

CMPS 378        Software Engineering  
Spring 2018     104 Thurman (TT 1100–1220)

Instructor:     Dr. Nigel Gwee  
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Office Hours:   TT 100–200.

Text:            Stephen R. Schach, *Object-Oriented and Classical Software Engineering*. 8<sup>th</sup> edition.  
ISBN 978-0-07-337618-9.

**Course Description:** Introduction to the principles of software engineering. The course includes discussion on life-cycle models, software system design and implementation, and testing with verification and validation. Various design and implementation methodologies will be examined and contrasted, including classical and object-oriented approaches. The course will be project-driven and students will work on a team project and fulfill various roles during the course of the project.

**Prerequisite:** Credit in CMPS 300 (Programming Languages). All students must have a LiveText account.

This course addresses Program Educational Objectives 1, 2, 3, and 4; Program ABET Outcomes a, b, c, d, e, f, g.

Program Educational Objectives: The Educational Objectives of the Computer Science Program are to produce graduates who:

**PEO 1:** Successfully enter the competitive job market or pursue advanced study;

**PEO 2:** Are proficient in identifying, formulating, and solving a wide range of computing problems;

**PEO 3:** Are capable of working collaboratively, and communicating effectively with team members, constituents, and the public;

**PEO 4:** Uphold professional and ethical responsibilities, and contribute to society through active engagement.

Program ABET Outcomes: Each graduate by the time of graduation will demonstrate:

**Outcome a:** an ability to apply knowledge of computing and mathematics appropriate to the discipline; [PEO 1, PEO 2]

**Outcome b:** an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution; [PEO 1, PEO 3]

**Outcome c:** an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs; [PEO 1, PEO 2]

**Outcome d:** an ability to function effectively on teams to accomplish a common goal; [PEO 1, PEO 3, PEO 4]

**Outcome e:** an understanding of professional, ethical, legal, security and social issues and responsibilities; [PEO 1, PEO 4]

**Outcome f:** an ability to communicate effectively with a range of audiences; [PEO 1, PEO 3]

**Outcome g:** an ability to analyze the local and global impact of computing on individuals, organizations, and society. [PEO 1, PEO 2]

**Course Objectives:** Students should be able to:

1. Create and understand specifications for software projects.
2. Design using standard tools, and implement the designs in a high level programming language.
3. Work in software teams, and communicate their ideas effectively to other members. Professional deportment should be shown at all times.

**Course Learning Outcomes [CLO]:** Upon, completion of this course, students will be able to:

1. Apply requirements analysis techniques. [ABET b] [Course Objective 1]
2. Apply modular- and user interface design techniques. [ABET a, c] [Course Objective 2]
3. Organize and execute software projects. [ABET a, c] [Course Objective2]
4. Implement and verify software design using a high level programming language (C++ or Java). [ABET a, c] [Course Objective 2]
5. Practice inter-personal and project management skills in a team development environment. [ABET d, e] [Course Objective 3]
6. Assimilate and apply ideas discussed in current literature. [ABET a] [Course Objective 3]
7. Communicate developmental ideas through project presentations. [ABET f] [Course Objective 3]
8. Complete a comprehensive software engineering project, emphasizing requirements and design, but including implementation and verification. [ABET c, g] [Course Objectives 1, 2, 3]

**Target:** 80% will perform at the level of performance 1-2 in achieving ABET Outcomes a–g.

**Grading:**

Attendance	20%
Assignments	10%
Project	10%
Midterm	20%
Final	40%

90 – 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
below 60%	F

**Administrative Information and Requirements:**

Missed exams and assignments turned in late earn 0 points. Any questions concerning grading of exams and assignments must be resolved with the instructor within a week following the return of the graded item.

All students are expected to adhere strictly to the highest standards of academic integrity. All infractions will be dealt with severely. Please refer to the academic dishonesty policy at <http://www.cmps.subr.edu/academicdishonesty.htm>.

**Topics and Weekly Content:**

Introduction to the Software Life Cycle

W1–2 Scope of software engineering

W3–4 The software process

W5–6 Software life-cycle models

W7–8 Technical terms and software development tools

W9–10 Testing—Verification and Validation

W11–12 Object-oriented programming

W13–14 Reusability, portability, and interoperability

W15 Management planning

The Phases of the Software Life Cycle

W1–3 Requirements

W4–6 Specifications

W7–9 Object-oriented analysis

W7–8 Design  
W10–12 Implementation  
W13–14 Integration  
W 15 Maintenance

### **Administrative Policies:**

Please turn OFF all cell phones and other communication devices when class and exams are in session. No recording devices of any kind are allowed.

Inappropriate and/or disruptive behavior will be reported to the Office of Student Life for disciplinary review as per the Code of Student Conduct.

**LIVETEXT SUBSCRIPTION** – Southern University and A&M College-Baton Rouge has entered into partnership with LiveText, Inc. to provide online academic resources for student collaboration and learning outcomes assessment. Therefore, all students enrolled in this course are required to purchase a subscription from LiveText, Inc. through the Southern University Bookstore. LiveText, Inc. provides students with the electronic tools and services needed to serve them in their courses and in their career or academic pursuits beyond graduation.

LiveText is a dynamic tool that will enable you to:

- Create electronic portfolios for storing and displaying coursework for use anytime and anyplace.
- Share your resumés, professional portfolios and virtually any projects that can be photographed, video recorded, and uploaded to prospective employers and others who need or want to know about your accomplishments.
- Engage in discussion boards with other students, exchange feedback, and create study groups and other types of social networks.
- Complete assignments in key/required courses where LiveText has been embedded (without LiveText, you will not be able to complete these assignments).
- Create a complete record of your academic career that is malleable and easily accessible.
- Engage in developing a results-driven culture of assessment at Southern University.
- Participate in a process that will allow for data-driven curricular improvements that foster improved student learning and performance.

**MOODLE ACCESS** – Southern University and A&M College at Baton Rouge will use Moodle extensively in this course. Moodle is a learning management system designed to help teachers and students communicate effectively online. The course syllabus, class materials (e.g., handouts, PowerPoint slides, journal articles, assignments, readings, etc.) will be placed on Moodle. The student should check Moodle DAILY for all assignments submitted via Moodle. If the student has problems with his Moodle account, he/she should contact Ms. Chrisena Williams-Brown in the Division of Information Technology via email at [chrisena\\_williams@subr.edu](mailto:chrisena_williams@subr.edu) or via phone at (225) 771-5017.

**ACADEMIC DISHONESTY** – The University defines academic dishonesty as premeditated and un-premeditated fraudulent behavior. Premeditated fraud is defined as conscious, pre-planned, deliberate cheating with materials prepared in advance. Unpremeditated fraud is defined as cheating without the benefit of materials prepared in advance. See the Southern University and A & M College Catalog for a more detailed definition of academic dishonesty. In addition, administrative regulations governing the conduct of students enrolled at the University are contained in the Code of Student Conduct. A copy of the Code of Student Conduct may be obtained from the Office for Student Affairs.

**ADA COMPLIANCE** – Students with documented disabilities who believe that they may need accommodations in this class are encouraged to contact the Disability Services Coordinator in the Office of Disability services, 234 A.C. Blanks Hall, 225-771-3950 (Voice/TTD), 225-771-5652 (Fax), as soon as possible to ensure that such accommodations are implemented in a timely fashion. Students who need accommodations must be registered with the Office of Disability Services. Students are responsible for informing the instructor of any instructional accommodations and/or special learning needs at the beginning of the semester. All discussions will remain confidential.