Software Engineering: COSC 3370
School of Engineering & Computing Sciences
Spring 2018

A. COURSE INFORMATION

Course number/section: 3370.001
Class meeting time: TR 11:00 AM- 12:15 PM
Class location: CI-128
Course Website: http://sci.tamucc.edu/~asheta

B. INSTRUCTOR INFORMATION

Instructor: Dr. Alaa Sheta
Office location: CI-342
Office hours: TR 12:30 – 4:00PM
Telephone: 825-3711
e-mail: alaa.sheta@tamucc.edu
Appointments: Must be scheduled at least a week in advance by email

C. COURSE DESCRIPTION

The application of engineering principles to the development and maintenance of high quality large software systems, delivered on time and within budget, including the development and application of processes and tools for managing the complexities inherent in creating these systems.

D. PREREQUISITES AND COREQUISITES

Prerequisites
COSC 2437

Corequisites
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
Software Engineering, I. Sommerville, Pearson Education, 10th Ed.

Optional Textbook(s) or Other References
Software Engineering: A Practitioner’s Approach, R.S. Pressman, McGraw Hill, 8th Ed.

Supplies
Some way to archive your documents (Flash drive, Dropbox/Cloud, etc)
F. **STUDENT LEARNING OUTCOMES AND ASSESSMENT**

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

- Describe the basic concepts of software engineering
- Understand the significance of engineering and programming to software development
- Utilize a variety of techniques to develop good requirements
- Use pseudocode and other techniques for component design
- Understand the use of data flow diagrams
- Develop strategic test plans
- Compute significant software metrics
- Discuss current developments in software engineering
- Understand effective project management techniques

By the end of this course, students should be able to:

1. Achieve team-assigned tasks
2. Listen and communicate in team settings
3. Meet deadlines and team duties
4. Apply current software development methodologies or techniques
5. Apply software principles to solutions to problems of varying complexity
6. Apply documentation principles in the construction of software systems

G. **INSTRUCTIONAL METHODS AND ACTIVITIES**

This course will be a mixture of lectures and discussions. The student is expected to actively participate in all class activities. The student is also expected to do outside work on assignments, reading, class presentation and project documentation.

H. **MAJOR COURSE REQUIREMENTS AND GRADING**

This is a high-level core course. This is a difficult course that demands all students attend all classes! Regular completion of all reading, homework, and other outside assignments, are absolutely essential for success in this course. Your course grade will be decided on your performance in the homework assignments, quizzes, projects, and two exams. The distribution of points is as follows:
ACTIVITY | % of FINAL GRADE
--- | ---
Two Exams | 40
Quizzes | 10
Assignments | 10
Team Project | 40

Grade Scale: A (90-100%)  B (80-89%)  C (70-79%)  D (60-69%)  F (<60%)

Readings
1. The reading assignment will be provided on Bb every week.
2. It is the student duty to do the reading.
3. If you have any question about the reading please let me know as early as possible.
4. You may visit during the office hours or setup a meeting via email.
5. Inability to finish the reading might affect your learning outcomes.

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction and Overview</td>
<td>Read Chapter 1</td>
<td></td>
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<tr>
<td>Week 2</td>
<td>Software Processes</td>
<td>Read Chapter 2</td>
<td>HW1</td>
</tr>
<tr>
<td>Week 3</td>
<td>Requirement Engineering</td>
<td>Read Chapter 4</td>
<td>Project Proposal Submission</td>
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<tr>
<td>Week 4</td>
<td>Project Planning</td>
<td>Read Chapter 23</td>
<td>HW2: Project Planning (MS Project)</td>
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<tr>
<td>Week 5</td>
<td>System Modeling</td>
<td>Read Chapter 5</td>
<td>HW3</td>
</tr>
<tr>
<td>Week 6</td>
<td>Unified Modeling Language</td>
<td>Lecture Notes 1, 2, 3, 4, 5, 6, 7</td>
<td>Lecture Notes</td>
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<tr>
<td>Exam 1 (02/22/2018)</td>
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<tr>
<td>Week 7</td>
<td>Design and Implementation,</td>
<td>Read Chapter 7</td>
<td>HW4</td>
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<tr>
<td>Week 8</td>
<td>Agile Software Development</td>
<td>Read Chapter 3</td>
<td>Project Progress Report Submission</td>
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<td>Week 9</td>
<td>Spring break holiday</td>
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<tr>
<td>Week 10</td>
<td>Project Progress Presentation</td>
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<td>Student will give a full presentation for their accomplishment.</td>
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<tr>
<td>Week 11</td>
<td>Software Reliability Modeling</td>
<td>Lecture Notes</td>
<td>HW5</td>
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<tr>
<td>Week 12</td>
<td>Software Cost Estimation</td>
<td>Lecture Notes</td>
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<tr>
<td>Week 13</td>
<td>Project Management</td>
<td>Read Chapter 22</td>
<td>HW6</td>
</tr>
<tr>
<td>Week 14</td>
<td>Selected Topic in SW</td>
<td>Lecture Notes</td>
<td>Final Report Submission due on 04/19/2018 for all students. No late submission is allowed.</td>
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<tr>
<td>Exam 2 (04/19/2018)</td>
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<tr>
<td>Week 14</td>
<td>Final Project Presentations</td>
<td>In Class</td>
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<tr>
<td>Week 15</td>
<td>Final Project Presentations</td>
<td>In Class</td>
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<tr>
<td>Tuesday May 8, 2018: Continue Project Presentations (11:00–1:30 PM)</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. **COURSE POLICIES**

**Course Syllabus:** We will meet in lecture on Tuesdays and Thursdays, when new material will be presented. Non-text material may also be included in the lectures. The assignments, quizzes, and exams will be given during the class hours. You are responsible for all the material presented during the lecture.

**Homework and Programming Assignments:** There will be 5-6 homework assignments that reflect a direct implementation of course topics.
1. Assignment will be given either on Tuesday or Thursday every week.
2. All assignment will be due the following Saturday at 12:00 PM.
3. You need to submit your HW on Bb.
4. Any assignment MUST have a cover page which include the assignment title, assignment number, and student name. 10% will be deducted if submission guidelines are not followed.
5. You need also to include the code for the assignment in a pdf format. Compressed file are not allowed. 50% will be deducted from your grade if you submitted a compressed file.
6. You need to include a description of the process you followed to develop your code, any tuning parameters, tables and figures. Submitting the results without an explanation is not accepted. 50% will be deducted from your grade.
7. For late submission, maximum two days after the deadline. In this case, 50% will be deducted from your grade.
8. It is your responsibility to check frequently the posted contents, assignments or announcement on Bb.

**Team assignment/project:**
1. For team assignment, if any, every team member has to make submission on Bb.
2. For team project, every team member has to make submission on Bb.
3. Failure to do that will lead to zero grade for that student.

**Selection of the Term Project:**
1. You/your team need to meet with Dr. Sheta at the first/second week of classes to discuss various aspects related to the selection of your term project.
2. You get points on making that meeting.

**What your project needs:**
1. Searching to build an acceptable background about the project subject.
2. Select appropriate software tool/technique to build your software.
3. Be able to analyze the data collected or pre-process the data.
4. Understand the architecture of your proposed software system.
5. Know how to test the performance of your software system.
6. Presentation and a technical report based the format and guidelines provided.
Proposal Guidelines: The following items need to be included in your proposal and extensively described in your final report.

1. You need to clearly state the Project Objective and Motivation
2. If possible and you can have a client, you need to provide your experience with the client. If not, some team members have to pretend that they are a client and be able to provide the client perspective of the product.
3. You need to understand and follow the standard software requirements. Dr. Sheta will provide and discuss some common examples.
4. Project design which includes: block diagram, flow charts, UML, … etc.
5. Project Time plan: You need to provide a plan of work using MS Project software.
6. Discuss the system testing process and if you had a chance to use real data provided by a client, if any.

Final Project Evaluation Criteria: The evaluation of the final report will be based on the quality of the following items:

1. Project Overview and Objectives
2. Requirements
   • Plain-English Description
   • Functional vs. Non-Functional
   • Structured Requirements
3. Analysis
4. Design
5. Implementation
6. Testing Activities
7. Appendices
   • Meeting Minutes
   • Major Code Components
   • User Manual
   • Recommended Future Work

Attendance/Tardiness: You are expected to be in attendance, punctual, and prepared for class. If you are more than 10 minutes late to class, you will be counted as tardy. Please make sure that you will never be tardy to any of your classes or accept the consequences.

Quizzes: Quizzes will be conducted any time in the lecture without a prior notice.

Exam contents and dates: Exams will cover part/all lecture, assignments, quizzes and reading material. Exams must be taken on the hour they are scheduled. In the event, if you cannot attend the class to take the exam due to some emergency or some unavoidable situation (such as serious illness, death in the family, participation in university sports, religious observations, and so on) you must notify me as soon as possible before the exam and also you must validate your absence by providing me a document (e.g., with a letter from your doctor). If you do not understand or have question about the exam content, it is your responsibility to ask questions. Do that early enough before the exam, at least 24 hours. The first exam will be given on October 03, 2017, the
second exam will be given on November 2, 2017 during the scheduled class time. The final exam
day is December 12, 2017 from 11:00 AM-1:30 PM.

Grading Error: All questions concerning a test score or grading of a returned test or assignment
must be resolved within one week. It is always a good idea to keep all of your work until the end
of the semester. In case of any recording errors or doubts, you may produce them for correction or
verification.

Extra Credit: There is no EXTRA CREDIT

Academic Honesty Policy: You are expected to avoid all forms of academic dishonesty as defined
in Catalog. In addition, students are expected to behave in an ethical manner in all class activities.
If you feel uncertain about a particular activity, please speak to me BEFORE problems arise.
Ethical behavior is a requirement for passing this course. All work submitted for grading must be
the student's own work. Plagiarism will result in a score of 0 (zero) for the work or dismissal from
the course and the Dean of Students office will be notified. No copying from another student's
work, of any class, is allowed. It is the student's duty to allow no one to copy his or her work.
Anyone found cheating and/or copying, in the exams or assignments, in the instructor's opinion,
will receive an automatic F for the course.

Collaboration: There is no collaboration allowed on homework assignments.

Attendance: You must attend all classes. In class attendance will affect your grade. You are
responsible for any materials covered or handed out or announcements made for the tests,
homework assignments in your absence. Records of your attendance will be maintained and
reported to the university. Students found missing classes without the instructor's permission will
be automatically withdrawn from the course.

Absence from class: Students are responsible for all materials covered in class and assigned.
Should a student be absent from class, it is his/her responsibility to get the notes, etc. for that
missed class. More important, should there be assignments, it is the student responsibility to obtain
such assignments. No excuse will be accepted for assignments not turned in because the student
was absent when it was due.

Cell Phone Use: Cell phones and pagers must be turned off during class. First violation
receives a warning. All succeeding violations result in a ten points deduction on the last exam.
Any violation during a quiz or exam results in a ten percent deduction off the corresponding
paper. No warnings for quizzes or exams.

Laptop Use: Laptops, Tablets cannot be used in the class.

Food in Class: No food in the class or labs.

Student Security Statement: Please read the Student Security Statement.
K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. *Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.* Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the
final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116. If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816. (http://disabilityservices.tamucc.edu/)

- **Statement of Academic Continuity**
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

I. **OTHER INFORMATION**

- **Academic Advising**
The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.