



GALLOGLY COLLEGE OF ENGINEERING
SCHOOL OF COMPUTER SCIENCE
The UNIVERSITY of OKLAHOMA

CS 3323: Principles of Programming Languages
Fall 2024

Instructor Information:

- **Instructor:** Dr. Doga Demirel
- **Office Location:** DEH 210-B
- **Student Support/Office Hours:** Tuesday and Thursday 2:00-3:00pm or by appointment.
- **Office Hours Location:** DEH 245
- **Email address:** doga@ou.edu

Course Information:

- **Class Time:** Tuesday and Thursday 4:30-5:45pm
- **Class Location:** Sarkeys Energy Ctr N0202
- **Modality:** In-person
- **Pre-requisites:** CS 2413/CS 2414, and CS 2813/ MATH 2513, and ENGL 3153/BC 2813/ENGR 2002.
- **Course Website:** <https://canvas.ou.edu/courses/363097>
- **Required Textbook:** Programming Languages Pragmatics, Michael L. Scott, 4th edition, Morgan Kaufmann, ISBN: 978-0124104099
- **Course Description:** An introduction to theoretical foundations and paradigms of programming languages. Topics include basic concepts such as lexical analysis, syntax analysis, type systems and semantics, some practical issues such as memory management and exception handling, and programming paradigms such as imperative programming, object-oriented programming, functional programming and scripting.
- **Final:** Monday, December 9th, 4:30- 6:30pm, Sarkeys Energy Ctr N0202

Teaching Assistant Information:

- **Teaching Assistant:** Lena Trigg
- **Office Location:** DEH 115
- **Student Support/Office Hours:** Wednesday 10:30-11:30am
- **Email address:** lena.trigg@ou.edu

Course Goals

- Compare and contrast the functional approach, procedural approach, and object-oriented approach.
- Interpret variables and lexical scope in a program.
- Use formal grammar to specify the syntax
- Identify key issues in syntax definitions: ambiguity, associativity, and precedence.

ABET Learning Outcomes

The general learning objectives for this course include the following ABET Outcomes:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
- Communicate effectively in a variety of professional contexts.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Grading Scale

| Letter Grade | Percentage |
|--------------|------------|
| A | 100-90% |
| B | 89-80% |
| C | 79-70% |
| D | 69-60% |
| F | 59-0% |

Evaluation Methods

| Assignment | Percentage of Final Grade |
|------------------------|---------------------------|
| Quizzes | 20% |
| Assignments & Projects | 40% |
| Midterm | 20% |
| Final | 20% |

Course Policies

Attendance Policy

All students are expected to follow proper classroom behavior and treat other students and the instructor with respect. In order to fully benefit from our class activities, you are expected to attend class and actively participate in the exercises and discussions. In cases of sickness, we want to work with you to identify alternative arrangements, but you must alert us before the class period you miss via email. Absence does not excuse a student from material covered or any activity done on that day, nor does it extend a deadline unless documentation is provided.

Late Work

Late submissions for assignment are accepted up to 24 hours with 10% of penalty. No late submissions after 24 hours.

Email Policy

Emails must be sent from your OU email account to the OU email address of the instructor (doga@ou.edu). Start the subject line with "[CS 3323]" for a quicker response time.

Academic Integrity

The overall goal of this course is your learning. In order to demonstrate that you have reached this goal, the work you turn in needs to be your own. This includes putting written work into your own words and citing your sources, as appropriate to avoid plagiarism. If you work in a group, seek assistance from a tutor, use a resource on campus, and/or use online resources (including AI software), the work you turn in must be your own, demonstrating your own understanding of the material that you have gained through the learning process.

If you have questions about academic integrity or plagiarism, please ask: my aim is to foster an environment where you can learn and grow, while also maintaining academic honesty and a clear representation of your learning and ideas. Penalties for serious offenses include a zero on the assignment and egregious offenses can even result in expulsion from the university, so it is important to understand expectations.

Plagiarism as defined by the [OU Integrity Office](#) includes:

- Copying words and presenting them as your own writing.
- Copying words, even if you give the source, unless you also indicate that the copied words are a direct quotation
- Copying words and then changing them a little, even if you give the source.
- Even if you express it in your own words, it is plagiarism to use someone else's idea as your own.

Visit the [OU Integrity Office](#) for more information on what constitutes plagiarism.

University Policies

Mental Health Support Services

Support is available for any student experiencing mental health issues that are impacting their academic success. Students can either be seen at the University Counseling Center (UCC) located on the second floor of Goddard Health Center or receive 24/7/365 crisis support from a licensed mental health provider through [TELUS](#) Health. To schedule an appointment or receive more information about mental health resources at OU please call the UCC at 405-325-2911 or visit [University Counseling Center](#). The UCC is located at 620 Elm Ave., Room 201, Norman, OK 73019.

Title IX Resources and Reporting Requirement

The University of Oklahoma faculty are committed to creating a safe learning environment for all members of our community, free from gender and sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX. There are resources available to those impacted, including: speaking with someone confidentially about your options, medical attention, counseling, reporting, academic support, and safety plans. If you have (or someone you know has) experienced any form of sex or gender-based discrimination or violence and wish to speak with someone confidentially, please contact [OU Advocates](#) (available 24/7 at 405-615-0013) or [University Counseling Center](#) (M-F 8 a.m. to 5 p.m. at 405-325-2911)

Because the University of Oklahoma is committed to the safety of you and other students, and because of our Title IX obligations, I, as well as other faculty, Graduate Assistants, and Teaching Assistants, are mandatory reporters. This means that we are obligated to report gender-based violence that has been disclosed to us to the Institutional Equity Office. This means that we are obligated to report gender-based violence that has been disclosed to us to the Institutional Equity Office. This includes disclosures that occur in: class discussion, writing assignments, discussion boards, emails and during Student/Office Hours. You may also choose to report directly to the Institutional Equity Office. After a report is filed, the Title IX Coordinator will reach out to provide resources, support, and information and the reported information will remain private. For more information regarding the University's Title IX Grievance procedures, reporting, or support measures, please visit [Institutional Equity Office](#) at 405-325-3546.

Reasonable Accommodation Policy

The University of Oklahoma (OU) is committed to the goal of achieving equal educational opportunity and full educational participation for students with disabilities. If you have already established reasonable accommodations with the Accessibility and Disability Resource Center (ADRC), please [submit your semester accommodation request through the ADRC](#) as soon as possible and contact me privately, so that we have adequate time to arrange your approved academic accommodations.

If you have not yet established services through ADRC, but have a documented disability and require accommodations, please complete [ADRC's pre-registration form](#) to begin the registration process. ADRC facilitates the interactive process that establishes reasonable accommodations for students at OU. For more information on ADRC registration procedures, please review their [Register with the ADRC](#) web page. You may also contact them at (405)325-3852 or adrc@ou.edu, or visit www.ou.edu/adrc for more information.

Note: disabilities may include, but are not limited to, mental health, chronic health, physical, vision, hearing, learning and attention disabilities, pregnancy-related. ADRC can also support students experiencing temporary medical conditions.

Religious Observance

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty.

[\[See Faculty Handbook 3.15.2\]](#)

Adjustments for Pregnancy/Childbirth Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact the Accessibility and Disability Resource Center at 405/325-3852 and/or the Institutional Equity Office at 405/325-3546 as soon as possible. Also, see the Institutional Equity Office [FAQ on Pregnant and Parenting Students' Rights](#) for answers to commonly asked questions.

Final Exam Period

The University of Oklahoma understands that finals week can be a very stressful time for students. As such, certain policies have been implemented in order to protect you from unreasonable course expectations in the lead up to finals week. Our course schedule has been structured to follow these [Final Exam Policies](#), which I recommend that you review. If you believe that a faculty member has violated these policies, I recommend that you speak with them to seek clarity. If there is a violation that cannot be remedied, then you may report the violation following the guidance in the Final Exam Policies.

Emergency Protocol

During an emergency, there are official university [procedures](#) that will maximize your safety.

Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather.

1. Look for severe weather refuge location maps located inside most OU buildings near the entrances.
2. Seek refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building.
3. Go to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows.
4. Get in, Get Down, Cover Up
5. Wait for official notice to resume normal activities.

Additional [Weather Safety Information](#) is available through the Department of Campus Safety.

The University of Oklahoma Active Threat Guidance

The University of Oklahoma embraces a Run, Hide, Fight strategy for active threats on campus. This strategy is well known, widely accepted, and proven to save lives. To receive emergency campus alerts, be sure to update your contact information and preferences in the account settings section at one.ou.edu.

RUN: Running away from the threat is usually the best option. If it is safe to run, run as far away from the threat as possible. Call 911 when you are in a safe location and let them know from which OU campus you're calling from and location of active threat.

HIDE: If running is not practical, the next best option is to hide. Lock and barricade all doors; turn off all lights; turn down your phone's volume; search for improvised weapons; hide behind solid objects and walls; and hide yourself completely and stay quiet. Remain in place until law enforcement arrives. Be patient and remain hidden.

FIGHT: If you are unable to run or hide, the last best option is to fight. Have one or more improvised weapons with you and be prepared to attack. Attack them when they are least expecting it and hit them where it hurts most: the face (specifically eyes, nose, and ears), the throat, the diaphragm (solar plexus), and the groin.

Please save OUPD's contact information in your phone.

NORMAN campus: *For non-emergencies call (405) 325-1717. For emergencies call (405) 325-1911 or dial 911.*

TULSA campus: *For non-emergencies call (918) 660-3900. For emergencies call (918) 660-3333 or dial 911.*

Fire Alarm/General Emergency

If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates:

1. *LEAVE* the building. Do not use the elevators.
2. *KNOW* at least two building exits
3. *ASSIST* those that may need help
4. *PROCEED* to the emergency assembly area
5. *ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues.*
6. *WAIT* for official notice before attempting to re-enter the building.

[OU Fire Safety on Campus](#)

Tentative Schedule, Subject to Change

| Week | Topics |
|-------------|--|
| Week 1 | Introduction, imperative languages |
| Week 2-3 | Compilation, Interpretation, regular expressions |
| Week 4 | Context-Free Grammars |
| Week 5 | Scanning, Parsing |
| Week 6-7 | Expression Evaluation, Selection, Iteration |
| Week 8 | Functional Languages |
| Week 9 | Scripting Languages |
| Week 10-11 | Data Types, Type Systems, Type Checking |
| Week 12 | Composite Types |
| Week 13-14 | Subroutines, Control Abstraction |
| Week 15-16 | Data Abstraction, Object Orientation |

Sample Rubric for Report and Presentations

The presentations and reports will be evaluated using rubrics similar to the ones included below.

Sample Report Rubric

| Objective | Category | Below Expectations | Weak | Average | Good | Excellent |
|---|---------------------------|---|--|---|--|---|
| | Score | 1 | 2 | 3 | 4 | 5 |
| Students can write professional quality documents | Introduction | Opening is off-topic and inappropriate to the purpose, not concise and no clarity | Opening is somewhat related to the topic and appropriate to the purpose but is not concise and clear | Opening is related to the topic and appropriate to the purpose. Somewhat clear and concise | Opening is related to the topic and appropriate to the purpose. Clear and concise | Strong opening that is clear and concise |
| | Organization | Disorganized; incorrect format; unclear direction | Somewhat organized; incorrect format; unclear direction | Organized; correct format; unclear direction | Organized; correct format; clear direction | Correct formatting, strong clarity and organization in the development of main points |
| | Design (weighted twice) | Does not provide information on research design | Inquiry design demonstrates misunderstanding of the methodology or theoretical framework | Critical elements of the methodology or theoretical framework are missing, incorrectly developed or unfocused | Critical elements of the methodology or theoretical framework are appropriately developed however, more subtle elements are ignored or unaccounted for | All elements of the methodology or theoretical framework are skillfully developed and may be synthesized from across disciplines or relevant subdisciplines |
| | Analysis (weighted twice) | Incorrect, Irrelevant, no supporting evidence | Correct, irrelevant, no supporting evidence | Correct, relevant, no supporting evidence | Relevant and correct with supporting evidence | Relevant, correct, complete, incorporates innovative insights |
| | Next Steps | Missing or content does not support conclusion | Conclusion irrelevant to the findings | Conclusion somewhat relevant to the findings | Conclusion relevant to the findings | Strong conclusion that is clear, complete and compelling |
| | Grammar & Spelling | Uses language that often impedes meaning due to errors | Uses language that often sometimes meaning due to errors | Uses language that generally conveys meaning to readers with clarity, although writing includes some errors | Uses straightforward language that conveys meaning to readers. Language has few errors | Uses graceful language that communicates meaning to readers with clarity and fluency and is virtually error free |
| Total points for Report = 50 | | | | | | |

Sample Presentation Rubric

| Objective | Category | Below Expectations | Weak | Average | Good | Excellent |
|---|---------------------|--|--|--|---|---|
| | Score | 1 | 2 | 3 | 4 | 5 |
| Students can demonstrate mastery of communication technology | Use of Media | Lack of media detracts from the presentation objective | Misuse of media that detracts from the presentation objective | Use of media barely supports and contributes to the presentation objective | Use of media supports and contributes to the presentation objective | Use of media supports, clarifies and reinforces the presentation objective |
| | Quality of Slides | Very poor quality. Not enough or too much colors, fonts and animations that detract from project objective | Poor quality. Not enough or too much colors, fonts and animations that detract from project objective | Fonts, colors and animations barely support the presentation objective | Fonts, colors and animations support the presentation objective | Fonts, colors and animations support, clarify and reinforce the presentation objective |
| Students can develop and deliver a compelling oral talk with relevant facts and information | Opening statement | Opening is off-topic and inappropriate to the purpose, not concise and no clarity | Opening is somewhat related to the topic and appropriate to the purpose but is not concise and clear | Opening is related to the topic and appropriate to the purpose. Somewhat clear and concise | Opening is related to the topic and appropriate to the purpose. Clear and concise | Strong opening that is clear and concise |
| | Organization | Disorganized; incorrect format; unclear direction | Somewhat organized; incorrect format; unclear direction | Organized; correct format; unclear direction | Organized; correct format; clear direction | Correct formatting, strong clarity and organization in the development of main points |
| | Analysis | Incorrect, Irrelevant, no supporting evidence | Correct, irrelevant, no supporting evidence | Correct, relevant, no supporting evidence | Relevant and correct with supporting evidence | Relevant, correct, complete, incorporates innovative insights |
| | Next Steps | Missing or content does not support conclusion | Conclusion irrelevant to the findings | Conclusion somewhat relevant to the findings | Conclusion relevant to the findings | Strong conclusion that is clear, complete and compelling |
| | Timing | Presentation is too short, insufficient coverage of material | Presentation is too long. Unable to cover all the material | Able to cover all the material within five extra minutes | Utilizes allotted time to provide sufficient coverage of material | Well-paced coverage of material within the allotted time |
| Students can deliver an oral talk with clarity and appropriate poise | Delivery Techniques | Does not participate in the oral presentation | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable. | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative. | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable. | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident. |
| | Peer Evaluation | 5 points | | | | |
| Total Points = 50 | | | | | | |