, Windows forms and Controls (widgets)	5
Week 5, 6	Programming fundamentals in VB.NET; Working with data types, identifiers, variables, constants, expressions and conversions.	5
Week 7	Sub Procedures and Functions, Argument Passing Mechanism and Dialog boxes	5
Week 8	Control Structures I; Selection structures - IF statements, and CASE statements	5
Week 9	Control Structures II; repetition structures; For...Next loops, Do-While...Loops and Do-Until...Loops	5
Week 10	Arrays: • One dimensional arrays • Two dimensional arrays	5
Week 11	Exception handling and debugging; Try...Catch...Finally error handling. Creating custom menus	5
Week 12	Mechanisms in software application: Constructing the three logical layers	5
Week 13	Database Programming: Define basic database terminology, including database, table, record, field, and key. Describe some commonly used ADO.NET objects. Use the Data Form Wizard to create a simple data access application. Display and modify data extracted from a database.	5
Week 14	Database Programming cont.. Create and open a connection to a database using objects. Create, read, update, and delete records in a database using objects.	5

Assessment

- Written End of semester Exams 70%
- Two/Three Cats 15%
- Two Assignments 5%
- Course Project 10%

Course Text Books

1. **Programming Visual Basic .NET,** Dave Grundgeiger, Publisher: O'Reilly
2. **Mastering Microsoft Visual Basic 2010,** Evangelos Petroutsos, Wiley Publishing, Inc.
3. **Programming in Visual Basic 2010 The Very Beginner's Guide**, Jim McKeown, Dakota State University
4. Michael Ekedahl (2004). MCSD/MCAD Guide to Developing and Implementing Windows-Based Applications with Microsoft Visual Basic .NET. Thomson Course Technology. ISBN: 0-619-21507-0
5. Michael Halvorson, Micsosoft Visual Basic 2010 Step By Step. Microsoft Press.

Reference Text Books

1. Jerry Lee Ford, Jr (2005). Microsoft Visual Basic 2005 Express Edition Programming for the Absolute Beginner Thomson Course Technology. ISBN: 1-59200-814-3
2. Diane Zak (2004). Programming with Microsoft Visual Basic .NET (2nd ed.). Thomson Course Technology. ISBN: 0-619-21718-9

Course Journals

1. Acta Informatica ISSN 0001-5903
2. Advances in Computational Mathematics ISSN 1019-7168
3. Advances in data Analysis and Classification ISSN1 1862-5347
4. Annals Of software Engineering ISSN 1022-7091

Reference Journals

1. Journal of computer science and Technology ISSN 1000-9000
2. Journal of Science and Technology ISSN 1860-4749
3. Central European Journal Of Computer Science ISSN 1896-1533
4. Cluster computing ISSN 1386-7857