**Name of Course/Course Code**

CMP 224 VU – Computer Programming I (Java I) (3 credits)

**COURSE DESCRIPTION**

CMP 224 introduces problem solving and computer programming using the programming language Java. The course teaches how real-world problems can be solved computationally using the object-oriented metaphor that underlies Java. Some of the concepts and techniques covered in the course include data types, expressions, objects, methods, conditionals, iteration, program testing and debugging, interactive programs, data abstraction, interfaces, inheritance, polymorphism, and arrays. No previous programming experience is required; however, this course is intended for Computer Science majors or those who plan on applying to the major. Non-majors are strongly encouraged to take one of our programming courses designed for non-majors. Use of a laptop computer on which you can install software is required.

**INSTRUCTIONAL MATERIALS**

**Required Resources**

Textbook: Introduction to Java Programming, 10th Ed., by Y. Daniel Liang, Prentice-Hall, 2014,

ISBN-0133813460.

<https://moodle.dallastown.k12.pa.us/pluginfile.php/379743/mod_resource/content/1/Java%20Text%20-%20Liang.pdf>

# Course goals:

By the end of this course, successful students will be able to:

1. Demonstrate knowledge and understanding of fundamental programming constructs such as variables, expressions, assignments, input and output operations, control constructs, objects, classes, methods, and recursion.
2. Deploy appropriate theory, practices and tools for problem definition, specification, design, implementation, and testing of programs that use the basic programming constructs listed in the previous item.
3. Use object-oriented design (inheritance, interfaces, polymorphism, abstract classes) as a mechanism for problem solving as well as facilitating modularity and software reuse.
4. Work productively as part of a team and demonstrate your ability for organization, communication, and collaboration in teams.
5. Demonstrate honesty and professionalism by adhering to the Voorhess Academic Honesty Policy, as well as policies that are specific to this course.

**COURSE POLICIES**

**Engagement**

The standard requirement for a 3.0 credit hour course is for students to spend at least

12.0 hours in weekly work. This includes preparation, activities and engagement

**Attendance**

Enrollment in a course obligates the student not only for prompt completion of all work assigned but also for punctual and regular attendance. It is the student’s responsibility to be informed concerning all course assignments. Absences, whether excused or unexcused, do not absolve a student from this responsibility.

For online classes, attendance is defined as participating in at least one graded academic activity each week. Postings not related to the graded discussion topics, emails, or course assignments may be disqualified for attendance purposes.

**Coffee House**

As a student, there may be time when you need to reach out to your classmates for assistance, idea sharing, and support. Please use this forum as a place to help each other, develop relationships with your classmates, and course instructor.

**Microsoft Office**

This course requires the use of Microsoft word. Voorhees College provides Microsoft Office (for PC and Mac) to students at no cost for use on their personal computers.Students can access Microsoft Office products by logging into their Office365 accounts by using their Voorhees College email.

**INSTITUTION POLICIES**

**Academic Dishonesty**

All students are expected to act with civility, personal integrity, respect other student’s dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their own efforts. An environment of academic integrity is requisite to respect for self and others and a civil community.

Academic integrity includes a commitment to not engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty include cheating or copying, plagiarizing, submitting another person’s work as your own, using internet sources without citation, fabricating field data or citations, having another student take exams on your behalf, stealing examinations, tampering with the academic work of another student, facilitating other student’s acts of academic

dishonesty, etc.

Academic dishonesty violates the fundamental ethical principles of the college community and compromises the worth of work completed by others. A student should avoid academic dishonesty when preparing work for any class. If charged with academic dishonesty, students will receive written or oral notice of the charge by the instructor. Students who contest the charge should first seek resolution through discussion with the faculty member. If the matter is not resolved, the student may submit a request to the Department Chair of your major.

**American with Disabilities Act (ADA) Statement**

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Coordinator of Counseling and Disabled Services/Counselor at [wjones@voorhees.edu] or call (803) 780-1272.

**Early Alert Statement**

The Voorhees College Early Alert Program is designed to assist you with your academic success. Should your instructor determine that you need additional help, you will be referred to the Academic Center for Excellence. The Academic Center for Excellence will assist you in successfully completing the course. Please contact the Academic Center for Excellence at [ehammond@voorhees.edu or ysing@voorhees.edu] or call (803) 780-1174 or (803) 780-1379.

# Grades

Your grade in this course will be based on completing work to prepare for class, completing class exercises, the assignments you turn in after working on them outside of class, and exams. Each of these pieces evaluates a different aspect of your engagement with the course goals. In more detail, the activities above consist of the following:

* + Completing work to prepare for class: Software Installation JGRASP.
    - checks for continuous engagement throughout the semester.
  + Completing class exercises: labs, attendance, in-class group work
    - provides an opportunity for group work. Checks for week-by-week understanding of new material.
* Quizzes: to test students quick understanding of course materials
  + Assignments: projects throughout the semester
    - checks for deep engagement with more detailed course material, and ability to complete a programming task.
  + Exams: Final Exams
    - verifies understanding of content that should be recalled quickly.

**Grade computation will be as follows:**

* + Software Installation Readiness: 10%
  + Lab work: 20%
  + Quizzes: 10%
  + Programming Projects: 30%
  + Exams: 30%

**WEEKLY COURSE SCHEDULE**

The standard requirement for a 3.0 credit hour course is for students to spend 12.0 hours in weekly work. This includes preparation and activities regardless of delivery mode.

# Topics

**CODE DEVELOPMENT**

Coding style

Commenting and documentation Modular code design

Skeleton code (stubbing) Testing your code

**PRIMITIVE DATA TYPES**

Numeric: int, double

Logical, character: boolean, char literal values

**ABSTRACT DATA TYPES (Classes)**

Java library classes: String, Scanner, Random, etc. User-defined classes/interfaces

**OPERATORS**

**VARIABLES**

Assignment and Arithmetic Operators

Relational Operators, Increment Operator, Logical Operations, Concatenation

Memory model of assignment and reference Initialization of Instance Variables

Type Conversion, Numeric Cast Static Variables

**EXPRESSIONS**

Assignment

Flow of Control: if, else Null References Packages

Import Statements **RUNNING A PROGRAM**

The main Method

Using System Resources Compiling Java source files Using a debugger Importing Java libraries

**OBJECT-ORIENTED PROGRAMMING**

Defining a Class Public Class Files Objects Constructors

Instance Members, Class Members and Finalization Setter and Getter Methods

Member Classes Local Classes

Nested Top-Level Classes Casting

**METHODS**

**STRINGS**

**I/O**

**ARRAYS**

Method Signature

Access level, return type, name, arguments Static Methods

String manipulation String class methods The StringBuffer class

Standard Input and Output Stream Classes File I/O using Scanner

Interfaces and polymorphic behavior

Arrays of Primitive Types Array indexing

Length of an array

Arrays of Objects 2D Array

# Schedule (always subject to adjustment as needed)

Week 1: Intro to Java

Week 2: Understanding the concept of Java – Video

Week 3: Basic Objects.

Week 4: Branch Statement, Variables

Week 5: Implementation of Objects, Basic Methods and Classes.

Virtual Thursday Lab.

Week 6: Conditional Statements

Week 7: Loops

Week 8: Algorithm development

Testing

Virtual Thursday Lab

Week 9: Arrays

Week 10: Object references

Array Lists

Week 11: Reviews

Virtual Lab

Week 12: Testing our Programs

Week 13: Recursion

Week 14: File Input/Output

Week 15: Course summary and reviews

**Grade computation:**

* + Software Installation Readiness: 10%
  + Lab work: 20%
  + Quizzes: 10%
  + Programming Projects: 30%
  + Exams: 30%

**GRADING SCALE – UNDERGRADUATE**

|  |  |  |
| --- | --- | --- |
| **Points** | **Percentage** | **Grade** |
|  | 90% – 100% | A |
|  | 80% – 89% | B |
|  | 70% – 79% | C |
|  | 60% – 69% | D |
| Below | Below 60% | F |

**Assignments Overview**

Weekly discussions, Weekly quizzes, weekly exercises,

Grading Rubric for exercises:

|  | | |
| --- | --- | --- |
| **Criteria** | **Ratings** | **Pts** |
| This criterion is linked to a Learning Outcome Finish correctly | |  |  |  | | --- | --- | --- | | **10.0 pts**  **Full Marks** | **6.0 pts**  **Partly correct** | **0.0 pts**  **No Marks** | | 10.0 pts |
| Total Points: 10.0 | | |

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**Course Policies:**

**Attendance**

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Unexcused absences for more than the number of times the class is scheduled per week, is excessive, and the student will receive a grade of AD, AP or AF. Absences shall not be recorded against a student until such time as the student is officially registered in the class. The individual instructor may choose to modify the policy as described above. It is of particular importance that a student be aware of scheduled college events that will require class absence and plan accordingly.

For in-seat classes, attendance is taken on a daily basis starting the first-class meeting. An absence is defined as missing more than one-half of a class period.

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**ADA Statement**

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**5.10 Student Grievance Policies (Voorhees College Student Handbook)**

5.10.1 Academic Grievances A student who wishes to file a grievance of an academic nature shall follow the Non-Academic Student Grievance Policy outlined in Volume VI, Section 6.9.

5.10.2 Non-Academic Grievances Voorhees College has adequate procedures to address all written and verbal student complaints. The College ensures integrity in all operations involving students. Students must use specific policies and procedures outlined in the College Catalog, Volumes II, V, and VI of the Voorhees College Policy Manual, and other policy manuals to address specific concerns where applicable. In addition, this procedure may not be used to grieve: 1. Claims based on College purchases or contracts; 2. Claims against a Voorhees College employee on matters that are unrelated to the employee’s job or role at the College; 3. Student disciplinary decisions, since there is a separate procedure for them; or 4. Where another Voorhees College policy and procedure could have been used for the matter being grieved (e.g., harassment or discrimination, academic grievances, FERPA grievances, etc.). Procedures to Students to Follow When Filing a Written Complaint: The procedures set forth below may be used by students who are enrolled as Voorhees College students, or who are participating in a College-sponsored event, at the time of the incident being grieved. The person filing the grievance must be the alleged victim of unfair treatment; a grievance cannot be filed on behalf of another person. The existence of this procedure does not bar students from also filing claims in other forums to the extent permitted by state or federal law. The resolution process described below must be initiated within 60 business days of the decision, action, or events giving rise to the grievance.

The Vice President for Student Affairs or the Executive Vice President and Academic Dean as applicable may extend this time limit if the grievant makes the request for extension within the 60-day period, for good cause shown.

1. The Vice President for Student Affairs and the Executive Vice President and Academic Dean are the points at which written student complaints may be filed for traditional and nontraditional students, respectively. The written student complaint must:
2. State how the decision or action is unfair and harmful to the student and list the Voorhees College policy or state or federal laws that have been violated, if applicable; Voorhees College Policy Manual: Volume V – Page 89
3. Name the respondent parties (the person(s) against whom the grievance is filed);
4. State how the respondents are responsible for the action or decision; and d. State the requested remedy.
5. The Vice President for Student Affairs or the Executive Vice President and Academic Dean receive the written and signed student complaint. If it is clear on the face of the written complaint that it has not been filed within the time limit, or pertains to a matter not grievable under this procedure, or is from a person without grievance rights as outlined above, the applicable Vice President shall so indicate in a letter to the student and the complaint shall be dismissed.
6. If the complaint satisfies the above elements, it is referred to the head of the appropriate unit or to one of the planning committees or standing committees of the College for advisement and policy clarification.
7. Consultation is made with the Accreditation Liaison Officer to review if the complaint is in non-compliance with the Criteria for Accreditation or Policies and Procedures of the Commission on Colleges. Other campus officials are contacted for clarification of College policies and/or procedures.
8. After an interview with the student, a written response is provided to the student based on College policies and procedures. The student complaint and written response are forwarded to the President of the College. A student may appeal the College’s response, by writing, to the President of the College within ten (10) business days of receiving the response. The President will review the complaint, the response, and consult appropriate College personnel for additional information. The President will notify the student in writing of the final decision regarding the appeal and the complaint.