

Science and Technology

ITEC 4260 – Software Testing and Quality Assurance, Spring 2019

**Instructor Information**

Instructor: Dr. Tacksoo Im

Office: W-2115

E-mail: tim@ggc.edu

Cell Phone: 678-682-5653

**Communication**

* I want to have face-to-face conversations with you, when possible. However, we may need to establish a time and place via email or by phone.
* The fastest way to connect with me is via GGC email. I am happy to set up a face-to-face meeting with you, when possible. However, we may need to establish a time and place via email or by phone.
* You may contact me via phone, email or texting. Do not hesitate to call me, I will answer if possible. If you contact me and I do not respond immediately, I will respond to you as quickly as possible, usually by 6:00 the day you contact me unless there are extenuating circumstances.
* When corresponding by email, I will communicate with you using only your GGC email. You should check your GGC email every day. Emails from other domains (yahoo.com, gmail.com, hotmail.com, etc.) will not receive replies due to the Family Educational Rights and Privacy Act (FERPA).
* When you email me you should consider the email as official correspondence. As such, the email should not appear as a text message but should have proper grammar and punctuation.
* You are expected to check your GGC email daily. Class notices, assignment changes and other information will be sent to you through your GGC email. Not checking your email/D2L will not be an excuse for a missed assignment.

**Technology Covenant**

* Technology will be used to deliver content, provide resources, assess learning, and facilitate interaction, both within the classroom and in the larger learning community. This covenant provides a general guideline for the course. I reserve the right to make periodic and/or necessary changes to the covenant, including: technology use and communication channels, in order to accommodate the needs of the class as a whole and fulfill the goals of the course.

**Expectations of Students**

* All students in this course are required to have a laptop in accordance with the IT Laptop Program.
* I expect students to access course or individual communications within 1-2 days excluding weekends.
* Students should check GGC email regularly (at least twice a day).
* Cell phones should be set on silent and stowed during class.
* Laptop computers should remain off, except when they are being used for an in-class activity or for taking notes.
* All completed assignments will be submitted through Brightspace (Desire2Learn) or GitHub. Unless otherwise specified, daily assignments must be submitted prior to class time. Major projects are due by midnight on the due date unless other arrangements are made.

### Course Information:

Class Time: **MW 3:30 pm – 4:45 pm Section 1**

Class Location: **B-2200**

### Course prerequisites:

The course prerequisites of this course is ITEC 3860. ITEC 3860 introduces key portions of the Software Development Lifecycle (SDLC) which will provide an important foundation for the material presented in this course.

### Course Outcome Goals:

1. Learn about theory of software testing.
2. Gain skills in various testing environments.
3. Develop test cases.
4. Practice QA and software testing via projects.

### Integrated Educational Experience Goals:

The IEE goals are a set of learning outcomes achieved in all GGC graduates. These outcomes are achieved as a result of learning experiences across the academic and student affairs programs. This course directly contributes to the goals **bolded** below.

* **Clearly communicate ideas in written and oral form.**
* Demonstrate creativity and critical thinking in inter- and multidisciplinary contexts.
* **Demonstrate effective use of information technology.**
* **Demonstrate an ability to collaborate in diverse and global contexts.**
* **Demonstrate an understanding of human and institutional decision making from multiple perspectives.**
* **Demonstrate an understanding of moral and ethical principles.**
* **Demonstrate and apply leadership principles.**
* **Demonstrate quantitative reasoning.**

### Keys to success in this course:

Good education is a shared responsibility. In order to help you succeed in this course and do your best I will:

1. Ensure the syllabus and tentative class schedule is uploaded into D2L by the first day of the semester. I will keep this updated as changes occur throughout the semester.
2. Provide guidance on what is expected of you on quizzes, assignments and exams.
3. Post grades and feedback on all of your work as soon as possible. Typically, this will be within 1 week from the due date.
4. Provide you my GGC email and cell phone number. I will respond as quickly as possible, usually immediately but if not, usually by the end of the day. Do not hesitate to call/text/email me with your questions. I will answer if I am available and if not, will answer as soon as possible. Do not worry about waking me up. My phone knows how to go to do not disturb.
5. Meet with you and provide assistance outside of class time.

In order for you to succeed in this course and do your best, you should commit yourself to:

1. Come to class prepared. We have a lot of material to cover and the better prepared you are, the more you will get from this course. I do not intend for this to be a lecture course but rather a discussion class. You must participate for this to be successful.
2. Complete assigned readings and questions prior to coming to class. Question answers are used to adjust the lecture/discussion material which means you need to complete these on time.
3. Ask questions. Your education up to this point has focused on development and producing code and associated artifacts. This course focuses on how to test code.
4. Do not delay starting on exercises. There are two assignments that you will be given almost a month for each. Expect it to take you most of this time to complete them. Remember, software estimation is extremely difficult and usually done incorrectly by professional developers. If you look at an assignment and think, “Oh, that will be easy.” You are probably missing something.
5. Ask questions, yes, I am repeating myself.

### Required Text and Supplies:

Art of Software Testing – Glenfod Myers

Explore It! Reduce Risk and Increase Confidence with Exploratory Testing - Elisabeth Hendrickson

### Grading Policy:

|  |  |
| --- | --- |
| A=90-100% |  |
| B=80-89.9% |  |
| C=70-79.9% |  |
| D=60-69.9% |  |
| F<60% |  |

### Graded Events:

Quizzes: 5%

Assignments: 25%

Projects 30%

Mid-term: 20%

Final: 20%

### Quizzes:

Class participation will be graded using quizzes. This grade will be based on the student’s engagement with the class and instructor throughout the semester. Pre-class assigned questions will be considered in this grade. Assigned questions must be completed no later than 8:00 the day of the class that will cover that material. Other methods may be used to determine this grade.

### Projects:

Test Strategy: Prepare a test strategy for our assigned requirement specification. In this project you will create a test strategy for testing this specification. This strategy should include appropriate application of both white and black box testing and note limitations of each test type and appropriate tradeoffs being emphasized to ensure proper testing.

Test Case: The test case project will be undertaken to prepare a set of test cases, steps required for each test scenario and expected results. This will be based on the requirements provided and should follow the strategy created in the above project. This will be begun in class. This project will be reviewed during class. Each student should be prepared to discuss their test cases, explain their choices of test scenarios, steps and expected results. A test template will be provided for the recording of this project.

Test Execution: The test execution project will use the strategy and test cases prepared earlier. The application to test will be provided. Following completion of the test execution, a paper detailing gaps and corrections to the test strategy and test cases will be required. This paper should address corrections needed to the earlier projects or ways these projects could have been done so the testing would have been more efficient. The project to be tested will have defects injected to measure the effectiveness of this testing.

Automation: Each student will research the automation tools available. These can include script execution tools such as Silk or code automation tools such as Junit and/or Selenium. The intention of this project is to provide the student with exposure to the various automation tools available. The student should prepare a paper on a code and a UI test tool discussing the advantages and disadvantages of each tool, expected types of tests that can be automated as well as known issues with implementing these tests. This paper should be a minimum of two pages and must contain appropriate references.

JUnit: The JUnit portion of the class will take the student through several TDD based development and testing evolutions. We will be using both Waterfall and Agile processes for this portion of the course.

### Exams:

There will be three exams (mid-term) and a final. These exams will be a combination of multiple choice, short and long answer questions. There will be some coding, TDD based, on the final.

#### Late Policy:

Late assignments will be accepted up to two weeks late. A penalty of 10% off earned grade will be taken for each late day. After three days, a penalty of 50% will be imposed. After midnight, two weeks after the original due date, no submissions will be accepted.

If you arrange to turn an assignment in late, an email documenting the assignment, reason and newly established due date must be sent to me. I will respond with an approval for this late request.

#### Resubmittal Policy:

Assignments may be resubmitted for re-grading if you need to work on the concepts covered by the assignment. These should be submitted within a reasonable amount of time, 1 week or less from the time the grade is awarded. All re-submittals will receive a 10 point deduction. Only one resubmittal is allowed. Once an assignment has been covered in class, no resubmittals will be accepted. Resubmittals later than a week following grading will be subject to the late policy described above.

## Academic Enhancement Center

The Academic Enhancement Center provides free drop-in tutoring for GGC students. Tutoring is available in many subjects including reading college texts, writing assignments, grammar focus, research and citation, college algebra, calculus, chemistry, and physics, and IT. The Academic Enhancement Center for math/science/IT/Business is located on the 2nd floor of the library. The hours of operation of the AEC can be found at:

[AEC Website](http://www.ggc.edu/academics/schools/school-of-transitional-studies/academic-enhancement-center/index.html).

# Instructor/Course Policies:

## Cell Phones:

Please silence and put away your cell phones during class out of respect to your classmates and instructor. If you feel the need to answer a call or text during class (emergency situation), please quietly exit the room and return when you are finished. **Any cell phone use during tests will be considered an academic violation.**

If you have an extenuating circumstance where you need to have your phone available, I am on call from work or have a sick family member, please let me know before we start class. Other than these types of exceptions, please do not use your cell phone during class. It is a disruption to the class, me and most importantly to you.

## Computer Use during Class:

This is a computer based course. You will be using either the classroom computers or your personal laptop during class. However, t**his is not the time to check your personal email, Facebook or twitter account.** If I see you working on non-course related material during class time, it will impact your participation grade.

## Course Materials and Grading

You can expect to access the course materials and grades via Desire2Learn. Students should check the *Desire2Learn* site regularly, as course changes will always be announced and recorded on the course the *Desire2Learn* site.

## Written Communication Etiquette

As our course prepares students not only for academic but also for professional life, it is essential to be trained in the writing of messages for future colleagues, clients, and/or business partners using formal language rather than the informal communication used between friends and relatives. Based on this foundation, all written communication with the instructor is considered official and it should therefore comply with the following rules:

1. Emails should only be sent using your GGC account such as xyz@ggc.edu
2. The subject line should contain a few words summarizing the message purpose. A blank subject line is not accepted.
3. The entire message should have proper spelling and grammar.
4. Text message abbreviations such as “u” instead of “you” or “cu” instead of “see you” are not accepted.
5. The message should start with a salutation message such as “Dear Mr. Price” or “Dear Professor”
6. The message body should:
   1. Start with your first name, last name, course number and section number. For instance it could read “This is Jacqueline Wilson from your ITEC1001 section 1 class”
   2. Clearly describe the message’s purpose.
   3. Explain the response needed from the instructor.
7. Finish with proper valediction such as “Regards” or “Sincerely” and the student’s full name.

### Example of a well-written message

**From**: [jwilson@ggc.edu](mailto:jwilson@ggc.edu)

**To**: [tim@ggc.edu](mailto:tim@ggc.edu)

**Subject**: Special assistance with Loan Amortization needed

Dear Dr. Im,

This is Jacqueline Wilson from your ITEC2140 section 1 class. I would like to schedule a meeting with you since I have been unable to figure out the looping constructs used in the project assigned last class. I am available to meet between 1:00 pm and 3:30 pm on Tuesday and Thursdays. Would you please inform me what date, time and location we can meet?

Sincerely,

Jacqueline Wilson

## Official Correspondence

When you email me you should consider the email as official correspondence. As such, the email should not appear as a text message but should have proper grammar and punctuation. Improperly constructed email will be followed with the following response. “At GGC, email is considered official and professional correspondence. I will be glad to help you when you resend the email with proper grammar and punctuation.”

## Technology Changes

**This covenant provides** a general guideline for the course. I reserve the right to make periodic and/or necessary changes to the covenant, including: technology use and communication channels, in order to accommodate the needs of the class as a whole and fulfill the goals of the course.

**Georgia Gwinnett College Policies**

**Academic Respect**

The college exists to foster educational excellence. To this end, a classroom atmosphere that supports learning must be maintained. Students are expected to be active, attentive participants in the class. Students are also expected to abide by class policies and procedures and to treat faculty and other students in a professional, respectful manner. Students are expected to be familiar with the student conduct code published in the [Student Handbook](http://www.ggc.edu/student-life/get-involved-on-campus/student-affairs/student-handbook/), page 31.

**Americans with Disabilities Act Statement**

Georgia Gwinnett College will provide reasonable accommodation to employees, applicants for employment, students, and patrons who have physical and/or mental disabilities, in accordance with applicable statutes. Georgia Gwinnett College will take affirmative action to employ and advance in employment persons who are qualified disabled veterans, veterans of the Vietnam Era, or other covered veterans.  If you are a student who is disabled as defined under the Americans with Disabilities Act and require assistance or support services, please seek assistance through the [Office of Disability Services](http://catalog.ggc.edu/content.php?catoid=1&navoid=22&hl=disabilities&returnto=search#disability-services). A CDS Counselor will coordinate those services.

For more information, refer to the [Americans with Disabilities Act Policy](http://www.ggc.edu/community/diversity_institutional-equity_title-ix/diversity_institutional-equity_title-ix_policy/#ada).

## Attendance Policy

The classroom experience is a vital component of the college learning experience. Interaction with instructors and with other students is a necessary component of the learning process. Students are expected to attend regularly and promptly all class meetings and academic appointments. Students who are absent from classes bear the responsibility of notifying their instructors and keeping up with class assignments in conjunction with instructor provisions in the course syllabus. An individual instructor bears the decision as to whether a student’s absence is excused or unexcused and whether work will be permitted to be made up; the decision of the instructor in this case is final. Students who are absent because of participation in college-approved activities (such as field trips and extracurricular events) will be permitted to make up the work missed during their college-approved absences.

## Health and Safety Policy

Certain laboratories include use of strong acids, solvents and preservatives. Any pregnant women, hypersensitive individuals, or immunocompromised people should report their condition to the instructor and to their physician, preferably before contact with the materials (see lab exercises). Additional instructions for lab will be presented during the first lab. Students are required to follow all instructions. Students failing to conform to lab rules and safety precautions will be first warned by removal from the lab. On second offense students will be removed from both lecture and lab.

## Americans with Disabilities Act Statement

If you are a student who is disabled as defined under the Americans with Disabilities Act and require assistance or support services, please seek assistance through the Center for Disability Services. A CDS Counselor will coordinate those services.

## Equal Opportunity Statement

Georgia Gwinnett College is an Equal Opportunity College open to any qualified individual without regard to race, religion, sex, age, color, national or ethnic origin, or disability. Pursuant to all applicable federal anti-discrimination laws and regulations, Georgia Gwinnett College does not discriminate against any of the protected categories of individuals in the administration of its policies, programs or activities. This non-discriminatory policy includes admission policies, scholarship and loan programs, employment practices, and athletics and other school-administered programs.

## Affirmative Action Statement

Georgia Gwinnett College adheres to affirmative action policies designed to promote diversity and equal opportunity for all faculty and students.

## Academic Respect

The college exists to foster educational excellence. To this end, a classroom atmosphere that supports learning must be maintained. Students are expected to be active, attentive participants in the class. Students are also expected to abide by class policies and procedures and to treat faculty and other students in a professional, respectful manner. Students are expected to be familiar with the student conduct code published in the Student Handbook.

## Academic Integrity

Student Honor Statement: We will not lie, steal, or cheat, nor tolerate the actions of those who do.

Georgia Gwinnett College students are expected to adhere to the highest standards of academic integrity and are expected to encourage others to do the same. Further, students are expected to take responsible action when there is reason to suspect dishonesty on the part of others.

Academic dishonesty carries severe penalties ranging from a grade of “0” on the affected assignment to dismissal from Georgia Gwinnett College. Each faculty member at Georgia Gwinnett College bears the responsibility for assigning penalties for cases of academic dishonesty. Students may appeal a penalty as outlined in the Student Handbook.

**School of Science and Technology**

**Vision/Mission Statement**

The School of Science and Technology will become recognized in the region and the state for excellence in STEM education at an open access institution.  SST Faculty will provide effective and relevant courses and programs in science, math, and technology which are characterized by interdisciplinary learning, novel use of educational technology, and an active learning environment that stimulates critical thinking.

**School Policies**

**Class attendance and Financial Aid**

Please be aware that faculty check attendance in each of your courses and are required to report to the Registrar students who never attend or cease attending a course. Students who are reported as never attended or have ceased attending a course, Financial Aid will be notified and is required to adjust your financial aid award accordingly. If you have any questions about how not attending a course for which you are registered will affect your financial aid eligibility, please contact the Financial Aid Office.

**Make-up Exam Policy**

You are expected to attend every class. Failure to attend class will affect your grade.

Special arrangements to take a regular exam early must be made in advance in writing. Early exams are available only at the instructor’s discretion and only under extreme circumstances.

IF an emergency arises and you miss an exam you MUST notify me on the same DAY as the exam. Notification by email, text or phone message is acceptable. Any make-up work may have a different format or different content from the regular assignment. Make-up work should be completed within two days of the original due date. Work missed due to unexcused absences will be given a grade of zero.

***Note:*** Lab Practical Exams CANNOT be rescheduled!

If you feel that you are unable to complete your courses due to illness or family emergency, contact the Registrar’s Office to attempt to withdraw from your courses without penalty.

**Final Exam**

The final exam will be given sometime during finals week as specified by the registrar. The date and time of the final exam is set by the Registrar and will be posted. The exam schedule cannot be changed at the convenience of the student. You should not plan to be absent anytime during that week. A make-up final exam will only be given in cases of a verifiable excused absence.

**Course Changes**

This course syllabus provides a general plan for this course. I reserve the right to make changes to the syllabus, including changes to assignments, projects, examinations, etc., in order to accommodate the needs of the class as a whole and fulfill the goals of the course.

Course syllabus (subject to change)

*Please note that there is a tremendous amount of material covered in the last three weeks of class and I strongly recommended getting ahead on the reading for this course.*

**School/Program Outcomes**

**Integrated Educational Experience Goals:**

**The IEE Goals met by the objectives of this course are in bold/strong format:**

**IEE-1  Clearly communicate ideas in written and oral form.**

**IEE-2   Demonstrate creativity and critical thinking in inter- and multi-disciplinary contexts.**

**IEE-3   Demonstrate effective use of information technology.**

IEE-4  Demonstrate an understanding of diversity and global perspectives leading to collaboration in diverse, global contexts.

**IEE-5   Demonstrate an understanding of human and institutional decision making from multiple perspectives.**

**IEE-6   Demonstrate an understanding of moral and ethical principles.**

**IEE-7   Demonstrate and apply leadership principles.**

**IEE-8   Demonstrate competence in quantitative reasoning.**

**Academic Integrity and Use of Turnitin**

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Students are reminded that they are responsible for avoiding every aspect or appearance of plagiarism by appropriately citing the sources of ideas, thoughts, or words of others that appear in their academic work. Students should be aware that faculty may use the originality check feature of Turnitin to assist students in learning how to cite work appropriately in order to avoid potential plagiarism.

Please note: This policy mandates that students include complete citations for any and all work which is not totally original in Unit and Lesson Plans developed as part of the course.

**Examples of plagiarism include:**

* Directly quoting another’s words without appropriate citation and punctuation;
* **Overusing quotations in a written work;**
* Paraphrasing another’s words without appropriate citation;
* Submitting assignments and other work that is not your own;
* Citing primary and secondary sources incorrectly.

**Examples of academic dishonesty include:**

* Submitting a single assignment for multiple courses without the instructors’ knowledge or permission;
* Using assignments submitted by other students;
* Using unauthorized materials during an exam.

**Georgia Gwinnett College Policies**

**Academic Respect**

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**Attendance Policy**

The classroom experience is a vital component of the college learning experience. Interaction with instructors and with other students is a necessary component of the learning process. Students are expected to attend regularly and promptly all class meetings and academic appointments. Students who are absent from classes bear the responsibility of notifying their instructors and keeping up with class assignments in conjunction with instructor provisions in the course syllabus. An individual instructor bears the decision as to whether a student’s absence is excused or unexcused and whether work will be permitted to be made up; the decision of the instructor in this case is final. Students who are absent because of participation in college-approved activities (such as field trips and extracurricular events) will be permitted to make up the work missed during their college-approved absences, provided that the student discussed with and obtained approval from the instructor to make up the work missed prior to the student's going on the field trip.

Individual instructors may establish additional attendance requirements appropriate to their course’s context, e.g., lab attendance. A student whose class schedule would otherwise prevent him or her from voting will be permitted an excused absence for the interval reasonably required for voting.

For more information, refer to the [GGC Student Attendance Policy.](http://catalog.ggc.edu/content.php?catoid=1&navoid=23#student-attendance-policy)

**Equal Opportunity and Affirmative Action Policy**

Georgia Gwinnett College ads to affirmative action policies designed to promote diversity and equal opportunity for all faculty and students.

As an equal opportunity institution, Georgia Gwinnett College is committed to nondiscriminatory practices consistent with federal and state requirements and objectives. Georgia Gwinnett College affirms its commitment to keeping its workplace and academic programs free of discrimination and harassment and maintaining an environment that recognizes the innt worth and dignity of every person.

It continues to be the policy of Georgia Gwinnett College to implement affirmative action and equal opportunity for all employees, students and applicants for employment or admission without regard to race, color, creed, religion, national origin, sex, age, sexual orientation, gender identity, pregnancy/parental status, veteran status or disability.

For more information, refer to the [GGC Equal Opportunity and Affirmative Action Policy Statement](http://www.ggc.edu/community/diversity_institutional-equity_title-ix/diversity_institutional-equity_title-ix_policy/#eoaa).

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**Academic Enhancement Center (AEC)—Your Pathway to Success**

We encourage you to take advantage of the various academic support services we provide to all currently enrolled GGC students on campus.

**AEC Tutors**

Our trained professional and peer tutors provide 30 minute one-on-one tutoring sessions. Group tutoring sessions are also available for students with similar questions on course content. Writing tutors will tutor you at any stage of the writing process. Math/Science/ITEC/Business tutors will help you gain a better understanding of course concepts. Bring your notes, textbook, rubrics, and your assignment sheets to your tutoring session. Be prepared to answer and ask questions.

**How to Receive Tutoring**

Schedule an appointment with one of our tutors by: 1) visiting the AEC in CG360, 2) calling 678-407-5191, or 3) sending an [e-mail](mailto:aec@ggc.edu). Drop-ins are also welcomed. Visit the [AEC website](http://www.ggc.edu/aec) for the hours of operations. We stop tutoring sessions 30 minutes before closing.

For more information about the AEC and other services we provide like workshops and outline tutoring, visit the [AEC website](http://www.ggc.edu/aec), follow us on [Twitter](https://twitter.com/ggcaec) and like us on [Facebook](https://www.facebook.com/ggcaec).

**Safety and Security**

View the [GGC Safety and Emergency Communications web page](http://www.ggc.edu/about-ggc/public-safety/safety-and-emergency-communications/) for information important to you. To avoid confusion and rumor, ensure you (1) sign up for [RAVE alert text notification](https://www.getrave.com/login/ggc), (2) download the LiveSafe app for [iPhone](https://itunes.apple.com/us/app/livesafe/id653666211?ls=1&mt=8) or [Android](https://play.google.com/store/apps/details?id=com.livesafe.activities&hl=en). (3) View the 15 minute [Active Shooter Video](http://www.kaltura.com/index.php/extwidget/preview/partner_id/2022371/uiconf_id/32334692/entry_id/1_z4itrq86/embed/auto?&flashvars%5bstreamerType%5d=auto). You are the additional eyes and ears for first responders. Follow the adage, “If you see something, say something” to a GGC employee. Your community needs your increased vigilance and awareness.

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| --- | --- | --- | --- |
| **Date** | **Quality Assurance** | **Reading** | **Projects/assignments** |
| Week 1 | Introduction, class expectations  Introduction to Quality Assurance  What is software quality  Software quality factors | TBA | TBA |
| Week 2 | Software testing strategies  Test cases, plans and execution | TBA | TBA |
| Week 3 | Test Cases continued  Procedures and work instructions  QA infrastructure | TBA | **TBA** |
| Week 4 | Psychology of Testing |  |  |
| Week 5 | Integration Testing | TBA |  |
| Week 6 | Testing Exceptions | TBA |  |
| Week 7 | Testing with Libraries | TBA | Mid-term grades posted |
| Week 8 | Testing Serialization | TBA |  |
| Week 9 | End to end testing | TBA |  |
| Week 10 | Automation Testing |  |  |
| Week 11 | Test Plans |  |  |
| Week 12 | Mockito |  |  |
| Week 13 | Hamcrest |  |  |
| Week 14 | Explore-It |  |  |
| Week 15 | Aspect Oriented Programming |  |  |
| Final |  |  |  |