

CSE 1325: Object-Oriented Programming  
Fall 2017

**Instructor:** George F. Rice

**Office Number:** Engineering Research Building, Room 402

**Email Address:** [george.rice@uta.edu](mailto:george.rice@uta.edu)

**Office Hours:** Tuesday and Thursday, 11:00 pm -12:00 pm or by appointment

**Section Information:** CSE 1325-001

**Time and Place of Class Meetings:** ERB 131, Tuesday and Thursday, 8:00-9:20 am

**TA:** TBD

**TA Office Number:** Engineering Research Building, Room TBD

**TA Office Hours:** TBD

**TA Email Address:** TBD

**Section Information:** CSE 1325-002

**Time and Place of Class Meetings:** ERB 131, Tuesday and Thursday, 9:30-10:50 am

**TA:** TBD

**TA Office Number:** Engineering Research Building, Room TBD

**TA Office Hours:** TBD

**TA Email Address:** TBD

**Section Information:** CSE 1325-003

**Time and Place of Class Meetings:** COBA348, Tuesday and Thursday, 2:00-3:20 pm

**TA:** TBD

**TA Office Number:** Engineering Research Building, Room TBD

**TA Office Hours:** TBD

**TA Email Address:** [TBD](#)

**Description of Course Content:** Object-oriented concepts and application. Object-oriented program design using the Unified Modeling Language (UML) and selected Software Design Patterns, and implementation using C++ with basic software development process management and version control. Additional topics may include graphical user interfaces, collection classes, templates, reflection, reusability, and concurrency. Projects involve extensive software design and programming.

**Student Learning Outcomes:**

- Object-Oriented Theory: Encapsulation, inheritance, and polymorphism
- Object-Oriented Design: UML and patterns
- Object-Oriented Implementation: C++ programming language
- Input and Output: Files, keyboards, streams, and exception handling
- Using Application Programming Interfaces (API) and libraries
- Command Line Interfaces (CLI) and Graphical User Interfaces (GUI)
- Common programming practices including an introduction to agile processes, version control, and regression test frameworks

**Required Textbooks and Other Course Materials:**

- Programming Principles and Practice Using C++, 2<sup>th</sup> Edition, Bjarne Stroustrup
- Unified Modeling Language Reference Manual, 2<sup>nd</sup> Edition, Rumbaugh et. al.
- UML designer: Umbrello 2.18.3
- C++ compiler: Gnu Compiler Collection (gcc) version 5.4
- C++ debugger: Gnu Data Display Debugger (ddd) version 3.3.12
- C++ library: GIMP Tool Kit (gtkmm) version 3.0
- Version Management: git version 2.7.4
- Your choice of programming editor / environment

**Descriptions of major assignments and examinations:**

Exam #1 – Tuesday, September 19

Exam #2 – Tuesday, October 17

Final Exam:

Section 001 (TR 8:00 am): Tuesday, December 12 at 8:00 am – 10:30 am

Section 002 (TR 9:30 am): Thursday, December 14 at 8:00 am – 10:30 am

Section 003 (TR 2:00 pm): Tuesday, May 11 at 2:00 pm – 4:30 pm

**Attendance:** At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I have established the following attendance policy:

Attendance is optional but strongly encouraged. Students who skip class may miss the frequent pop quizzes, important demonstrations, and discussions in class. This class is more than just “programming”, and covers many fundamentals of successful system / software engineering practice.

However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course.” UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

**Other Requirements:** CSE 1320: Intermediate Programming, passed with a C or better, is a prerequisite for this class. Some homework projects may include one or more 10-minute sprint reviews and one 20-minute final class demonstration, one or both of which may be outside normal class hours. Scheduling for these is flexible.

## Grading:

The current breakdown of the grade is as follows:

- Pop Quizzes : 10%
- Homework: 30%
- Three Exams : 20% each

See [www.uta.edu/records/faculty-staff/grading.php](http://www.uta.edu/records/faculty-staff/grading.php) for how to enter grades on Blackboard, etc. and [www.uta.edu/records/calendars/grade-reports.php](http://www.uta.edu/records/calendars/grade-reports.php) for dates and deadlines related to grades. Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see “Student Support Services,” below.

No late policy exists this semester. Assignments are due when scheduled, and late work will not be graded if submitted after the due date.

This semester, sections 001, 002, and 003 will follow a synchronized lecture schedule. A student who is unable to attend a scheduled lecture during their assigned section may attend a different section lecture subject to available seating, or may watch the lecture on Echo360 ALP video via the Blackboard side bar. Note that section 004 is NOT synchronized with the other sections, and is not a practical option for missed lectures.

A **Pop Quiz** will be taken during class approximately once per week. All students should bring a 3”x5” index card to every class on which to write the answers to each pop quiz. Each quiz will consist of 2 questions: (1) Your name, and (2) A short answer to a simple question covered in a recent lecture. The pop quizzes are intended primarily to measure attendance and encourage class engagement.

All students will complete approximately twelve mandatory **Homework** assignments during the semester to ensure competent understanding of C++ and the Object-Oriented Programming paradigm. Additional bonus work may be offered as part of these assignments, for which extra credit may be awarded in addition to the deeper knowledge gained.

All students will complete **2 Exams** and a **Final Exam**. Theory and practice covered earlier in the semester impact the topics of the latter exams, thus all exams should be considered comprehensive.

### Make-up Exams:

- If a student sits any exam, this means the student accepts the responsibility for that exam. Once taken, the exam will not be given again, and no make-up will be scheduled.
- If a student cannot make an exam other than the Final Exam, and the student brings adequate documentation of why they did not attend, such as a doctor’s note, then the Final Exam score will be substituted for that exam. If not, the grade will be a zero.
- If a student informs the instructor they cannot make the Final Exam before it is given, then a make-up exam will be scheduled. If they miss the Final Exam, and the student brings adequate documentation of why they did not attend, such as a doctor’s note, a grade of Incomplete will be given and a make-up exam will be scheduled. If neither action is taken, the Final Exam will be a zero.

A dental appointment or other non-emergency health situation is not an acceptable excuse for missing any examination. Written documentation of an emergency health situation is required, and its adequacy will be solely determined by the instructor.

**Expectations for Out-of-Class Study:** Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend **at least** an additional 9 hours per week of their own time in course-related activities, including reading required materials, researching and completing assignments, preparing for exams, etc.

The homework assignments planned for this semester may include bonus work for extra credit.

Students desiring additional credit for study and practice should schedule a time during office hours to discuss. Students should not rely on extra credit to pass this class, but should endeavor to complete all assignments and quizzes with their usual high standard of excellence. **Extra credit work cannot be assigned with a due date past Thanksgiving** due to insufficient time prior to Final Review Week.

If unexpected events impact the class (inclement weather, unexpected closings, power outages, class delays or other issue) and a student completes an assignment or task regardless, the instructor has the option to award extra credit.

**Grade Grievances:** Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

**Disability Accommodations:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of **a letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

**The Office for Students with Disabilities, (OSD)** [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability).

**Counseling and Psychological Services, (CAPS)** [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

**Non-Discrimination Policy:** *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit [uta.edu/eos](http://uta.edu/eos).*

**Title IX Policy:** The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or [jmhood@uta.edu](mailto:jmhood@uta.edu).*

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** For semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located to the left as you exit the classroom. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities. Evacuation plans may be found at [http://www.uta.edu/campus-ops/ehs/fire/Evac\\_Maps\\_Buildings.php](http://www.uta.edu/campus-ops/ehs/fire/Evac_Maps_Buildings.php).

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

**The IDEAS Center** (2<sup>nd</sup> Floor of Central Library) offers **free** tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email [IDEAS@uta.edu](mailto:IDEAS@uta.edu) or call (817) 272-6593.

**The English Writing Center (411LIBR):** The Writing Center Offers free tutoring in 20-, 40-, or 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Our hours are 9 am to 8 pm Mon.-Thurs., 9 am-3 pm Fri. and Noon-6 pm Sat. and Sun. Register and make appointments online at <http://uta.mywconline.com>. Please see [www.uta.edu/owl](http://www.uta.edu/owl) for detailed information on all our programs and services.

The Library's 2<sup>nd</sup> floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation. <http://library.uta.edu/academic-plaza>

**Librarian to Contact:** Martin Wallace ([martin.wallace@uta.edu](mailto:martin.wallace@uta.edu), 817-272-3924  
<http://www.uta.edu/library/help/subject-librarians.php>

## Course Schedule

Class Date	Lecture	Chapters	Topic
Thu, Aug 24	1	1, 2	Syllabus, Intro to Object-Oriented Programming and C++; Version Control
Tue, Aug 29	2	3	Classes, Types, and Values; <b>Top-Level Diagram</b> ; Intellectual Property
Thu, Aug 31	3	4	Computation; <b>UML Class Diagram</b> ; <b>Singleton Pattern</b>
Tue, Sep 5	4	5, 26	Errors, Exceptions, Testing, and Debugging; <b>Extending UML Diagrams</b>
Thu, Sep 7	5	8	Eclectics: Declarations, Arguments, Scope, Namespaces, and Makefiles
Tue, Sep 12	6	(6)	Writing an Object-Oriented C++ Program (Part 1); <b>UML Use Case Diagram</b> ; <b>MVC Pattern</b>
Thu, Sep 14	7	(7)	Writing an Object-Oriented C++ Program (Part 2); <b>UML Sequence Diagram</b> ; Review
Tue, Sep 19			Exam #1
Thu, Sep 21	8		Return Exam; Intro to Scrum
Tue, Sep 26	9	12	Intro to Graphical User Interfaces (GUI) and Drawing; <b>Façade Pattern</b>
Thu, Sep 28	10	16	GUI Widgets and Dialogs
Tue, Oct 3	11	13, 14	Main Windows, Custom Dialogs, and Callbacks; <b>Observer and Adapter Patterns</b>
Thu, Oct 5	12	15	Drawing, Plotting Data, and Designing a Class Library
Tue, Oct 10	13	(16)	Writing a Full C++ GUI Application (Part 1)
Thu, Oct 12	14	(16)	Writing a Full C++ GUI Application (Part 2); Review
Tue, Oct 17			Exam #2 (Last day to drop is Nov 1)
Thu, Oct 19	15		Return Exam; Intro to the Class Project
Tue, Oct 24	16	9	Operator Overloading, Multiple Inheritance; <b>Strategy Pattern</b>
Thu, Oct 26	17	10	Files and I/O
Tue, Oct 31	18	11	Custom I/O; <b>UML Activity Diagram</b>
Thu, Nov 2	19	25	<b>Embedded Programming</b> ; <b>UML Statechart Diagram</b> , <b>State Design Pattern</b>
Tue, Nov 7	20	17, 18	Free Store: Pointers, Destructors, and Memory Maps
Thu, Nov 9	21	19	Free Store: Templates, Iterators, and Miscellany;
Tue, Nov 14	22	20, 21	Concurrency and Hyperthreading; <b>UML Deployment Diagram</b> ; <b>Factory Pattern</b>
Thu, Nov 16	23	23, 24	Text Manipulation, Numerics; <b>Anti-Patterns</b>
Tue, Nov 21			Thanksgiving Week
Thu, Nov 23			Thanksgiving
Tue, Nov 28	24	22	Ideals and History, or Guest Lecture, or Project Demos
Thu, Nov 30	25		TA Lecture, or Guest Lecture, or Project Demos
Tue, Dec 5	26		Review; Project Demos (Dec 6 is last day of classes)
Tue, Dec 12			Final Exam: Section 001 (8 am) at 8-10:30 am Section 003 (2 pm) at 2-4:30 pm
Thu, Dec 14			Final Exam: Section 002 (9:30 am) at 8-10:30 am

Chapter references are approximate. Not all class material is in Stroustrup.

**As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. –George F. Rice.**

**Emergency Phone Numbers:** In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381

**Subscribe to the MavAlert system** to be sent information in case of an emergency to your cell phone or email accounts. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>



## **Additional Resources for Students**

### **Academic Help**

Academic Plaza Consultation Services [library.uta.edu/academic-plaza](http://library.uta.edu/academic-plaza)

Ask Us [ask.uta.edu/](http://ask.uta.edu/)

Library Tutorials [library.uta.edu/how-to](http://library.uta.edu/how-to)

Subject and Course Research Guides [libguides.uta.edu](http://libguides.uta.edu)

Subject Librarians [library.uta.edu/subject-librarians](http://library.uta.edu/subject-librarians)

### **Resources**

A to Z List of Library Databases [libguides.uta.edu/az.php](http://libguides.uta.edu/az.php)

Course Reserves [pulse.uta.edu/vwebv/enterCourseReserve.do](http://pulse.uta.edu/vwebv/enterCourseReserve.do)

FabLab [fablab.uta.edu/](http://fablab.uta.edu/)

Special Collections [library.uta.edu/special-collections](http://library.uta.edu/special-collections)

Study Room Reservations [openroom.uta.edu/](http://openroom.uta.edu/)