

Computer Science Department at Moorpark College

To: Computer Science Majors

From: The Computer Science Department, Moorpark College

Re: Computer Science Courses Required for your Major

The following computer science courses are required for **C.S. majors** planning to transfer:

CS M125 Programming Concepts and Methodology I, Using C++ (3 units)

CS M135 Programming Concepts and Methodology II, OOP & Data Structures Using C++ (3 units)

CS M145 Computer Architecture and Organization (w/assembly language) (3 units)

Math M155 Discrete Structures (3 units)

CS M10J Intro to Computer Programming Using Java (4 units) and **CSM10P** Python

Programming (4 units) are elective courses which may be required by your transfer institution.

CS M10J and CSM10P may be taken at any time.

Here is the list of CS courses:

CS M01: Intro Computer Science

Units: 3

Programs referencing this course

Moorpark College General Education Requirements

Music Technology

Geographic Information Systems

Course Description

Students will learn the overview of the main concepts in computer science. Such as data storage, binary, Octal, hexadecimal numbers, logic circuits, Von Neumann architecture, programming languages, operating systems, algorithms, software engineering, data abstraction, computer programming (Intro to C++), networking and Internet (how to design a web site using HTML), database systems, ethical issues, and data structures.

Prerequisites: none

CS M125: Programming Concepts and Methodology I

Units: 3

Formerly known as: CS M10A

Reason for Change: **To align with C-ID and to develop ADT.**

Programs referencing this course:

Associate in Science in Computer Science for Transfer

Prerequisites: none

Advisories on Recommended Preparation:

CS M01 and basic computer usage knowledge and MATH M06 or MATH M07

Course Description

Provides an introduction to the C++ programming language. Covers the basic programming concepts such as syntax, semantics, algorithms, data types, input/output, assignment statements,

conditional statements, loop structures, arrays, functions, strings, file operations, pointers, and Object-Oriented Programming.

CS M135: Programming Concepts and Methodology II

Units: 3

Formerly known as: CS M10B and CSM20 **together**, so it is a compressed CSM10B and CSM20.

Programs referencing this course:

Associate in Science in Computer Science for Transfer

Prerequisites: CS M125 or CSM10A

Course Description:

Covers the object oriented programming concepts such as inheritance, polymorphism, abstract data type (ADT), operator overloading, recursion, exception handling, templates, containers, data structures (linked list, stack, queue, binary tree, binary search tree, heap, graphs), and the associated algorithms.

CS M145: Computer Architecture & Organization

Units: 3

Programs referencing this course:

Associate in Science in Computer Science for Transfer

CSM145 is the new version of **CSM30**.

Course Description

Covers boolean algebra, logic gates, and flip-flops, computer architecture, computer organization, basic digital circuits (full adders, half-adders, decoders, multiplexers, registers and ALU's), and 80x86 assembly language programming including mnemonics, registers, different operand types and addressing modes. Studies the mapping of statements and constructs in a high-level language into sequences of machine instructions. Discusses the internal representation of simple data types, structures, and examines numerical computation, data representation errors, procedural errors, data representation including number systems, signed & unsigned

Prerequisites: CSM125 or CSM10A Applies to Associate Degree

CS M155: Discrete Structures

Units: 3

Programs referencing this course:

IGETC

Moorpark College General Education Requirements

Associate in Science in Computer Science for Transfer

CSU GE-BREADTH

Course Description

Covers functions, relations, sets, basic logic, proof techniques, basics of counting (multiplication, factorial, permutation, combination, Pigeonhole theorem), graphs, trees, discrete probability (addition, multiplication, complement rules), and conditional probability. Methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.

Covers number theory, cryptography, and linear congruence equations. Applies to Associate Degree. C-ID: COMP 152

Prerequisites: (CSM125 or CS M10A) and MATH M07 or (MATH M05 and MATH M06)

CS M10P: Python Programming

Units: 4

Programs referencing this course:

Computer Programming, Web Design, Geographic Information Systems

Course Description

Covers the fundamentals of computer programming: basic data types, switching and looping constructs, functions, modules, file processing, exception handling, recursion, object oriented programming, inheritance, polymorphism, arrays, lists, sets, dictionary, GUI, basic input and output, both interactive and with files. Explains some principles of algorithm design and analysis as well as techniques for testing programs. Applies to Associate Degree.

Prerequisites: none

CS M10J: Intro to Comp Prog Using Java

Units: 4

Programs referencing this course:

Moorpark College General Education Requirements
Music Technology, Computer Programming, Web Design

Course Description

Uses the Java computer language to introduce basic programming concepts such as algorithms, data types, and control structures (conditional statements and loops), strings & characters, debugging, documentation, exception handling, templates, file processing, object-oriented programming, inheritance, polymorphism, graphical user interface (GUI), applets, recursion, and creating multimedia programs. Applies to Associate Degree.

Prerequisites: none

Advisories on Recommended Preparation

CS M01 and basic computer usage knowledge or (CSM125 or CS M10A) and MATH M06 or MATH M07

CS M10DB: Intro to Database Management Systems & Applications

Units: 3

Programs referencing this course:

Computer Programming, Web Design

Course Description

Introduces modern database concepts while emphasizing the relational database model. Includes such topics as design methodologies, normalization of tables to reduce redundancies, supertypes and subtypes to reduce nulls, data integrity, referential integrity, and using locks and other techniques for concurrency control in a multi-user database. Describes the factors that should be

balanced during the design of a database. Documents databases, entity relationship diagrams, relational schemas, and data dictionaries are described. Applies the principles by performing exercises using MS SQL Server, MySQL, or other database management system. Uses SQL and other languages to create and fill tables, retrieve data, and manipulate it by stored programs.

Prerequisites: none

CS M10DS: Intro to Data Science

Units: 3

Programs referencing this course:

Data Science Certificate

Course Description

Provides a comprehensive introduction to the field of Data Science. Studies machine learning which is a type of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Distinguishes supervised and unsupervised machine learning (Data Mining) algorithms. Studies the emergence of massive datasets containing millions or even billions of observations which provides the primary incentive for the field, such data sets arise, for instance, in large-scale retailing, telecommunications, astronomy, engineering, health, and internet social media. Provides the key knowledge of data development, management, statistical analysis, data visualization, and inference.

Prerequisites: none

Recommended Preparation: CS M10P or CS M10A or CS M125 or CS M10J

CS M15W: Client-Side Web Development Using HTML/JavaScript

Units: 3

Programs referencing this course:

Web Design and Web Development

Course Description

Introduces students to different methodologies used to develop webpages. Explains the syntax and semantics of Hyper Text Markup Language (HTML). Introduces the different tools to create dynamic and static webpages using Cascading Style Sheets (CSS) and JavaScript. Develops written, oral communication and analysis skills in students so they can review and critique web content from a developer's perspective.

Prerequisites: none

CS M16PH: Server-Side Development using PHP

Units: 3

Programs referencing this course:

Web Design and Web Development

Course Description

Applies best coding practices using Personal Home Page (PHP) language. Introduces different techniques to connect client-side code hypertext markup language (HTML) with databases using queries. Performs different input/output (I/O) operations to manipulate data. Enables students to

manage sessions and track user activities among different pages using sessions, cookies and database queries.

Prerequisites: none

CS M10R: Intro to R Programming

Units: 3

Programs referencing this course:

Data Science Certificate

Course Description

Introduces computer programming and algorithm design using the R programming language. Covers an introduction to R, from installation to most of the statistical concepts, and machine learning. Includes the fundamentals of computer programming concepts: basic data types, variables, if-else, loops, functions, vectors, objects, matrices, arrays, data frames, lists, factors, basic input, data visualization, and output with files. Explains some principles of algorithm design and analysis as well as techniques for testing programs.

Prerequisites: none

Recommended Preparation: CS M10P or CS M10A or CS M125 or CS M10J

Associate in Science in Computer Science for Transfer

REQUIRED CORE: Complete the following

CS M10A	Intro-Programming Using C++	3 or 4
or CS M125	Programming Concepts and Methodology I	
CS M135	Programming Concepts and Methodology II	3
CS M145	Computer Arch. & Organization	3
CS M155	Discrete Structures	3
PHYS M20A	Mechanics of Solids and Fluids	4
PHYS M20AL	Mechanics of Solids/Fluids Lab	1

Additional Requirements (15 units)

LIST A: Complete 2 semesters of Calculus (10 units)

MATH M25A	Calculus with Analytic Geometry I	5
or MATH M25AH	Honors: Calculus Analytic Geom	
MATH M25B	Calc/Analy Geometry II	5

LIST B: Select and complete one course (5 units)

BIOL M02A	General Biology I	5
or BIOL M02AH	Honors: General Biology I	

Total = 32/33 units

See the Moorpark College Catalog for descriptions of these courses. Check with your transfer institution and the M. C. Counseling Department for additional requirements for the C.S. transfer degree.