COURSE: Advanced JAVA Programming	GRADE(S): 10 11 12
UNIT 1 : Arrays	

NATIONAL STANDARDS:
ALL STUDENTS…

- Demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:
- Apply digital tools to gather, evaluate, and use information.
- Use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
- Understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
- Demonstrate interpersonal, teamwork, problem solving, and leadership skills
- Develop career awareness, make career choices, and become employable in a variety of careers
- Prepare for further education and lifelong learning

STATE STANDARDS:	UNIT OBJECTIVES:
2.5.11A. Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems. **2.5.11B.** Use symbols, mathematical terminology, standard notation, mathematical rules, graphing and other types of mathematical representations to communicate observations, predictions, concepts, procedures, generalizations, ideas and results. **2.5.11C.** Present mathematical procedures and results clearly, systematically, succinctly and correctly. **2.5.11D.** Conclude a solution process with a summary of results and evaluate the degree to which the results obtained represent an acceptable response to the initial problem and why the reasoning is valid.	**1.1 Implement two dimensional arrays of simple data types to store data** **1.2 Implement two dimensional arrays of Objects to store data** **1.3 Use the MouseListener Interface to get input from the user**
ACTIVITIES: **1.1 – 1.3** **Deal or No Deal Game** **IPAD Number Clicking Game** **2-d Array Activities –** **Initializing, outputting, find high, find low, searching, sum, delete row, delete column** **Ten light bulbs/ten switches activity** **Dodg'em Program** **RESOURCES:** **JAVA Programming – Joyce Farrell**	**ASSESSMENTS :** **Survivor Game Program** **REMEDIATION:** **Do all 2-d array activities using single dimensional arrays** **ENRICHMENT:** **Add Images, AudioClips to programs** **Use the KeyListener Interface to get input from the user**

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UNIT 2 : Classes	

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ACTIVITIES: **2.1 – 2.3** **Write a Point class to simulate Cartesian Coordinates** **Inventory Program (Product class)** **Extending the Product Class Activity** **Date Class** **Clock Class** **Card and Deck Classes**	**ASSESSMENTS :** **Rational Class** **Classes Quiz** **Card Game Simulation Programs** **Racecar Attributes Class Program** **REMEDIATION:** **Write classes to simulate geometric shapes (Square, rectangle, circle, triangle, etc.)** **ENRICHMENT:**

RESOURCES: **JAVA Programming – Joyce Farrell**	**Use the Clock Class to get a digital clock running on the screen** **Use the Clock Class to get an analog clock running on the screen**

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UNIT 3 : Threads	

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ACTIVITIES: **3.1 – 3.3**	**ASSESSMENTS :** **Air Hockey Game**

Rewrite the Clock class to extend Thread **Write a MovingVehicle class that extends Thread** **Write 2 player Spaceship laser shooting game** **Space Invaders game** **RESOURCES:** **JAVA Programming – Joyce Farrell**	**Frogger Game** **Final Project (Student Selected Topic)** **Final Exam** **REMEDIATION:** **Final Project** **ENRICHMENT:** **Use the Clock class to include a count down clock in any previous program.** **Final Project**