SI340 Theory of Computing

Course Policy, Fall AY20

<u>Coordinator</u>: LT M. D. Moeller USN, x3-6572, moeller@usna.edu

<u>Course Description</u>: This course presents the theoretical foundations for computing, including the study of formal languages, finite state machines, pushdown automata, Turing machines and computability.

<u>Credits</u>: 3-0-3

<u>Learning Objectives</u>:

1. Understand the various models of computation, from both the formal language and the corresponding machine model perspective;

2. Understand some of the practical applications of these formal models of computation and language; (supports Outcome CS-6)

3. Apply the mathematical methods that let us describe computation and language in order to understand formal algorithms.

<u>Student Outcomes</u>:
1. Analysis. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Implementation. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communication. Communicate effectively in a variety of professional contexts.
4. Ethics. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Teamwork. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
CS-6. Theory. Apply computer science theory and software development fundamentals to produce computing-based solutions.

<u>Textbook(s)</u>: *Theory of Computing: A Gentle Introduction*, Kinber & Smith, Prentice Hall, 2001.

<u>Extra Instruction</u>: Extra instruction (EI) is strongly encouraged and should be scheduled by email with the instructor. EI is not a substitute lecture; students should come prepared with specific questions or problems.

<u>Collaboration</u>: The guidance in the Honor Concept of the Brigade of Midshipmen and the Computer Science Department Honor Policy must be followed at all times. See
`www.usna.edu/CS/resources/honor.php`. Specific instructions for this course:

- Homework: Homework: You may collaborate as much as you like on homeworks, but the actual pencil-to-paper or fingers-to-keyboard effort must be your own. As always, all collaboration must be cited.

- Group Projects: There will be two group projects this semester. You may only communicate within your group, with your instructor, or with the MGSP leaders on the anything related to solving group project problems.

- Exams:All work on exams must be your own.

All collaboration and outside sources should always be cited. The same rules apply for giving and receiving assistance. If you are unsure whether a certain kind of assistance or collaboration is permitted, you should assume it is not, work individually, and seek clarification from your instructor.

Classroom Conduct: The section leader will record attendance and bring the class to attention at the beginning of each class. If the instructor is late more than 5 minutes, the section leader will keep the class in place and report to the Computer Science department office. If the instructor is absent, the section leader will direct the class. Drinks are permitted, but they must be in reclosable containers. Food, alcohol, smoking, smokeless tobacco products, and electronic cigarettes are all prohibited. Cell phones must be silent during class.

Late Policy: Penalties for late submission of graded work may vary among courses or from semester to semester, but they will be the same for all sections of a given course. For *this* course:

- Homework assigned with class x is due at the beginning of class $x + 1$, unless stated otherwise. Late homeworks are not generally acccepted. With an excused absence, arrange the turning in of homework with your instructor.

- Group Projects must be submitted by the due date.

Grading:

	6 weeks	12 weeks	16 weeks	Final
Homework	20%	20%	30%	20%
Midterms	80%	75%	60%	34%
Projects	0%	5%	10%	10%
Exams	0%	0%	0%	36%
Total	100%	100%	100%	100%