

Common Course Outline

Course Prefix and Number: CSCI 1106

- A. Course Title Fundamentals of Computer Science 1
- B. Semester Credit Value 4 credits
- C. Prerequisites CSCI 1101 or prior programming experience, and MATH 0210 or equivalent
- D. Catalog Description
The first course in a two-course sequence for students who are planning to major or minor in Computer Science. Emphasis is on algorithm design, analysis, and refinement. Students will be introduced to functions and procedures, control structures, static data structures, file manipulation, and recursion. An object-oriented programming language will be used as a formal way of expressing algorithms and data.
- E. General Course Purpose
- 1) To provide the student an introduction to the fundamentals of computer science and programming.
 - 2) To provide the first course in a two semester sequence for transfer to a four year institution.
- F. Course Information
1. Hours per Week
 - a. Classroom 3 hrs
 - b. Laboratory 1 hr
 - c. Clinical
 - d. Other (describe)
 2. Degree for which Course is Intended AAS in ENGR, Transfer in Computer/Information Sciences
 3. Program of Study for which Course is Required
Depends upon specific engineering area and transfer program (i.e. May be required for some students and not for others – dependent upon the area of further study they will pursue.)
- G. Learner Outcomes
At the conclusion of the course the student should be able to:
1. Understand and write computer programs employing:
 - a. Basic input and output techniques
 - b. Selection statements
 - c. Repetition statements
 - d. Arrays
 - e. Strings
 - f. Procedures, functions and subprograms
 - g. Recursion
 - h. File manipulation
 - i. Objects
 - j. Data Abstraction
 - k. Pointers

2. Understand basic Object Oriented Programming concepts

- a. Encapsulation
- b. Polymorphism
- c. Inheritance

H. ARCC Guiding Principle(s) Satisfied

Identify the learner outcomes (from G) which relate to each of the guiding principles listed below or describe how the guiding principle(s) is/are used in this course.

- 1. Clear Thinking 1,2
- 2. Effective Communication 1,2
- 3. Accepting Diversity 1
This allows the student to express individuality.
- 4. Ethical Decision-Making 1

I. Minnesota Transfer Curriculum Emphasis Area(s) Satisfied: None

J. Entry Level Skills/Knowledge

Choose: 1 (basic), 2 (pre-college), or 3 (college)

- 1. Mathematics: 3
- 2. Reading: 2
- 3. Writing: 2

K. Major Areas of Course Content:

- 1. Usage of an object-oriented language(Java or C++)
- 2. Structured programming concepts(sequential, selection, and iteration).
- 3. Subprograms and recursion.
- 4. Data abstraction and Data hiding
- 5. File manipulation
- 6. Utilizing objects

L. Outcomes Assessment:

- 1. Learner outcomes that will be assessed (from G): All

2. How information will be collected to assess outcomes:

Students will be assessed in a variety of ways including, but not limited to: written homework assignments ; programming assignments with the laboratory portion of the course; programming assignments outside of lab, a semester programming project(either as a group or as an individual project), periodic hour exams, and a comprehensive final examination will be administered.

Transfer institutions will be contacted and input regarding the preparation of ARCC students at their institution will be sought.

3. When information will be collected (i.e., each semester, yearly):

Course: Each semester.

Transfer: Yearly contact will be maintained with the (primary) institutions to which ARCC students transfer. Verbal input and GPAs will contribute to the assessment.

4. Measure(s) used to determine if an outcome has been achieved:

Course:

- a. written exams
- b. programming assignments
- c. completion of final project
- d. final examination
- e. homework assignments
- f. class discussion
- g. laboratory reports

Transfer: GPAs and verbal input from transfer institution “contacts”

5. Person/Group responsible for information collection: Course: Course instructor

Transfer: Computer Science coordinator and all faculty teaching CS courses

6. Person/Group responsible for reviewing the resulting data:

Computer Science coordinator and all faculty teaching computer science courses

M. Procedure for Credit by Examination:

This will be a two step process:

- a) A comprehensive examination will be administered
- b) A programming project will be assigned that is commensurate with the level of expertise of an average student that has completed this course.

N. Proposed Implementation Date: Fall 2000