COUNTY COLLEGE OF MORRIS
Course Information Outline

Course Title Computer Science II **PREFIX&NUMBER** CMP 129

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

Department Chairperson Approval TAMurphy **Date** 10/16/12

Division Dean Approval [signature] **Date** 10 · 23 , 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**
   This course is the second in a three-course sequence that provides students with a foundation in Computer Science. Students develop intermediate-level programming skills using an object-oriented approach, with an emphasis on software development, fundamental algorithms and data structures, software assurance and ethical conduct.

2. **Prerequisite(s)**
   CMP 128 or CMP 113 or equivalent

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

4. **Textbooks**
   C# 2010 for Programmers, Fourth Edition or current edition; Deitel, Paul, Deitel, Harvey. Prentice Hall, 2011.

5. **Supplementary Books and/or Materials**
   None

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.)
   Microsoft Visual Studio.NET, Microsoft Visio, Microsoft SQL Server Express (should be installed with Studio.NET) and Internet access.

7. **Course Content (List of Topics)**
   - Software development process (4 hours): software life cycle; software tools; characteristics of maintainable software; program code verification and data validation; test case design.
   - Object-oriented design and modeling (5 hours): Abstract Data Types (ADTs); Application Programming Interfaces (APIs); Unified Modeling Language (UML);

class diagrams; modeling tools; reusable software components; cohesion and decoupling.

- Programming Language Indoctrination (2 hours): basic syntax, data types, input/output, method signatures.
- Object-Oriented Programming (7 hours): encapsulation and information hiding; inheritance; polymorphism; crating and using class libraries.
- Intermediate programming constructs (3 hours): properties, overloading operators and methods; overriding methods; constructors and destructors; abstract, generic and interface classes; delegates.
- Intermediate computing algorithms (5 hours): searching (linear, binary), sorting (selection, insertion, merge sort); recursive algorithms; algorithmic complexity.
- Intermediate data structures (7 hours): arrays (including multi-dimensional and jagged), linked lists.
- Human-Computer Interaction (2 hours): design concepts; interfaces between people and technology.
- Event-driven programming (4 hours); GUI forms, controls, mouse/keyboard event handling.
- Simple database integration (2 hours): database I/O; embedded SQL queries.
- Software assurance (3 hours): buffer overflows; memory leaks; garbage collection; malicious code; unauthorized and back-door access; security-aware exception handling.
- Societal and Professional issues (1 hour): computing and the Internet; social impact of computing; privacy.

8. Statement of Course LEARNING OUTCOMES

Upon completion of this course, students will after successful completion of assignments, projects, and examinations;

- Use software design and development tools to create functioning object-oriented software programs using programming constructs.
- Design and create a GUI application
- Create a program that interfaces to a database
- Apply and implement searching and sorting algorithms
- Specify algorithmic complexity
- Describe software assurance approaches
- Report on a societal or professional computing issue
- Work individually and collaboratively to complete tasks accurately and on deadline

9. Statement of Relation to Curriculum(s)

Required for A.S. Computer Science. Required for the A.A.S. CIS-Management Information Systems Option 3501 and Game Development Option 3504. Technical Elective for all other CIS/MED option.

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

☒Traditional **On-Line** **☒Hybrid**