New Jersey Institute of Technology

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Fall 2023

CS 104: Computer Programming and Graphics Problems

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Course Identification:

   Course title: Computer Programming and Graphics
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Virtual Classroom System: Canvas and Discord

There is a detailed digital syllabus system of this course with a live schedule and evaluation available on Canvas.

1. Course Information:

  A. Course Number, Title, Credits
CS104, Computer Programming and Graphics Problems, 3 credits.

  B. Prerequisites
Course Pre-Requisite: Math 138

  C. Catalogue Course Description

An introductory course in computer science with applications in computer graphics for architecture. Emphasis on programming methodology using a high level language as the vehicle to illustrate the concepts. Topics include basic concepts of computer systems, software engineering, algorithm design, programming languages and data abstraction, with applications.

2. Course Features and Objectives:
A- Features:
This course has unique features that are not currently offered through any other course on campus. These features are:
- It provides hands-on multidisciplinary real world experiences that integrate business applications with computer technology areas such as art & design, multimedia and game development.
- It simulates the real-world environment internally in the structure of students' teams and course "virtual organization".
- It offers dynamic market-driven training that reflects hot topics highly demanded by industry but not usually covered through a static college curriculum.
- It enables students to master career-oriented skills such as leadership, presentation, entrepreneurship, social and communication skills.

- It shows how both IT and business knowledge are used to solve real-world architecture-related problems.

- The experience gained working on such projects will make students more employable by industry including the ability of building businesses through the entrepreneurship track.

B- Specific goals for the course
Students who complete this course successfully will have:

- Ability to breakdown complex problems into manageable pieces (using WBS and Gantt).

- Ability to define project stakeholders, scope & requirements (including the use of FDD).
- Ability to capture, map and visualize the design of the proposed solution identifying key components and their relationships.
- Ability to implement the solution successfully using software and/or hardware technologies with emphasis on Database design and development.
- Ability to communicate a value proposition of the project to various stakeholders including the ability to explain, convince, engage and impress.
- Ability to organize the presentation in a meaningful and professional fashion including mastering personal and collaboration presentation skills.

Accordingly, the general outcomes of this course include:
(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(d) An ability to function effectively on teams to accomplish a common goal
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(f) An ability to communicate effectively with a range of audiences
(h) Recognition of the need for and an ability to engage in continuing professional development (i) An ability to use current techniques, skills, and tools necessary for computing practice.
(k) An ability to apply design and development principles in the construction of software systems of varying complexity.

Note: Each week is divided into one hour and a half of instruction & one hour and a half of project-based teamwork.

A. References
No textbook is required.

B. Number of hours of lecture, recitation, and laboratory

Students work on real-world entrepreneurial, industry sponsored or research development projects for the entire 14 weeks of the semester. The problem solving process is broken down into five "Sprints". Lectures and training will include a comprehensive crash course on weekly basis and some on demand training throughout the semester. Additional hands-on training, project management training and laboratory hours will also be included.

GRADING POLICIES

Your final grade in this course will be based on the percentage of points that you receive out of the total possible points for the course (1100). Grades will be determined according to the following scale:

90% - 100%   A
85%- 89%   B+
80% - 84%   B
75%- 79%   C+
70% - 74%   C
60% - 69%   D
0% - 59%   F

CS104 Evaluation Criteria (Fall 2023)

(Subject to adjustments as necessary)

Criteria	Points/ Percentage
Attendance	100 Points (10%)
Progress reports, weekly activities, exercises an participation	190 points (19%)
Database Assignment	100 points (10%)
Team Project (Two Presentations, final report and Database Sub-project)	610 Points (61%)
Total	1000 points (100 %)

- You can earn up to 100 points extra credit (10%).

- Curve is possible but only if absolutely necessary. Please don't count on it since it might not happen at all.

- Weights are subject to change if necessary.

Please note that:

• Class attendance, and in-Class /online participation and collaboration is very important.

• Since I use project-based learning as a key pedagogy for teaching in my classes, we dedicate one of the two class meetings each week to allow teams to meet independently without adding more pressure on your schedule.

- In-group participation and attendance is extremely significant in determining your final letter grade.

Good Luck,
Osama Eljabiri