Department of   Software and Informatics Engineering

College of Engineering

University of Salahaddin

Subject: Computer Graphics course book – (HD- level)

Lecturer's name: Assist Prof. Dr. Gullanar M Hadi

Academic Year: 2023/2024

HD Course Book

1. Course name	Computer Graphics
2. Lecturer in charge	Dr Gullanar M Hadi
3. Department/ College	Software and Informatics Engineering/ Engineering
4. Contact	+9647503108228
5. Time (in hours) per week	3 hours per week
6. Office hours	8:30-2:00
7. Course code	SIE03
8. Teacher's academic position	Assist Prof.

Computer Graphics: involves display, manipulation and storage of pictures and experimental data for proper visualization using a computer. Typical applications areas are: GUI- Graphical user interface, Scientific visualization, Plotting in business, Office automation, Plotting in science and technology, Web/business /commercial publishing, CAD design , Desktop publishing, Entertainment (movie, TV Advt., Games etc), Simulation studies and simulators, Cartography, Virtual reality, Process monitoring, Digital Image processing, Education and training

11. Course objective: The course covers topics deal with software, hardware, and mathematics tools used to represent, display, and manipulate topological, two, and three-dimensional objects on a computer screen. The objects can be real world objects (houses, plants, molecules…etc) or imaginary or theoretical (the Dinosaurs, the Mammoths, Fermi surface), developing views will involves problems of scaling, Rotation, Translation, Perspectives, line and surface removal algorithms, lighting and realistic surface rendering

12. Student's obligation:
- Students are expected to have good working knowledge of C++
- This course has more Mathematics so students are expected to have good knowledge in linear algebra and numerical techniques.
- Students must keep tracking research journal during the course

13. Teaching technique: The methodology of the course will be through master classes of 3 h/session, where the teacher will explain the theory and will introduce exercises to improve the understanding of the subject. The exercises will consist in problems exposed and solved in class (on the whiteboard), or in some cases they can be program codes (with the help of a computer), as lab practices.

14. Assessment scheme: Through the course, the student will have to solve at least 3 specific exercises of the different topics of the subject. These exercises will be evaluated by the professor and will constitute part of the final score. There will be also a short project that will be selected by the student, where the student has to show the acquired knowledge. This short project will be presented and evaluated in an oral presentation. For the solution of some of the exercises and the complete project, the students will use a computer vision programming tool

15. Student learning outcome: Upon successful completion of the course, students will:
- understand the vision technology in conjunction with real world applications
- learn the principles and commonly used paradigms and techniques of computer vision
- be able to identify the limitations of vision systems
- be able to demonstrate successful applications to process and analyze images, and to make automatic decisions based on extracted feature information

16. Course Reading List and References:

Text books:
- computer graphics C Version, Donald Hearn & M. Pauline Baker, Pearson educations, New Delhi, 2004(chapters 1-12 except 10-9 to 10-22).

Reference books:
- Procedural elements for computer graphics , David F. Rogers, TATA McGraw Hill book company, New Delhi, 2003
- Computer graphics principle & practice in C, JD Foley , S.K.Fenter, A. Van Dam, F.H. John Pearson education, 2004.
- Computer graphics using Open GL, Franscis S. Hill JR. Pearson Education, 2004.
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