CS 104 – Computer Programming and Graphics Problems Course Syllabus, Spring 2023

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Sections 004:

Class location and time – GITC 2400 – Tuesday, Thursday 8:30 am – 9:50 am Classroom Assistant - TBD

Course Information:

- Course Number, Title, Credits CS104 Section 004, Computer Programming and Graphics Problems, 3 credits.
- Prerequisites Course Pre-Requisite: Math 138
- 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.

Course Materials:

- Lecture notes and files posted on Canvas
- No book required
- Software downloads:
 - Notepad++ (Windows) https://notepad-plus-plus.org/downloads/
 - Sublime Text (Mac) https://www.sublimetext.com
 - VPN AT https://ist.njit.edu/vpn (Links to an external site.)
 - FileZilla at: https://filezilla-project.org/ (Links to an external site.)
 - o Microsoft Access

Course Features and Objectives:

- Course Features:
 - It provides hands-on multidisciplinary real-world experiences that integrate business applications with computer technology areas.
 - 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.

- Course Objectives Students who complete this course successfully will have:
 - o Ability to breakdown complex problems into manageable pieces (using WBS and Gantt).
 - o 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:
 - o An ability to apply knowledge of computing and mathematics appropriate to the discipline
 - An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
 - An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
 - An ability to function effectively on teams to accomplish a common goal
 - o An understanding of professional, ethical, legal, security and social issues and responsibilities
 - \circ $\,$ An ability to communicate effectively with a range of audiences $\,$
 - An ability to use current techniques, skills, and tools necessary for computing practice.
 - An ability to apply design and development principles in the construction of software systems of varying complexity.
- Course Details:
 - Tuesdays are dedicated to regular lecture-based classes & presentations.
 - \circ Thursdays are dedicated to independent individual and team project work.
 - Teams are required to report their progress every week and attendance in weekly team meetings is REQUIRED and will be taken.

Course outline with approximate week-by-week schedule (subject to change if necessary)				
Week #	Subject	Deliverables		
1	Introduction to CS 104	Project idea and proposal voting		
2	Hardware and Software Engineering	None		
3	CS 104 Projects Open House and Web Development - HTML (Part 1)	Progress Report 1		
4	PC Build	None		
5	Web Development – HTML (Part 2)	Progress Report 2		
6	Web Development $-$ CSS (Part 1)	Progress Report 3		

7	Web Development $-$ CSS (Part 2)	Progress Report 4
8	Web Development Bootstrap	Progress Report 5
9	Midterm Exam	Progress Report 6
10	Midterm Presentations	Submit Midterm
		Presentations
11	Web Development – Java Script and Smart Apps	Progress Report 7
12	Database Design – Part 1	Progress Report 8
13	Database Design – Part 2	Progress Report 9
14	Final Presentations	Progress Report 10
15	Final Submissions	Progress Report
		(Final)

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

Course format and number of hours of lecture, recitation, and laboratory:

• Students work on real-world entrepreneurial projects for the entire 14 weeks of the semester. 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.

Course Policies

- Class attendance, and in-class /online participation and collaboration is very important.
- Since this course uses project-based learning as a key pedagogy for teaching in 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.

Course Communication

• Canvas (<u>canvas.njit.edu</u>) will be used to post lecture notes, to submit homework and for course discussion. You may also email instructors and classroom assistants.

Assignments, Progress Reports and Weekly Activities

All assignments must be submitted via Canvas. All submitted work (including exams) must include your name and student ID and Team name. No assignments will be accepted late except for special circumstances (such as jury duty or medical problem), for which you must provide documentation approved by Dean of Students.

Weekly announcements on Canvas will include details for each assignment.

Plagiarism will result in zero credit for the assignment and/or an XF grade in the course. Cell phones must be turned off during class.

Students will be informed of any modifications of the syllabus during the semester.

Evaluation Criteria and Grading

The evaluation will be based on the following course requirements (subject to adjustment as necessar	ry)
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Criteria	Percentage		
Progress reports, weekly activities, exercises and participation	20%		
Midterm Exam	20%		
Database Assignment	10%		
Team Project	40%		
Attendance	10%		

The letter grade is based on the overall course score.

Grade Formula								
Grade	A	B +	B	C+	С	D		
Overall Course Score Cutoff	90	85	80	75	70	60		

Exam Policies

Midterm Date - TBD. You must bring a photo ID to all exams. Students with special needs are advised to plan with OARS. There are no makeup exams.

If you believe that you deserve more credit than you have been awarded on a particular exam problem, you may request, within 48 hours of the exam being returned, that it be regraded. Your entire exam will be regraded, which may result in points being added or subtracted.

Exams require to bring your own computer. Any other electronic devices, such as cell phones, smart watches, or calculators must be put away and turned off during the exam.

University Code on Academic Integrity

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: <u>http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf</u>.

Please note that it is my professional obligation and responsibility to report any academic misc onduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at <u>dos@njit.edu</u>"