

CS 7B - Section 3481 - Spring '19

Computer Science II

MW 2:00-4:30 in DM 24

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This syllabus is an alpha version of an open source platform.

**Course Description:** This second course in computer science introduces more advanced topics in programming. Students will use modularity to develop solutions for larger-scale programming problems. Recursion, file processing, and object-oriented programming with standard template library containers are implemented. This course will be taught using the C++ programming language.

**Prerequisite:** CS 007A with a C or better and MATH 012 (precalculus) with a C or better.

**Texts:** *Programming Principles and Practice Using C++* (2nd ed). ISBN: 978-0-321-99278-9, by Bjarne Stroustrup (Addison-Wesley, 2014)

### “Learning Outcomes”

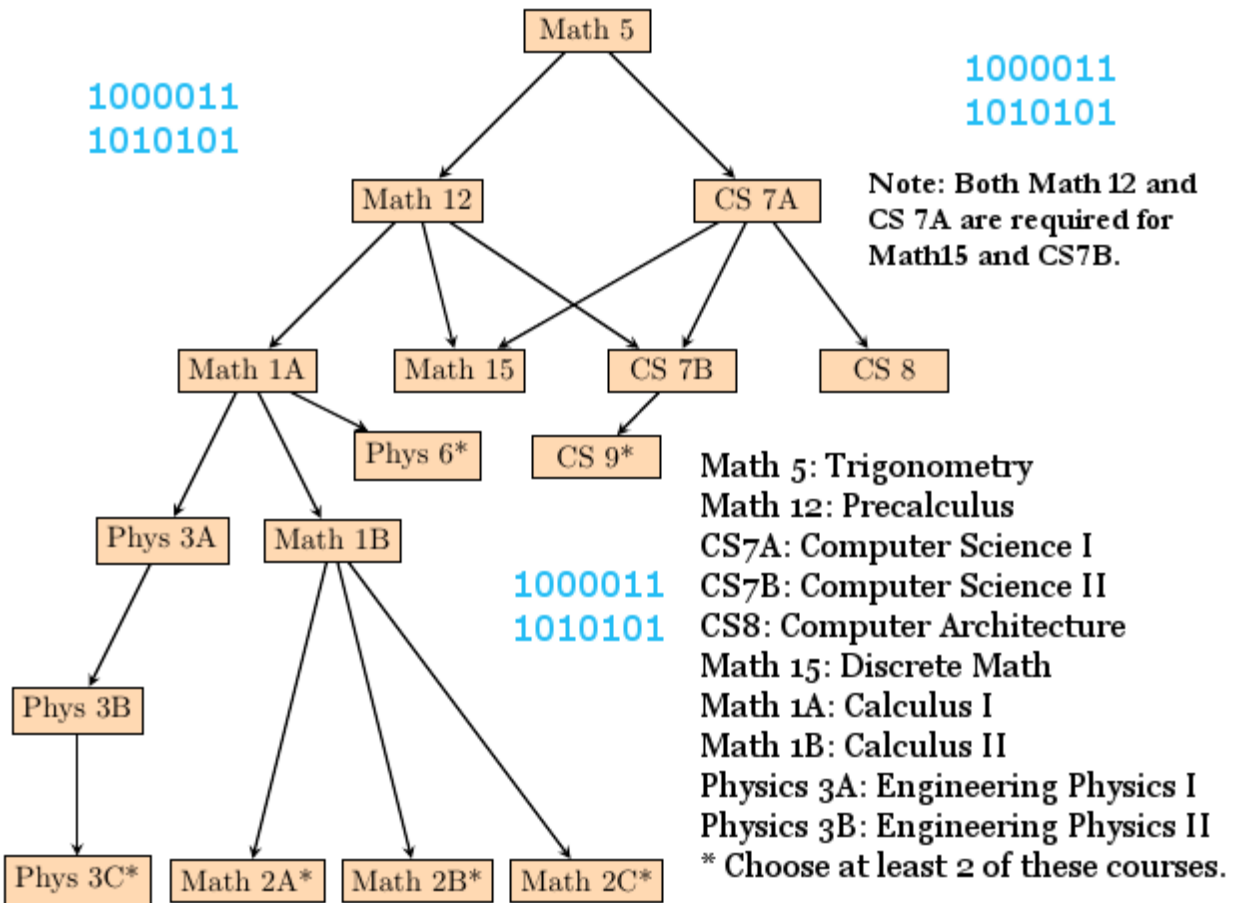
- Create programs which use standard C++ language features, including functions, arrays, arrays of arrays, pointers, pointer arithmetic, dynamic memory allocation, and structured data (structs).
- Design and implement an abstract data types with member variables, functions, and constructor/destructor.
- Design and implement modular programs, created in appropriate .h and .cpp files, that use multiple classes with inheritance relationships, friend functions, friend classes, and operator overloading, using modern C++ language features and STL vectors and iterators where appropriate.

### Course Objectives:

At the completion of this course, students will be able to:

1. Develop skills in the design and development of computer software utilizing more advanced features of C++.
2. Select and implement appropriate data structures from the Standard Template Library such as vectors, lists, stacks, queues and sets in the design computer programs to solve complex problems from math and science.
3. Create classes which implement dynamic memory allocation techniques appropriate to the design of computer programs.
4. Implement advanced file reading and writing methods.
5. Demonstrate an understanding of and use techniques of inheritance and polymorphism.
6. Implement application using third-party libraries, especially SFML.

## Computer Science Program Prerequisites Map



### Course Policies:

- **Piazza**
  - You will receive an email on your cod.us account inviting you to Piazza, where homework, projects, class notes, etc. will be posted: <https://piazza.com/class/jrf96r1ew6d5hk>.
- **Homework**
  - Homework will involve close reading (and re-reading) course materials and working exercises from the text.
- **Projects**
  - A large part of your evaluation in this course is based on your ability to complete various projects in a timely manner. Some of these will be individual, and for some you will work in teams.

You'll want to start the projects as soon as possible and, when you get stuck on something, bring your questions to class and/or post on Piazza and/or see me in my office.

- **Lecture vs. Lab and Computers**

- Learning is best accomplished by combining the processes of listening, looking and writing—each occupies a relatively independent neural network, the whole of which is greater than the sum. Therefore it is recommended that you take notes during lecture.
- Access to a computer with an Visual Studio 2017 (Community Edition) IDE outside of class is essential—you will need this to be able to modify code and test your changes in a timely manner. See the Resources Guide.

- Grades in the **C** range represent performance that **meets minimal expectations**; Grades in the **B** range represent performance that is **substantially better** than the expectations; Grades in the **A** range represent work that is **excellent**.

• <b>Letter Grade Distribution:</b>	$\geq 90.00$	A	70.00 - 79.99	C
	80.00 - 89.99	B	60.00 - 69.99	D
	.	.	$\leq 59.99$	F

• <b>Grade Distribution:</b>	Quizzes	10%
	Midterms	25%
	Final Exam	15%
	Projects	50%

- **Attendance and Absences**

- Attendance is expected and will be noted. If you're not there, you missed it.
- Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

### Academic Honesty Policy

In addition to skills and knowledge, College of the Desert aims to teach students appropriate ethical and professional standards of conduct. The college catalog specifies that students are expected to "Integrate universally accepted values such as honesty, responsibility, respect, fairness, courage and compassion into judgments and decision-making." and that, "Students are expected to act in an honest and trustworthy manner. Work performed on examinations or other forms of evaluation must represent an individual's own work, knowledge and experience of the subject matter. Students are expected to follow the classroom rules established by each instructor." Any attempt to deceive a faculty member or to help another student to do so will be considered a violation of this standard.

Week	Tentative Course Schedule:
Week 1, Jan. 28	<p>Project 0: Set up VS2017 and debug From the text:</p> <ul style="list-style-type: none"> <li>• §8.1 Technicalities</li> <li>• §8.2 Declarations and definitions</li> <li>• §8.3 Header files</li> <li>• §8.4 Scope</li> <li>• §8.5 Function call and return</li> <li>• §8.6 Order of evaluation</li> <li>• §8.7 Namespaces</li> </ul> <p>Exercises: 2-7,10-14</p>
Week 2, Feb. 4	<ul style="list-style-type: none"> <li>• §9.1 User-defined types</li> <li>• §9.2 Classes and members</li> <li>• §9.3 Interface and implementation</li> <li>• §9.4 Evolving a Class: The Date Class</li> <li>• §9.5 Enumerations</li> <li>• §9.6 Operator overloading</li> <li>• §9.7 Class Interfaces</li> <li>• §9.8 The Date class</li> </ul> <p>Project 0 is due Exercises: 2-18 (Library, Rational and Money)</p>