OUTCOMES BASED LEARNING MATRIX

Course: CTIM168 Advanced Java (3 credits/60 hours)
Department: Computer Technology and Information Management

Description: This course is a continuation of CTIM 157 Introduction to Java Programming. It develops advanced Java programming skills that are required to fully utilize the capabilities of this object-oriented, general-purpose programming language. Topics covered include exception handling, streams and file input/output, dynamic data structures, recursion, inheritance, and graphics. The student will create sophisticated applications and applets. Two lecture and two laboratory hours per week.

Prerequisites: CTIM157, Introduction to Java Programming or permission of department

While completing the table below, remember that the individual outcomes you list in the first column should answer this question: **What must the learner know and be able to do at the end of the course?** Items in the third column should answer the question: **How do we know?** The second column is where teachers can be most creative; it's for pedagogy. Each rectangle in column one should contain just one outcome; the corresponding rectangles in columns two and three, however, may contain more than one item. Using the code at the end of the matrix, indicate the core competencies being strengthened by the outcomes activities and the assessment tools.

*COURSE OUTCOMES	OUTCOMES ACTIVITIES	ASSESSMENT TOOLS
At the end of this course students will be able to create sophisticated applications to include.		
1. Explore Exception Handling	1. Explore Basic Exception Handling (CCT, OC, QL, IL, WC, IG) 2. Define Exception Classes (CCT, OC, QL, IL, WC, IG) 3. Use Exception Classes (CCT, OC, QL, IL, WC, IG)	1. Quizzes, tests, projects, class participation, homework assignments (CCT, OC, QL, IL, WC, IG).
2. Work with Streams and File Input/Output	4. Overview of Streams and File I/O (CCT, OC, QL, IL, WC, IG) 5. Use Text File I/O (CCT, OC, QL, IL, WC, IG)	Referenced above.

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	6. Use Binary File I/O (CCT, OC, QL, IL, WC, IG) 7. Explore File Objects and File Names (CCT, OC, QL, IL, WC, IG)	
3. Manipulate Dynamic Data Structures	8. Create/Use Vectors (CCT, OC, QL, IL, WC, IG) 9. Create/Use Linked Data Structures (CCT, OC, QL, IL, WC, IG)	Referenced above.
4. Use Recursion	10. Explore Recursion (CCT, OC, QL, IL, WC, IG) 11. Program with Recursion (CCT, OC, QL, IL, WC, IG)	Referenced above.
5. Manipulate Window Interfaces Using Swing Objects	12. Explore Graphical User Interfaces (CCT, OC, QL, IL, WC, IG) 13. Explore Basic Swing Details (CCT, OC, QL, IL, WC, IG) 14. Explore Basic Buttons and Action Listeners (CCT, OC, QL, IL, WC, IG) 15. Explore Container Classes (CCT, OC, QL, IL, WC, IG)	Referenced above.
6. Explore Applets and HTML	16. Explore/Program HTML (CCT, OC, QL, IL, WC, IG) 17. Explore/Program Applets (CCT, OC, QL, IL, WC, IG)	Referenced above.
7. Program with Swing Objects	18. Explore Menus (CCT, OC, QL, IL, WC, IG) 19. Design GUIs (CCT, OC, QL, IL, WC, IG) 20. Explore Layout Managers (CCT, OC, QL, IL, WC, IG) 21. Explore Inner Classes (CCT, OC, QL, IL, WC, IG)	Referenced above.

	22. Explore Complex Events and Listeners (CCT, OC, QL, IL, WC, IG) 23. Explore the Swing Class Hierarchy (CCT, OC, QL, IL, WC, IG)	
8. Program with Graphics Objects	24. Explore Basic Figures (CCT, OC, QL, IL, WC, IG) 25. Explore Colors (CCT, OC, QL, IL, WC, IG) 26. Explore Fonts and Other Text Details (CCT, OC, QL, IL, WC, IG)	Referenced above.
To strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Referenced above.	Referenced above.

*Try to express an outcome as an infinitive phrase that concludes this sentence: **At the end of the course, the students should be able to . . ..** Finding the line between too general and too specific can be difficult. In an English Composition course, for instance, it is probably too general to say, "The student should be able to write effective essays." It is probably too specific to say, "The student should be able to write an introductory paragraph of at least 50 words, containing an attention-getting device, an announcement of the narrowed topic, and an explicit thesis sentence." Just right might read, "The student will write introductions that gather attention and focus the essay."

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: critical and creative thinking (CCT); oral communications (OC); quantitative literacy (QL); information literacy (IL); written communication (WC); civic engagement (CE); integrative learning (IG); global learning (GL).