CMPE416 Object Oriented Programming and Graphical User Interfaces

Department:
Computer Engineering

Program Name: Computer Engineering	**Program Code:** 25	
Course Number: CMPE416	**Credits:** 4 Cr	**Year/Semester:** 2021-2022 Summer

☐ Required Course ☒ Elective Course (click on and check the appropriate box)

Prerequisite(s):
CMPE211

Catalog Description:
The student is to learn the language structure of JAVA, its object oriented aspects, the similarities and differences with C. He must also acquire a practical programming experience in Java through a number of exercises.
Concerning the applications of the language, we will focus on the implementation of Graphical User Interfaces as well as animation programs. Blueprints and a practical object oriented development methodology will be given for such applications.

Course Web Page:
http://cmpe.emu.edu.tr/

Textbook(s):
Java in a Nutshell - 5th Edition;or*6th Edition*; David Flanagan; O'REILLY.
Lab Manual:
NA

Indicative Basic Reading List :
JAVA - How to program; Deitel & Deitel; Prentice Hall International.
SUN tutorials on JAVA (Web pages at www.java.sun.com).

An Introduction to Object-Oriented Programming with Java, C Thomas Wu, McGraw Hill International Edition.

Topics Covered and Class Schedule:
(4 hours of lectures per week)

Week 1-2-3	**Data structures and programming structures:** ***Primitive data types; Reference data types; Operators and expressions; Statements; Methods and passing of arguments; Method overloading; Arrays; Strings.*** **Classes of objects and object oriented programming:** ***Principle of object oriented programming; Using objects; Definition of classes; Subclasses and inheritance; Nested top-level classes and interfaces; Inner classes.*** **Graphical User Interfaces:** ***Containers and components of a GUI; GUI hierarchy of containers and components; blueprint for the definition of a GUI; Tuning the aspect of the GUI; Some available containers and components; Events created by containers and components.***
Week 3	Midterm Exam (18.08.22, 9:00) **Graphical User Interfaces:** ***Containers and components of a GUI; GUI hierarchy of containers and components; blueprint for the definition of a GUI; Tuning the aspect of the GUI; Some available containers and components; Events created by containers and components.***
Week 4-5	**Various useful classes:** ***String manipulation; Mathematical functions; Standard input / output; File input / output; Various system features; Hashtable; Useful graphical classes.*** **Graphics:** ***Drawing instructions; Painting of containers and components; Custom painting of container or component.*** **Threads:** ***Running several threads concurrently; Coherence of shared data; thread termination.***
Week 6	**Final Examination**

Laboratory Schedule:
(4 hours of laboratory per week)

Week 2	Tutorial
Week 3	Lab 1-2
Week 4	Lab 2-3
Week 5	Lab 3-4

Course Learning Outcomes:

At the end of the course, student must be able to

1. possess the mathematical knowledge and skills necessary to the analysis of algorithms:
   Reinforce mathematical fundamentals including techniques for solving summations and recurrences and the asymptotic growth rate of functions.
2. gain insight into algorithmic design and how it is affected by and/or affects algorithmic logic, structure, and performance:
   Apply proof techniques and mathematical concepts to demonstrate the correctness and assess the performance of standard algorithms.
3. demonstrate their ability to carry out a complete algorithmic design process (design, analysis, implementation, results):
   Address problems involving algorithmic design, analysis, and implementation.
4. gain an understanding of certain classes of algorithms, along with models for future algorithmic work:
   Introduce a number of standard algorithms, both classical and modern, as objects for algorithmic analysis.

	Method	No	Percentage
Assessment	Midterm Exam(s)	1	40%
	Lab Work(s)	6	15%
	Final Examination	1	45%

***Attendance is compulsory for this course. If you miss 10% of the total attendance you will get NG.**

Contribution of Course to Criterion 5

Credit Hours for:
Mathematics & Basic Science : 0
Engineering Sciences and Design : 4
General Education : 0

Relationship of Course to Program Outcomes

The course supports achievement of the following program objectives

- I. identify, formulate and solve computer engineering and science problems ...
- VII. apply modern engineering tools and techniques innovatively;
- X. Pursue graduate studies in related fields.

This course is used to assess the following items of Program Outcomes

- e) an ability to identify, formulate, and solve engineering problems, (CLO item 3)
- k) use the techniques, skills, and modern engineering tools necessary for engineering practice, (CLO item 4)

Prepared by: Asst. Prof. Dr. Ahmet Ünveren	**Date Prepared:**18 July 2022