

Fall 2020

CS 104-003: Computer Programming and Graphics Problems

Osama Eljabiri

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CS104-003: Computer Programming and Graphics Problems
Fall 2020

Course Identification:

Course title: Computer Programming and Graphics

Instructor: Osama Eljabiri, PhD

Office: Room 4210 - GITC Building – 4th Floor (virtual hours during Fall 2020)

Office Hours: One hour before and after class via WebEx and non-stop support via Slack.

Online help: Virtual office via WebEx, Slack and email

Telephone (973) 642-7123 or

Cell Phone: (732) 456-0249 (preferred)

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Class Time/ Location: <https://njit.webex.com/meet/oe2>

Virtual Classroom System: <http://canvas.njit.edu>

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.

3. Course Details:

A. Course outline with approximate week-by-week schedule (subject to change if necessary)

Fall 2020 CS104 SCHEDULE					
Date	Activities	Time	Location	Regular Class	Deliverables
Week 1 Sep 2	Introduction to Computers and CS104 Regular class	During class time	WebEx	YES	Project idea proposal & voting (Due Sunday Sep 6)
Week 2 Sep 9	CS104 Projects Open House Regular class				
Week 3 Sep 16	Hardware and Software Engineering Regular class	During class time	WebEx	YES	Progress report 1
Week 4 Sep 23	Web Development HTML (Part 1) Regular class	During class time	WebEx	YES	Progress report 2
Week 5 Sep 30	Web Development HTML (Part 2) Regular class	During class time	WebEx	YES	Progress report 3
Week 6 Oct 7	Web Development CSS (Part 1) Regular class	During class time	WebEx	YES	Progress Report 4

Week 7 Oct 14	Web Development CSS (Part 2) Regular class	During class time	WebEx	YES	Progress Report 5
Week 8 Oct 21	Online Midterm Exam	During class time	WebEx	YES	Progress Report 6
Week 9 Oct 28	Live Midterm Presentations Regular class	During class time	WebEx	YES	Submit midterm presentation via PPT
Week 7 Oct 14	Web Development Bootstrap Regular class	During class time	WebEx	YES	Progress Report 7
Week 10 Nov 4	Web Development Java Script Regular class	During class time	WebEx	YES	Progress Report 8
Week 11 Nov 11	Database Design & Smart Apps Part 1 Regular class	During class time	WebEx	YES	Progress Report 9
Week 12 Nov 18	Database Design & Smart Apps Part 2 Regular class	During class time	WebEx	YES	Progress Report 10
Week 13 Nov 25 (Nov 27 is holiday)	Database Design & Smart Apps Part 3 Regular class	During class time	WebEx	YES	Progress Report 11
Week 14 Dec 2	Final Presentations Regular class	During class time	Via WebEx Live	YES	

Week 15 Dec 9 (Dec 11 is reading day)	Final report submission NO regular class	Any time	Any where	SUBMIT ON CANVAS	Progress Report 12 (Final)
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Note: Each week is divided into one hour of instruction & one hour of project-based team work.

B. References

No text book is required.

C. 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 2020

Criteria	Points/ Percentage
Attendance	200 Points (20%)
Weekly Activities, Presentations, exercises and Participation	400 points (18%)
Database Experience and Sub-Project	100 points (15%)
Team Project (presentation, report and final product)	300 Points (25%)
Total	1000 points (100%)

- You can earn up to 150 points extra credit (15%).

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

Good Luck,
Osama Eljabiri