

CS 10A Course Outline as of Fall 2021**CATALOG INFORMATION**

Dept and Nbr: CS 10A Title: INTRO TO PROGRAMMING

Full Title: Introduction to Programming Concepts and Methodologies

Last Reviewed: 2/8/2021

| Units | | Course Hours per Week | | Nbr of Weeks | Course Hours Total | |
|---------|------|-----------------------|------|--------------|--------------------|--------|
| Maximum | 4.00 | Lecture Scheduled | 3.00 | 17.5 | Lecture Scheduled | 52.50 |
| Minimum | 4.00 | Lab Scheduled | 3.00 | 6 | Lab Scheduled | 52.50 |
| | | Contact DHR | 0 | | Contact DHR | 0 |
| | | Contact Total | 6.00 | | Contact Total | 105.00 |
| | | Non-contact DHR | 0 | | Non-contact DHR | 0 |

Total Out of Class Hours: 105.00

Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: CS 10

Catalog Description:

Specification, design, implementation, testing, debugging, maintenance, and documentation of computer programs. Topics include algorithms, languages, software engineering, control structures, functions, and arrays. Numerous programs are written in C++. Intended for the absolute beginner, both computer science majors and those seeking a general introduction to computer programming.

Prerequisites/Corequisites:**Recommended Preparation:**

Eligibility for ENGL 1A or equivalent or appropriate placement based on AB705 mandates

Limits on Enrollment:**Schedule of Classes Information:**

Description: Specification, design, implementation, testing, debugging, maintenance, and documentation of computer programs. Topics include algorithms, languages, software engineering, control structures, functions, and arrays. Numerous programs are written in C++. Intended for the absolute beginner, both computer science majors and those seeking a general

introduction to computer programming. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 1A or equivalent or appropriate placement based on AB705 mandates

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

| | | | |
|-------------------|----------------------|------------|-----------|
| AS Degree: | Area | Effective: | Inactive: |
| CSU GE: | Transfer Area | Effective: | Inactive: |

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| IGETC: | Transfer Area | Effective: | Inactive: |
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| CSU Transfer: | Transferable | Effective: | Spring 1989 | Inactive: |
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| UC Transfer: | Transferable | Effective: | Spring 1989 | Inactive: |
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CID:

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| CID Descriptor:COMP 122 | Programming Concepts and Methodology I |
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| SRJC Equivalent Course(s): | CS10A OR CS10B |
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| CID Descriptor:COMP 112 | Introduction to Programming Concepts and Methodologies |
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| SRJC Equivalent Course(s): | CS10A |
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Certificate/Major Applicable:

Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. Describe the principles of structured programming and be able to describe, design, implement, and test structured programs using currently accepted methodology.
2. Explain what an algorithm is and its importance in computer programming.

Objectives:

At the conclusion of this course, the student should be able to:

1. Create correct and efficient algorithms.
2. Describe the software-development life cycle.
3. Employ the basic elements of the C++ language.
4. Implement algorithms using C++ flow-control constructs.
5. Write descriptive and helpful program documentation.
6. Implement algorithms using arrays.

Topics and Scope:

I. Software Life-Cycle

- A. Design
- B. Development
- C. Styles
- D. Documentation

- E. Testing
- F. Maintenance
- II. Procedural Versus Objected Oriented Programming - Survey of Current Languages
- III. Program Design Tools and Programming Environments
- IV. Documentation
- V. Coding Conventions
- VI. Data Types, Variables, Expressions, Sequential Processing
- VII. Arrays
 - A. Declaring and allocating arrays
 - B. Multiple-subscripted arrays
- VIII. Control Structure
 - A. Selective structures: if and switch
 - B. Repetitive structures: loops
- IX. Algorithms
 - A. Simple Sorting
 - B. Searching
- X. File I/O
 - A. Files and streams
 - B. Sequential access files
- XI. Error Handling
- XII. Passing Parameters by Value and by Reference
- XIII. Principles of Testing and Designing Test Data

All topics are covered in both the lecture and lab parts of the course.

Assignment:

Lecture-Related Assignments:

1. Read approximately 30 pages per week
2. Complete 2-8 examinations including final exam

Lab-Related Assignments:

1. Complete 10-15 programming assignments, with documentation, using the C++ programming language

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

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| Written program documentation |
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| Writing 10 - 20% |
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Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

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| Programming assignments |
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| Problem solving 20 - 60% |
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Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations
0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Exams, Final Exam: (Multiple choice, true/false, matching items, completion, programming problems)

Exams
20 - 60%

Other: Includes any assessment tools that do not logically fit into the above categories.

None

Other Category
0 - 0%

Representative Textbooks and Materials:

Starting Out with C++ From Control Structures through Objects. 9th ed. Gaddis, Tony. Pearson. 2017