Spring 2022   MATE 206 Algorithm and Programming

Instructor: Dr. Elçin Emre-Akdoğan	**Place:** Online (Zoom)
Office Hours: by appointment	**Textbook:** Lecture Notes
Office: GB24	**Program:** Scratch/ Python
Email: elcin.akdogan@tedu.edu.tr	**Time:** Friday 11:00-13:00

Course Description:
- Design of an algorithm
- Flow diagrams, input-output concepts, loops, decision making, decision structures and develop appropriate algorithms for cyclic problems
- Applications of algorithms and flowcharts in Scratch
- Develop appropriate solution algorithms using functions
- Develop appropriate solution algorithms using single and double dimensional sequences.
- Coding and applications of generated algorithms in Computer Algebra Systems

Course objectives:
The aim of this study is to provide students understanding of basis of algorithm and programming. By applying basic steps of algorithm and programming, students will generate solutions for problems and test their appropriateness.

Learning Outcomes:
- Explain basis of design of an algorithm,
- Exemplify flow diagrams, input-output concepts, loops.
- Develop appropriate algorithms for cyclic problems.
- Use applications using algorithms and flowcharts.
- Use appropriate function to create appropriate solution algorithms.
- Develop appropriate solution algorithms using single and double dimensional sequences.
- Collaborate on coding and applications of generated algorithms in Computer Algebra Systems.

Methods for Assessment of Learning Outcomes: The expected learning outcomes for the course will be assessed through graded activities and ungraded activities. The graded activities include assignment, in-class activities, take-home homework and project. The ungraded activities will be used to monitor your progress. A variety of these ungraded assessment techniques may be employed, including activities to be completed during class, direct questioning of students, answering students' questions in class, and discussions during office hours.

Assignment: Assignment will cover the topics of algorithm, flow diagrams, input-output concepts, cyclic problems.

You need to upload your assignment to moodle, your document's title should be NAME_SURNAME_Assignment

In-class activities: You need to upload your in-class activities to moodle, your document's title should be NAME_SURNAME_In-Class Activities-X (X: number)

In-Class activities will be graded on a scale of 0-10.

Project: You need to upload two files to moodle;
1. Prepare your first document that include your project's information:
   "Name-Surname:
   Title of the Project:
   Mathematical concept:
   Grade Level:
   Learning outcome:
   Summary of the Project: Indicate your aim of the project and give details here."
   (Word file)
2. Second document should be your activity that you prepared in Scratch (Scratch file)
   Plan out a project.
   Build it in Scratch.
   Be as creative as you can. Use the resources you have seen throughout the semester.
   Incorporate the following into your project:
   At least two sprites
   Costume or Background Change Broadcast
   Variable
   Images and sounds
   Numeracy aspect
   Upload your project to scratch.mit.edu

Both of your document's title should be NAME_SURNAME_Project

Attendance: This course requires strong involvement and attendance. You are responsible for all information given out during the courses. Exceeding 20% of attendance with unexcused absences will result a half letter grade reduction. You are expected to arrive on time for the lectures.

Communication: All announcements will be sent to your e-mail address through Moodle. Check your e-mails regularly in order to be informed.

Grades: Your final grade will be weighted as follows:

45 points	In-Class Activities	Details will be given during class	Individual Work
15 points	Assignment	Details will be given during class	Individual Work

40 points	Project	Details will be given during class	Group Work

Academic Honesty: It hardly needs to be said that such things as plagiarism or stealing another student's work are unacceptable. However, in this class, it is entirely proper to work in teams to do discussion on the problems or the problem solving, as long as you yourself have mastery of those answers and are prepared on your own to present them in class. Plagiarism is a serious breach of academic trust. In academic work, our words and ideas are the value of our work, so turning in someone else's work as if it were your own is a form of theft. When you use someone else's words and ideas--whether it's the work of a famous writer or a fellow student--without crediting the source or authorship of those words and ideas, you are plagiarizing. So here's the bottom line: original work only, credit to ideas, writing, or words from someone other than you.

STUDENT SERVICES INFO:

o Specialized Support and Students with Disabilities

Students who may require specialized support due to a disability affecting mobility, vision, hearing, learning, mental or physical health should consult with Specialized Support and Disability Coordinator, Asst. Prof. Emrah Keser E-mail: emrah.keser@tedu.edu.tr, or visit the website at https://www.tedu.edu.tr/tr/main/engelsiz-tedu

o Student Counseling Centre

The Student Counseling Centre is a service mandated with providing crisis intervention and supportive listening services to the campus community. A major part of fulfilling that mandate is raising awareness of our service so that students know they are never alone in dealing with problems. For further information and/or questions, you can contact Sıla Deniz Beyarslan, sdeniz.beyarslan@tedu.edu.tr, Office 165, or visit SCC website at http://csc.tedu.edu.tr/

o TEDU COPeS

TED University Coronovirus Psychosocial Support Team was established in order to facilitate coping with the psychological, social, familial, academic, and professional difficulties that may arise due to adverse conditions associated with COVID-19 pandemic for TEDU students and employees. TEDU COPeS aims to provide psychosocial support for TED University students and employees during the coronavirus outbreak. To this end, the team aims to provide support at the early stages of a possible crisis, activate and strengthen your coping strategies, and provide information on support resources. For further information and/or questions, visit their website at https://copes.tedu.edu.tr/

SCHEDULE

Date	Topic	Content
Week 1 **Session 1** **(18/02/2022)**	ALGORITHM	Introduction
Week 2 **Session 1** **(25/02/2022)**	ALGORITHM	Design of an algorithm
Week 3 **Session 3** **(04/03/2022)**	FLOW DIAGRAMS	Flow diagrams, input-output concepts, loops, decision making, decision structures
Week 4 **Session 1** **(11/03/2022)**	CYCLIC PROBLEMS	Developing appropriate algorithms for cyclic problems
Week 5 **Session 1** **(18/03/2022)**	ALGORITHM AND FLOW DIAGRAMS	**Assignment** (Algorithm and Flow diagrams)
Week 6 **Session 1** **(25/03/2022)**	PYTHON	Introducing Python
Week 7 **Session 1** **(01/04/2022)**	PYTHON	In-Class Activies-1
Week 8 **Session 1** **(08/04/2022)**	PYTHON	In-Class Activies-2
Week 9 **Session 1** **(15/04/2022)**	PYTHON	In-Class Activies-3
Week 10 **Session 1** **(22/04/2022)**	SCRATCH	Introducing interface and tools of Scratch
Week 11 **Session 1** **(29/04/2022)**	SCRATCH	In-Class Activities-4 (Coordinates)
Week 12 **Session 1** **(06/05/2022)**		In-Class Activities-5 (Chase Game)
Week 13 **Session 1** **(13/05/2022)**	SCRATCH	In-Class Activities-6(Area of the shape) **Take Home Homework** **(Due Date: XXXX)**
Week 14 **Session 1** **(20/05/2022)**	SCRATCH	In-Class Activities-7(Rounding numbers)
Week 15 **Session 1** **(27/05/2022)**	SCRATCH	In-Class Activities-8 (Quiz)