Java Programming

Syllabus | 2021-2022 |# 10155G1000 - One Credit

Instructor: Carmanita Monroe **Email:** cmonroe@bessk12.org **Phone:** 205-432-3777

COURSE DESCRIPTION:

Java Programming is a one-credit course designed to provide students with a conceptual understanding of object-oriented programming. Students learn to use Java language object-oriented technologies to solve business problems. Topics also include language fundamentals and the Java language application programming interface (API). Students create classes, objects, and applications using Java language.

PREREQUISITES: Information Technology Fundamentals **COURSE FEE:** $30

CAREER CLUSTER: Information Technology **CAREER PROGRAM:** Programming and Software Development

LAB APPLICATION:	TEXTBOOK:
Microsoft Visual Studios Community https://visualstudio.microsoft.com/vs/community/ Eclipse IDE for Java Developers https://www.eclipse.org/downloads/packages/release/kepler/sr1/eclipse-ide-java-developers Java SE Developoment Kit 16 https://www.oracle.com/java/technologies/javase-jdk16-downloads.html	Microsoft Imagine Academy *Course: 40551A, Introduction to Programming Using Java*
WEBSITE:	**EMAIL:**
Links to all course technologies will be available on the Bessemer Center for Technology website here: https://technologybessemeral.schoolinsites.com/	All students are required to use their school email to access the course technologies we will use.

PROGRAM/INSTRUCTIONAL DELIVERY PLAN:

Students will be expected to meet all of the course goals listed below and demonstrate an understanding of the underlying concepts. The instruction will be cooperative learning, application-based, with a minimum of lecture and demonstration. This course requires research, experiments, and hands-on application. Students will complete several projects that enable them to work in groups and independently. **Assignments will require that students draw upon academic skills in math, science, English, and reading.**

GENERAL SUPPLIES:

- Notebook
- Pen or Pencil (Mechanical or Standard)
- Highlighters

ADDITIONAL RECOMMENDED SUPPLIES: These supplies would be used to organize lessons, fact sheets, and lab printouts from the textbook for test preparation and as a reference in a Java Programming career.

- 5" or 6" Three-Ring Binder
- Dividers or Post It Tabs
- Sheet Protectors
- College ruled filler paper

CAREER AND TECHNICAL STUDENT ORGANIZATION (CTSO):

SkillsUSA - $15 Membership Fee (included in Course Fee)

Various CTSO activities are integrated into the course to prepare students for SkillsUSA competitions.

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All Java Programming students are required to join and participate in SkillsUSA. SkillsUSA is a professional organization designed to be run by students as an integral, co-curricular component of career and technical courses. SkillsUSA members develop leadership abilities, expand workplace-readiness skills, and broaden opportunities for professional growth. Through chapter meetings, contests, leadership conferences, and activities, students will build these skills. Each chapter chooses plans and conducts its operations.

AVAILABLE INDUSTRY-RECOGNIZED CREDENTIALS:

Microsoft Technology Associate 98-388: Introduction to Programming Using Java

DUAL ENROLLMENT:

Dual enrollment is available through Lawson State Community College.

GRADING AND EVALUATION CRITERIA:

Assessments: Grades will be based on quizzes, midterm, and final examinations. Exams are cumulative and given in a variety of formats. An in-class review will be held before each exam.

Classwork/Participation: Grades will be based on keyword terms, review questions, critical thinking, weekly objectives, bell ringers, exit tickets, etc.

Projects/Anchor Assignments: Students will engage in project-based learning independently and as a group. Grades will be based on the understanding and execution of the project objectives, including literacy, numeracy, and writing.

Hands-on/Virtual Labs: Labs allow students to demonstrate their understanding and application of real-world skills. Grades will be based on students' participation and completion of each lab.

The following scale will be used in assessing the student's content knowledge and skills during the course:

EVALUATION CRITERIA:	PERCENTAGE:	GRADING SCALE:	LETTER GRADE:
Assessments	25	100 – 90	A
Classwork/Participation	25	89 – 80	B
Projects	25	79 – 70	C
Labs	25	69 – 60	D
TOTAL	**100**	Below 59	F

CLASS POLICIES:

1. Eating and drinking are NOT permitted in the computer lab or classroom.
2. Students are not to tamper with computers in any way nor to make changes in setup unless directed by the instructor. Any students performing unauthorized actions on computers will be subject to disciplinary action.
3. Sufficient time will be allowed in the classroom to complete the work assigned.
4. Students must leave the work area clean, neat, and ready for the next class. Also, students are to return any textbooks to the book bin and shut down the computer before leaving the classroom.
5. School policies will be followed.

MAKE-UP POLICY:

Students are responsible for informing the instructor within one week after returning that they need to make up assignments or tests. Failure to do so will result in a zero being assigned for the missed work.

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COURSE GOALS:

1. Utilize research results to distinguish between Java and other programming languages.
2. Analyze objects in Java code to develop effective programs.
3. Utilize mathematics skills to assist in evaluating system and software requirements to determine usability.
4. Demonstrate the effective use of Java tools for software development.
5. Explain basics of creating classes, including methods, arguments, and return values.
6. Construct objects to meet Java program requirements.
7. Demonstrate the Java software development process.
8. Design a software application using Java tools.
9. Implement a simple applet by writing the code, performing unit testing, and debugging the program.
10. Determine how to handle errors in package creation.
11. Demonstrate Java software testing.
12. Analyze quality assurance tasks to produce quality products.
13. Identify maintenance and customer support functions.
14. Determine career and entrepreneurial opportunities, responsibilities, and educational and credentialing requirements in the Java programming field.
15. Apply skills in communication, leadership, and teamwork in the Java programming field. Applying problem-solving and criticalthinking skills to resolve workplace conflict.

ESSENTIAL QUESTIONS:

- What distinguishes Java from other programming languages and what are the advantages of using Java?
- How would you use inheritance and polymorphism to design a class hierarchy?
- What considerations are involved in using data abstraction and encapsulation in designing a class?
- How are mathematical operations used to design algorithms?
- What are the types of errors and the procedures for detecting and fixing them?
- How do methods work with respect to parameters, arguments, return statements, return types, and return values?
- What is the software engineering process and how does it apply in the case of Java with respect to reuse of code?
- What are the procedures for insuring that software needs and system requirements are met as a part of Java software testing?
- How can quality assurance tasks be used to produce quality products?
- What are the maintenance and customer support functions to be identified?
- How would you create a cost budget for a feedback loop that includes maintenance and customer support?
- What are the considerations to facilitate the development of a time line for a feedback loop that includes maintenance and customer support?
- How do occupations rely on or utilize Java as an essential skill?
- What are the job requirements for occupations that use Java programming skills?
- How would you define your responsibilities in jobs that use Java in a work environment dedicated to solving business problems?
- What prospective entrepreneurial opportunities could you consider that rely on Java programming skills?
- How can you approximate your greatest interests with respect to occupations?
- What are the credentials that fit a student's goals and the relevant requirements?
- How would you design an employee training program?
- What are the categories of computer crimes with respect to the creation of software products?

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- How would you describe your profession and ethical responsibilities in a job that creates software products?
- What are the steps a company might take to preserve intellectual property rights?
- How are software companies affected by the global marketplace?

COURSE OUTLINE:

Module		Unit Topic
0		**Course Orientation**
1		**Career Opportunities** • Employment and Careers, Job Demand by Industry, Requirements for Java Programming field • Professional Communication
2		**Customer Service** • Java Software Testing • Quality Assurance Tasks • Maintenance and Customer Support Functions
3		**Software Development** • Java vs Other Programming Languages • Anaylze Objects in Java Code • Utilize Mathematics Skills • Number Systems (Binary, Hexadecimal) • Syntax • Effective Java Tool Use • Classes, Methods, Arguments, Return Values • Design a Software Application using Java Tools • Error Handling
4		**Leadership** • Communication Skills, Teamwork • Problem-Solving, Critical-Thinking

CULMINATING PRODUCTS:

1. Programs modified, written, and documented. Exercises and projects performed, executed, and assessed.
2. Knowledge gained from simulating and revising the procedures involved in a maintenance and customer support feedback loop.
3. Additions to portfolios and student confirmation of and enthusiasm for a prospective career using Java programming skills.
4. With students divided into groups:
    a. Role play scenarios
    b. Presentations

NON-DISCRIMINATION STATEMENT

The Bessemer City School System does not discriminate on the basis of race, color, national origin, sex, disability, and, or religion in its programs and activities and provides equal access to the Boy Scouts and other designated youth groups.

The following person has been designated to handle inquiries regarding the non-discrimination policies:

Dr. Jameka Thomas, Section 504 and Title IX Coordinator
1621 – 5th Avenue North | Bessemer, Alabama 35021
Phone: 205.432.3028 | Email: jathomas@bessk12.org