COUNTY COLLEGE OF MORRIS
Course Information Outline

Course Title Computer Science I **PREFIX&NUMBER** CMP 128

Lecture Hours 2 **Laboratory Hours** 2 **Credit Hours** 3 **Course Fee** $40

Department Chairperson Approval _____ **Date** 10/15/12

Division Dean Approval _____ **Date** 10/16/12

General Education Information:

Categories:

☐ Communications ☐ History ☐ Humanities ☐ Mathematics
☐ Science ☐ Social Science ☒Technological Competency
☐ Diversity *(check if course also meets diversity category)*

Integrated Goals: *(check all that apply)*

Ethical Reasoning and Action ☒Information Literacy

1. **Catalog Course Description**
   In this introductory course, students obtain fundamental computer science knowledge and develop programming skills using an object-oriented approach, incorporating security awareness, human-computer interactions and social responsibility. This course provides students with a basic foundation in computing history, computing careers, computer organization, operating system responsibilities, software development process, algorithm design and analysis, programming paradigms, and human interaction design.

2. **Prerequisite(s)**
   MAT 011 Basic Math, Placement basis OR ENG 025 or ENG 022 or ENG 007

3. **Co-requisite(s)**
   None

4. **Textbooks**
   Invitation to Computer Science. 5th ed. Schneider, G. Michael, and Judith L. Gersting. Course Technology, 2010.

   Introduction to Programming Using Java. Version 6, Eck, David J. http://math.hws.edu/javanotes6/ (free on-line textbook)

5. **Supplementary Books and/or Materials**
   USB Drive for saving classwork.

6. **Specialized equipment, supplies, facilities, for classes limited by enrollment or restricted by accreditation and/or equipment limitations.** (Information will be used to determine differential funding category.)
   Computer lab equipped with the Java JDK, Eclipse/NetBeans IDE, TextPad with Java Extensions, Microsoft Visio.

7. Course Content (List of Topics)

- Historical context of computing (1 hour): history of computing and programming.
- Computing Careers (1 hour).
- Ethical conduct (1 hour): codes of ethics and responsible conduct; intellectual property, copyright, and plagiarism; "Ten Commandments for Computer Ethics".
- Programing languages (1 hour): binary code, assembly code, third-generation languages; compilation versus interpretation; comparison of object-oriented, procedural, functional programming and scripting.
- Machine level representation of data (1 hour): overview of the storage of instructions, numbers and characters in a Von Neumann machine.
- Software tools and IDE (2 hours): compiling, interpreting, linking, executing, testing and debugging.
- Fundamental programming constructs (11 hours): basic syntax and semantics of a high-level language; variables (scope and lifetime), types, expressions, and assignment; self-documentation; standard and file I/O; conditional and iterative control structures; structured decomposition; methods.
- Fundamental algorithms and problem-solving (6 hours): problem-solving strategies; the role of algorithms in the problem-solving process; implementation strategies for algorithms; debugging strategies; the concept and properties of algorithms.
- Fundamental data structures (6 hours): primitive types, arrays, strings, references.
- Secure code (2 hours): data validation; exception handling; data encapsulation; information hiding and integrity; strict data typing.
- Overview of operating systems (1 hour): role and purpose of operating systems; file management.
- Human-computer interaction (1 hour): design concepts and fundamental graphical interface design; standard API graphics.
- Program development process (3 hours): program development phases, with emphasis on design, implementation, and testing and debugging strategies.

8. Statement of Course LEARNING OUTCOMES

Using software development tools and following a program development process, plan, design, create, test and debug computer programs that demonstrate basic high-level programming language concepts, algorithms and data structures.

- Incorporate human-computer interaction design strategies in program development.
- Relate important events in computing history.
- Describe different career options in computing.
- Identify ethical conduct as it relates to computing.
- Compare and contrast different programming language paradigms and programing levels.
- Describe machine-level data storage.
- Identify operating system roles and responsibilities.

9. Statement of Relation to Curriculum(s)

Required course for A.S. in Computer Science.
Required course for A.A.S. in CIS-Management Information Systems Option 3501.
Required course for A.A.S. CIS-Technical Support Option 3502.
Required course for A.A.S. CIS-Game Development Option 3504.
Technical elective for A.A.S. CIS-Administrative Support Option 3503.
Technical elective for A.A.S. Digital Media Technology 3530.

10. Format for offering the course (check all that apply)

☒Traditional ☒On-Line ☒Hybrid