Course Book

Software and Informatics Engineering Department

College of Engineering- Salahaddin University

Simulating Natural Phenomena

Course Book of High Diploma

Lecturer Nyan D. Sallman

Academic Year: 2023/2024 (2nd Course)

Course Book

1. Course name	**Simulating Natural Phenomena**
2. Lecturer	**Nyan D. Salman**
3. Department/ College	**Software & Info. Engineering- College of Engineering**
4. Contact	**e-mail: nyan.sallman@su.edu.krd**
5. Time (in hours) per week	**Theory: 3 hrs**
6. Lectures Schedule	**Monday (3 hrs)**
8. Teacher's academic profile	www.a/su.edu.krd/nyan_dawwod
9. Keywords	**Randomness and Probability , acceleration analysis , Force and its influence on acceleration, Angular Motion.**

10. Course overview:

This course is an elective requirement for higher diploma degree in Software and informatics Engineering. It provides an introduction to some natural phenomena and engineering analysis using processing pf code. the course aims to enhance student's mathematical simulation with a view to providing them with the skills, knowledge and experience that they need in some mathematical tools and analytical reasoning that may be related to, and useful in, their future professions. This course also studied to supply students with a greater appreciation of the relevance and importance of mathematics within the engineering professions with a view to enhancing motivation and increasing interest in the field of mathematics and processing.

11. Course objective:

- The primary objectives of this subject are to expose engineering students to the most important analytical areas of applied mathematics that are useful in higher diploma level engineering problem solving.
- Analyze some nature mathematical equations and physical analysis and simulate it in order to give students skills to programming video game or making preparatory level for expert system.

12. Student's obligation

Students are obliged to attend within the time stated in the lecture schedule for lessons that are many examples of solution during the lecture for closer understanding of the subject and that's what does not exist in the form reproduced obtained lectures, also the students responsible to do assignments and prepare report or seminar.

13. Forms of teaching

The subject will be covered theoretical part in the class (material parts of the processor) with programming also in the class); whiteboard and pen have been mostly used and frequently clear the subject step by step. Homework is normally given throughout the academic year.

14. Assessment scheme

The following grade system is used for the evaluation of the module exam:
The module exam is based on the summation of two categories of evaluations:

First: (50%) of the mark is based on the Course efforts which includes

- Normal exams: 10 marks
- Seminar: 10 marks
- Report: 10 marks
- Midcourse exam: 20marks

Second: (50%) of the mark is based on final examination that is comprehensive for the whole of the study materials reviewed during the academic course.

15. Student learning outcome:

- Basic competence in all the important areas of applied mathematics for higher diploma engineering applications.
- An understanding of how contemporary applied mathematics is used in conjunction with physical principles to develop detailed models for describing the key physical processes governing engineering applications

16. Course Reading List and References:

- ✓ THE NATURE OF CODE, 2012 by Daniel Shiffman, ISBN-13: 978-0985930806.
- ✓ "Advanced Engineering Mathematics", 5th Edition, C.Ray Wylie & Louis C. Barrett.

17. The Topics:	Lecturer's name
1. Randomness and Probability 2. Vector processing 3. Vector motion 4. Velocity and Acceleration analysis for moving objects 5. Force and Acceleration 6. Angular movements analysis 7. Oscillation 8. Fourier Transform 9. Inverse Fourier transform 10. Fourier Series	**Nyan D. Salman** **Some topic** **(1-2 weeks)**

20. Extra notes: