

2010/2011 Java Programming I
PTP305 - 18 weeks
DoDEA Course Description and Competencies

About the Program

Java Programming I prepares students for careers in the IT industry. The course sequence focuses on duties and tasks performed by professionals in computer programming as well as pre-employment and employment skills.

Major Concepts/Content: Programming in Java is a one-semester course designed to teach students Java programming concepts using a structured approach. Students will develop Java applications and applets. Problem solving and program documentation will be emphasized.

Major Instructional Activities: Students will analyze a problem, design a solution, write the program needed to solve the problem, test the program and make the necessary corrections in the program. Activities will include hands-on programming, group and individual assignments and special projects. Students may demonstrate the ability to communicate with instructor and peers via communications software. Students will use electronic learning services to access additional resources.

Major Evaluative Techniques: Assessment will be accomplished by the successful completion of assignments. Assignments will be evaluated for structure, the correct use of programming statements, documentation, conciseness, and appropriateness of the solution to the problem. Success may be demonstrated by written tests, oral tests, class work, projects, or other means deemed appropriate by the instructor.

Essential Software: The focus of this course will be the use of JAVA Development Kit, Java SE and Net Beans to produce a variety of interactive programs.

The table below is a competency list for the Java Programming I course. The competencies are considered essential and are required of all students.

PTP305 18 weeks	JAVA Programming I TASKS/COMPETENCIES
Implementing DoDEA's CTE Course Requirements	
• 001	Demonstrate DoDEA's Workplace Readiness Skills in course activities.
• 002	Identify issues related to this field of study that affect the environment and impact local and global communities.
• 003	Identify Internet safety issues and procedures for complying with acceptable use standards.
Exploring Programming Concepts	
• 004	Outline the development of computers and current industry trends in the programming field.
• 005	Describe the functions of computer hardware, software, and computer theory.
• 006	Describe the software development life cycle (SDLC).
• 007	Describe the development of programming languages and applications.
Exploring Object-Oriented Programming	
• 008	Describe object-oriented programming and related concepts (e.g., encapsulation,

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	abstraction, inheritance, and polymorphism).
• 009	Describe design attributes and methods of each class within a problem description.
• 010	Describe the concepts of reusability.
Implementing Programming Procedures	
• 011	Design a program using pseudo code and/or a flowchart.
• 012	Design an algorithm for a program.
• 013	Code a program.
• 014	Compile a program.
• 015	Execute a program with sample data.
• 016	Debug a program.
• 017	Document a program.
• 018	Maintain a program using SDLC.
Mastering Programming Fundamentals	
• 019	Create a program with user-defined classes.
• 020	Import code from existing sources (e.g., library, pre-constructed code, online resources).
• 021	Code a program that uses correct data types, variables and constants.
• 022	Write code using appropriate operators.
• 023	Code a program accepting user input.
• 024	Code a program that uses looping, conditional, switch, and sequential control structures.
• 025	Code an applet.
• 026	Create a web page to host an applet.
• 027	Code a program that uses industry accepted style and naming conventions.
• 028	Identify and correct syntax, semantic, and run-time errors.
• 029	Code a program that uses exception-handling procedures.
Developing Web Applications	
• 030	Identify programming languages used to create Web applications.
• 031	Describe ways to view applets.
• 032	Design a GUI (graphical user interface) for a Web application.
• 033	Code a Web application.
Developing Employability Skills	
• 034	Research continuing education pathways and careers in the information technology industry.
• 035	Create or update a portfolio containing representative samples of student work (e.g., program design, source code, technical documentation, and output).