New York City College of Technology
Computer Systems Technology Department

CST3613 – Application Development with Databases
(2 lecture hours, 2 lab hours, 3 Credits)

Instructor: **Office:**
E-mail: **Phone:**
Office Hours:

Course Description:

This course intends to enhance students' understanding of Object-Oriented programming and to strength students' programming ability to develop advanced window applications, in specially applications that use Java database connectivity. In this course, students will learn to build application with advanced GUI components and also learn to connection the application with database and be able to execute SQL command through application such as retrieving data, updating data, and etc. It will introduce students to Java collections Framework, including Stack class, Queues as well as sorting and searching algorithm.

Course Objectives:

Upon completion of this course, student will be able to:

1. Understand basic Object-Oriented program design
2. Understand how to use Stack class and Queue class
3. Develop application that apply stack class and queue class
4. Understand basic sorting and searching algorithm.
5. Develop application using advanced GUI components.
6. Develop window application that connects to database.
7. Create program that execute variety of SQL commands on database

General Education Outcomes:

- **SKILLS/Inquiry/Analysis:** Students will employ scientific reasoning and logical thinking.
- **SKILLS/Communication:** Students will communicate in diverse settings and groups, using written (both reading and writing), oral (both speaking and listening), and visual means
- **VALUES, ETHICS, RELATIONSHIPS / Professional/Personal Development:** Students will work with teams, including those of diverse composition. Build consensus. Respect and use creativity.

Prerequisites:

CST 1201 (Programming Fundamentals) and CST 1204 (Database system Fundamentals)

Required Text:

Daniel Laing, Introduction to Java Programming -Comprehensive version, 10th Edition, Pearson.

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For further information, see Student Handbook.

Grading Policy:

Your final grade will be based on your homework programming projects (25%), test (10%), midterm exam (30%), final exam (30%), and class participation (5%).

Suggestions:

Students may study and discuss homework problems together. However, students are responsible for submitting their own original work. Students found cheating will fail the course. If you miss a class, you are responsible for the material. Have the phone numbers of several other students to find out what material you missed

Course Outline:

	Topic	Chapters
1.	Review	
2.	GUI Basics: JButton,JCheckBox,JRadioButton	12
3.	GUI: Introduction to Layout Managers	12
4.	Graphics:Graphics Contexts and Graphics Objects	13
5.	Recursion: Introduction , Recursion Concepts	20
6.	Example Using Recursion: Factorial, Fibonacci Series	20
7.	Searching:Linear Search and Binary Search	25
8.	Sorting:Selection,Insertion,Merge	25
9.	Review and Midterm	
10.	Generics: Introduction, Defining Generic classes	21
11.	Generic Stack Java Collection Framework: ArrayList, Map, List and HashMap	
12.	GUI Components:JComboBoxe, JList, JScrollBar and JSlider	17
13.	Java Database Programming: Introduction,Relational database Systems	34
14.	Java Database Programming :SQL	34
15.	Java database connectivity	34
16.	Review and Final	

Assessment criteria:

For the successful completion of this course a student should be able to:	Evaluation methods and criteria
Demonstrate understanding of the advanced concepts and process of Object-Oriented Programming	Exams, laboratory exercises, and class discussions.
Effectively work individually and in teams to implement the above concepts.	Programming assignments and project.

General Education Outcomes and Assessment:

Learning Outcomes	Assessment Method
SKILLS/Inquiry/Analysis Students will employ scientific reasoning and logical thinking.	Programming project involving analysis of a problem/task, development of use cases, requirements specifications, functional and performance testing.
SKILLS/Communication Students will communicate in diverse settings and groups, using written (both reading and writing), oral (both speaking and listening), and visual means	Documentation and written reports detailing the analysis and experimental results from the above project.
VALUES, ETHICS, RELATIONSHIPS / Professional/Personal Development Students will work with teams, including those of diverse composition. Build consensus. Respect and use creativity.	Students are assigned groups that contain members of varying skill sets and levels. This leads to experience organizing group dynamics and making managerial decisions. Additionally, assigned groups ensure that they will work outside of their social group.

Bibliography

- Elmarsi, R., Navathe, S., *Fundamentals of Database Systems*, 6th edition, Pearson, 2011, ISBN-13: 9780136086208
- Silberschatz, A., Korth, H., Sudarshan, S. *Database System Concepts*, 6th edition, McGraw Hill, 2005, **ISBN-13:** 978-0072958867
- Kedar, S., *Database Management Systems*, 2nd edition, Technical Publications, 2011, ISBN-13: 978-9350381526
- Bai, Y., *Practical Database Programming with Java*, 1st edition, Wiley, 2011, ISBN-13: 9781118104651
- Gaddis, T., *Starting Out with Java: From Control Structures Through Objects*, 4th edition, Addison-Wesley, 2010, ISBN-13: 9780136080206