COUSE SYLLABUS

INFO 5001: Application Modeling and Design, Spring 2023

Instructor:	Professor Kal Bugrara
Classroom:	Boston – Richards Hall 238; Seattle - 225 Terry Ave 306; Silicon Valley –2nd Street 1045.
Schedule:	Lectures at 12pm EST on Tuesdays, Labs 6pm EST on Fridays (additional Labs at on Sundays, time is TBD)
Contact:	Professor Kal Bugrara - kmb@coe.neu.edu
TA:	Archil Lelashvili – lelashvili.a@northeastern.edu

Course Aims

The primary objectives of this course are to introduce software engineering techniques and their application to real-world business problems. Students will be equipped with practical design and programming techniques for the purpose of modelling significant business applications quickly. In a step-by-step manner, the instructor will take you through the process of systematically combining object-oriented programming techniques, business processes, and complex data models to assemble models that are user friendly and meet business requirements. You will learn how to employ systems thinking, the object-oriented paradigm, the visual Programming technique, as well as productivity tools to put together complicated, powerful designs. We will practice simple and smart ways of making software programming enjoyable.

Course Outcomes

Students will learn how to build models that represent the full functionality of software applications. The modularity principle will be used to build powerful models that lend themselves to specifications for software implementation. In addition, the student will learn basic programming techniques to prepare them for INFO 5100 and other technical courses. Overall, the class will teach the students how to be a functional architect and take the lead in using software to drive innovative solutions to business problems, in healthcare, financial, as well as other social challenges.

An Interactive Setting

Besides the lectures, the class will have lab sessions, which will permit continuous interaction. The time will be divided into lecture, lab, help sessions; students will engage in hands-on design and application modeling under instructor supervision. For the duration of the class, we will focus on a single business problem – you will focus on one problem for the entire semester and that you will start small and gradually expand the scope. Students will practice the art of how to break down business requirements into small manageable components, program the components, and assemble those components into useful designs.

Our Approach

Students will select a practical business problem and articulate its underlying user requirements. They will engineer an information model capturing the important aspects of the business problem and define the business processes necessary to deliver the solution that will satisfy the stated business requirements as well as define the user tasks as screen designs. We will work on identifying and incorporating the information needed for the task (screen) at hand. The information model will be linked to user screens through input and output flows and data transformation.

Elements of the Smart Programming

This course will review the essential elements of any programming language—such as arrays, control structures, class definitions and components. It shows how to develop and execute Java applications. Various assignments, which strengthen the understanding of how programming works will be studied.

Tools

The class will use Visual Studio Code for programming and UML visualization tools.

Tentative Schedule of the Course

Lecture		**Topic/Activity**	**Type**
Lecture 1		Introduction to the course	Lecture
Lecture 2		Building components architectures	Lecture
Lecture 3		Application Architectures	Lecture
Lecture 4		Modeling the supply-side	Lecture
Lecture 5		Principle of socio-technical engineering	Lecture
Lecture 6		University Model	Lecture
Lecture 7		Digital Marketing cases	Lecture
Lecture 8		Healthcare case studies	Lecture
		Final Project Announcement	Final Project
		Mid-term exam	Exam
Lecture 9		Advanced Design Techniques	Lecture
Lecture 10		Advanced Design techniques part II	Final Project
Lecture 11		Final Project Status Check	Lecture
Lecture 12		Case Studies	Lecture
Lecture 12		Final Project Status Check	Final Project
Lecture 13		Final Project Submission	
Lecture 14		Final Project Presentation	

Grading

Coursework will be weighted as follows:

Name	**Percentage**
Assignment and Lab	30%
Class Participation	10%
Spot Attendance	10%
Final Project	50%

Plagiarism Policy

When there is evidence that a student has committed plagiarism, copied the work of others, allowed others to copy their work, cheated on an exam, altered class material or scores, or has inappropriate possession of exams, or sensitive material, the incident will be investigated. The consequences for academic dishonesty are severe and that will include a straight F in the course with the potential for dismissal.