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### Course description:

This course is intended to extend the student's knowledge in computer programming by introducing a number of important programming techniques necessary for building modern computing applications. The course content will include techniques in C# to deal with a range of issues drawn from the following topics: creating and querying databases; image representation and basic image processing; designing web pages using ASP.net; multi-threading and its importance; fundamental of network programming; and introduction to XML documents.

### Aims of the course:

*Students are expected to:*

- Gain the ability to create and manipulate database tables.
- Be able to create and manipulate images as binary files.
- Be able to understand threading concepts and thread programming.
- Have the needed knowledge to make him able to deal with networking programming.
- Be encouraged to design and implement several applications and present it.

### Intended Learning Outcomes: (ILOs):

*Upon successful completion of this course, students will be able to:*

#### A. Knowledge and Understanding

##### A1. Concepts and Theories:

1. Understand the concepts of databases, threading and images.
2. Know Network programming concepts.

##### A2. Contemporary Trends, Problems and Research:

Use recent programming techniques to build modern applications

##### A3. Professional Responsibility:

Abide by laws and regulations of software development and design.

#### B. Subject-specific skills

##### B1. Problem solving skills:

1. Create and managing databases
2. Decompose programs into multi-threads
3. Supply the student with the ability to solve different problems related to the topics

##### B2. Modeling and Design:

Learn how to design a complete C# application

##### B3. Application of Methods and Tools:

Learn how to implement a complete C# project

### C. Critical-Thinking Skills

#### C1. Analytic skills:

Use analytical skills to learn how to analyze and solve specific programming problems

#### C2. Strategic Thinking:

Propose solutions to complex problems.

#### C3. Creative thinking and innovation:

Use creative thinking and innovation to mix different programming techniques such as designing web pages to interact with databases

### D. General and Transferable Skills (other skills relevant to employability and personal development)

#### D1. Communication:

Express and communicate ideas in written and oral forms.

#### D2. Teamwork and Leadership:

Be cooperative members of a team

#### D3. Organizational and Developmental Skills:

Plan, prioritize, and achieve defined goals

#### D4. Ethical and Social Responsibility:

Understand that they are accountable for their actions and there must be a balance between economic growth and the welfare of the society and environment.

#### Course Structure:

Week	Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1	3	A1	Revision: C# concepts revision	Lecturing with active participation, quizzes, team learning.	Homework, quizzes, reports
2-5	12	A1, A2, B2, B3, C1	Database Management System: -Concepts of database -Creating tables, relations using SQL -Creating tables, relations using C# -Using LINQ to SQL to manage the database -Using LINQ to query the database -Projects presentation	=	=
6-8	9	A1, A2, B2, B3, C3, D1, D2, D3, D4	Image processing: - Binary files -Image representation -processing images: Change to gray scale, remove one color of the image, rotating and	=	=



			negative image, generate image with different shapes.		
9-10	6	A1, B3, D1, D2,D3,D4	ASP.net: -Internet concepts -ASP concepts -Design login pages with database -Project to manage database through ASP.net -project presentation	=	=
11	3	A1, A2, B1, C1, C2, C3, D1,D2,D3, D4	Threading: -Multi-threading concepts - Threading in console application -Threading in Windows Form applications - Threading with image processing program	=	=
12-13	6	A1, A2, B1, C1, C2, C3,S1,D2, D3,D4	Network programming: -Concepts of networking -server side programming -client side programming -Socket programming	=	=
14-15	6	A1, B1, 2,	XML documents	=	=

## References:

### A. Main Textbook:

- 1- *C# for programmers*, Deitel & Deitel , Pearson Education, Inc.2010
- 2- *Programming C#*, Jesse Liberty, 3<sup>rd</sup> ed., O'Reilly Media, Inc., 2003.
- 3- *C# Graphics Programming*, Rod Stephens, John Wiley & Sons, 2010.

### B. Supplementary Textbook(s):

Java How to Program: Early Objects Version, 8th Edition- Paul Deitel, Deitel& Associates, Inc., 2010

### Assessment Methods:

Methods	Grade	Date
Mid Exam	20%	
Four Projects	35%	
Practical final exam	25%	
Final exam	20%	

