CS4298: IOS APPLICATION DEVELOPMENT

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
iOS Application Development

Subject Code
CS - Computer Science
Course Number
4298

Academic Unit
Computer Science (CS)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
(CS2311 Computer Programming or
CS2312 Problem Solving and Programming or
CS2313 Computer Programming or
CS2360 Java Programming)
And
(CS1303 Introduction to Internet and Programming or
CS2204 Fundamentals of Internet Applications Development or
CS3201 Computer Networks)

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses

CS4295 Mobile Application Programming

Part II Course Details

Abstract

This course aims to provide an advanced study of designing and building mobile applications, particularly on iOS platform. As one of the major mobile platforms, iOS programming is an essential skill for mobile applications developer. This course will provide in-depth knowledge on iOS development including the development tools, programming languages, model-view-controller paradigm and various frameworks of iOS. Students are expected to design and develop applications on iOS platform that meets the constraints and requirements of high quality mobile applications.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Identify and describe the essential requirements and constraints of developing mobile and iOS applications.	15	x	x	
2	Demonstrate working knowledge on model-view-controller (MVC) paradigm and various frameworks of iOS.	25		x	
3	Demonstrate working knowledge on sensor, camera and location based programming.	25		x	
4	Provide qualitative evaluation on mobile applications and explores new applications that utilizes the sophisticated features of contemporary mobile devices.	20	x	x	x
5	Explore and develop sophisticated and robust applications on iOS devices.	15	x	x	x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Lectures will cover the essential constraints, requirement knowledge, system models and frameworks on iOS application development.	1, 2, 3, 4, 5	3 hours/week

2	Tutorial	Tutorials will provide hands-on practices on iOS application development. Programming tools and platform such as xCode, Objective-C/Swift will be covered extensively, together with various mobile application programming topics like sensor, location-based service and multimedia programming.	1, 2, 3, 4, 5	8 hours/semester
3	Programming Assignment	Student will develop a mobile application on iOS platform that - demonstrates a good understanding of the characteristics and constraints of mobile applications. - utilizes the sophisticated features of contemporary mobile devices. - explores new applications on mobile devices.	1, 2, 3, 4, 5	
4	Written assignment	Students will conduct a survey on common mobile applications and provide evaluations and potential improvements of their findings.	1, 2, 3	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Written Assignment	1, 2, 3	10	
2	Quiz	1, 2, 3, 4, 5	20	
3	Programming Assignment	1, 2, 3, 4, 5	20	

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Assessment Rubrics (AR)

Assessment Task
Written Assignment

Criterion
ABILITY to identify the essential constraints and requirements of mobile applications

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Written Assignment

Criterion
ABILITY to provide concise and thorough evaluations on mobile applications

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Programming Assignment

Criterion
ABILITY to identify the characteristics and constraints of the selected mobile applications and consider these factors in developing their applications

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Programming Assignment

Criterion
ABILITY to justify their system design and implementation based on a thorough understanding of the iOS development platform

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Programming Assignment

Criterion
ABILITY to utilize sophisticated features of contemporary mobile devices in developing an innovative mobile application

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Programming Assignment

Criterion
DEVELOP a robust and sophisticated mobile application

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Exam

Criterion
ABILITY to describe and identify the essential constraints and requirements of developing iOS applications

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Exam

Criterion

ABILITY to evaluate and compare various techniques in developing iOS applications and justify their applications under different scenarios

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Exam

Criterion

ABILITY to demonstrate working knowledge of the technologies and skills required to develop iOS applications with MVC paradigm and appropriate frameworks

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

iOS, xCode, Objective-C/Swift, Cocoa, multi-touch technologies, model-view controller paradigm, memory management, power management, multi-threading, location-based service, camera and sensors.

Reading List

Compulsory Readings

	Title
1	Stephen G. Kochan, Programming in Objective-C (6th Edition), Developer's Library, 2014

Additional Readings

	Title
1	Joe Conway, Aaron Hillegass, iOS Programming: The Big Nerd Ranch Guide, 3rd Edition, Pearson, 2012
2	Objective-Chttps://developer.apple.com/library/mac/documentation/Cocoa/Conceptual/ProgrammingWithObjectiveC/Introduction/Introduction.html
3	Swifthttps://developer.apple.com/library/ios/documentation/Swift/Conceptual/Swift_Programming_Language/GuidedTour.html