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## CSC 235 Programming Challenges

(3 contact hours – 0 lab hour - 3 credits)

### Syllabus<sup>1</sup>

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- **General Information**

<b>Instructor</b>	
<b>Office</b>	
<b>Phone / Email</b>	
<b>Class Time</b>	
<b>Class Location</b>	
<b>Office Hours</b>	
<b>Teaching Assistant</b>	

- **Required Textbook**

**Competitive Programming 3**, *third Edition*, Steven Halim, Lulu publishing, 2013.

- **Supplementary Textbook**

**Programming Challenges: The Programming Contest Training Manual**, S. Skiena and M. Revilla, Springer-Verlag, 2003.

- **Course Description**

Practicing advanced problem solving techniques: arrays, stacks, queues, strings, sorting, arithmetic, algebra, combinatorics, number theory, backtracking, geometry, graphs algorithms and traversals. Introduction to dynamic programming. Preparing students majoring in computer science for international and regional ACM programming contests.

- **Course Prerequisites**

CSC 225 (Programming and Data Structures).

- **Course Category**

Elective

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<sup>1</sup> This syllabus may change as needed. In such a case, students will be informed accordingly

- **Course Outcomes:**

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

1. Design efficient solutions for simple and advanced programming problems.
2. Implement rapid and accurate solutions for programming problems.
3. Work within a team effectively in a competitive atmosphere.
4. Participate in the Regional and International ACM Programming Contests.

- **Tentative Schedule**

<b>Topic</b>	<b>Week</b>
Syllabus + Ch0: Introduction	1
Ch1: Arrays and Iterations	1
Ch2: Data Structures	2
Ch3: String	2
Ch4: Sorting	2
Ch5: Arithmetic and Algebra	3
Ch6. Combinatorics	3
Ch7: Number Theory	4
Ch8: Backtracking	4
Ch11: Dynamic Programming	5
Ch10: Graph Algorithms	5
Ch9: Graph Traversal	6
Ch13: Geometry	6

- **Grading Scheme**

Programming Assignments	<b>30%</b>
Exams (including in-class contests)	<b>20%</b>
Project Presentation	<b>20%</b>
Final Exam	<b>30%</b>