CSE 4253 (Approved): Programming in C#

Course Description
C# programming for students well-versed in programming with another object-oriented language.

Prior Course Number: 459.24
Transcript Abbreviation: C# Prgrmng
Grading Plan: Satisfactory/Unsatisfactory
Course Deliveries: Classroom
Course Levels: Undergrad
Student Ranks: Junior, Senior
Course Offerings: Autumn
Flex Scheduled Course: Never
Course Frequency: Every Year
Course Length: 14 Week
Credits: 1.0
Repeatable: No
Time Distribution: 1.0 hr Lec
Expected out-of-class hours per week: 2.0
Graded Component: Lecture
Credit by Examination: No
Admission Condition: No
Off Campus: Never
Campus Locations: Columbus
Prerequisites and Co-requisites: CSE 2231
Exclusions: Not open to students with credit for CSE 459.24
Cross-Listings:

The course is required for this unit's degrees, majors, and/or minors: No
The course is a GEC: No
The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.0901
Subsidy Level: Baccalaureate Course

Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering

Course Goals

Master C# programming language constructs and built-in types.
Master using C# delegates and events.
Be competent in using language interfaces, in particular, those defined in the .NET framework.
Be competent in using inheritance in C#.
Be competent with using .NET collections (sets, lists, dictionaries.
Be exposed to the Common Language Runtime (CLR), garbage collection, and assemblies.
Be familiar with GUI programming on Windows.
Be exposed to C# documentation and community web sites.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Overview of the course, the .NET platform and C#	1.0							
C# language basics	1.0							
Hands-on workshop on Visual Studio	1.0							
Review of Object-oriented design, programming to interfaces, C# interfaces, C# inheritence and C# class definitions.	1.0							
C# Generics and generic collection classes in .Net	1.0							
Enumerations and Iterators	2.0							
Windows Forms and basic GUI development	2.0							
Delegates and Events	1.0							
Extension methods	0.5							
Equality, comparisons and hashing in .NET	1.0							
Anonymous types	0.5							
Lambda Expressions	0.5							
Language integrated queries (LINQ) and functional programming with C#	1.5							

Representative Assignments

Develop a simple Windows Console Application that reads text from the Clipboard and prints out a list of unique sorted words.
Create a C# type library (Class libary) and associated dll file that contains both interfaces and concrete class implementations for a computer graphics scenegraph. Create a simple Console Application that test the creation and traversal of the scenegraph with simple textual output to the console.
Create a GUI application to create scenegraphs (textually).
Refactor the Class libraries to use a plug-in Architecture with the interface types specified in their own dll.

Grades

Aspect	Percent
Quizes	40%
Programming Assignments	60%

Representative Textbooks and Other Course Materials

Title	Author
C# in a Nutshell	Joseph Albahari and Ben Albahari

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
	a	An ability to apply knowledge of mathematics, science, and engineering.
	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.

Course Contribution		College Outcome
**	e	An ability to identify, formulate, and solve engineering problems.
	f	An understanding of professional and ethical responsibility.
	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
**	i	A recognition of the need for, and an ability to engage in life-long learning.
***	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

BS CSE Program Outcomes

Course Contribution		Program Outcome
	a	an ability to apply knowledge of computing, mathematics including discrete mathematics as well as probability and statistics, science, and engineering;
	b	an ability to design and conduct experiments, as well as to analyze and interpret data;
**	c	an ability to design, implement, and evaluate a software or a software/hardware system, component, or process to meet desired needs within realistic constraints such as memory, runtime efficiency, as well as appropriate constraints related to economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability considerations;
	d	an ability to function on multi-disciplinary teams;
**	e	an ability to identify, formulate, and solve engineering problems;
	f	an understanding of professional, ethical, legal, security and social issues and responsibilities;
	g	an ability to communicate effectively with a range of audiences;
	h	an ability to analyze the local and global impact of computing on individuals, organizations, and society;
**	i	a recognition of the need for, and an ability to engage in life-long learning and continuing professional development;
***	j	a knowledge of contemporary issues;
***	k	an ability to use the techniques, skills, and modern engineering tools necessary for practice as a CSE professional;
	l	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
	m	an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
*	n	an ability to apply design and development principles in the construction of software systems of varying complexity.

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