COMP360 Programming Languages

Spring Semester 2017

Instructor: Dr. Kenneth A. Williams
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office hours: MWF 9:00 to 9:30, 11:00 to 11:30, MW 2:00 to 5:00,
F 2:00 to 4:30, R 9:30 to 11:00 *other times by appointment*

Prerequisites: COMP280 Data Structures

Required Text: *Programming Language Pragmatics (4th Edition)* by Michael L. Scott, ISBN 9780124104099

Lectures: Monday, Wednesday and Friday 2:00pm – 2:50pm in Graham 210

Communication: Assignments and course material will appear on the University's online Blackboard system, https://blackboard.ncat.edu The web page http://williams.comp.ncat.edu/comp360 contains lecture slides and other information. Email messages are sent to the student's A&T email address. It is the student's responsibility to regularly check their A&T email account.

Description: 3 credits

This course focuses on formal specification of programming languages, including definition of syntax and semantics: simple statements including precedence, infixes, prefix, and postfix notations. It highlights global properties of algorithmic languages including sequence control, data structure implementation, scooping, storage management, grouping of statements, binding time, sub-routines, and tasks

Goals: Upon completion of this course, the student should be able to:

- Describe how programming language constructs are implemented from an abstract (high) level to the operating system and hardware (low)
- Implement portions of a compiler
- Select from the different language paradigms an appropriate programming language to design and implement an efficient and effective software application
- Write simple programs in different programming paradigms
- Understand how software interacts with the hardware

Response clickers: This course will use response clickers during the lecture. All students are required to have an i>clicker 2 response clicker. Response clickers may be purchased at the A&T bookstore. The response clickers will be used to provide input during the lectures and to record attendance. If you do not bring your response clicker to lecture, you will only get half credit for attendance.

Grading : A student's grade in the class will be based on their performance on the exams, quizzes, programs and homework assignments. All work will be graded on a numerical scale from 0 to 100. The final grade will be the weighted sum of all work using the following weights:

attendance	4 %
assignments and quizzes	16 % combined
3 exams	20 % each
final exam	20 %

The lowest homework or quiz grade will be discarded. Homework must be turned in at the beginning of class on the assigned day for full credit, unless accompanied by a valid excuse. Homework turned in within one day of the assigned time will be penalized 15%. Homework turned in within two days of the assigned time will be penalized 25%. **No homework will be accepted after two days.** Students who are absent during a class period when a test is given, will receive a score of zero unless previous arrangements are made or a valid written excuse is presented.

Final letter grades will be based on the following scale:

Letter Grade	from	up to but not including
A	87	100
A-	85	87
B+	82	85
B	77	82
B-	75	77
C+	72	75
C	62	72
C-	60	62
D+	57	60
D	50	57
F	0	50

Students will be allowed one and only one 8½ by 11 inch page of notes during the exams. Both sides of the note page can contain information as small as the student desires. You are not allowed to use more than 187 square inches of paper surface to hold your notes. Any additional pages, fold outs, flaps or other means of extending the page of notes will be considered cheating.

The final exam will be optional for a student when it is determined by the instructor that it is statistically unlikely that the final exam will change the student's grade. A student always has the option to take the final exam if they wish to do so. When a student is permitted to not take the final exam, their course grade will be determined by the weighted average of all other graded work.

Attendance: The lectures introduce the class material. Some material presented in the lectures is not covered in the text. Students are responsible for all class material covered or assigned in lectures. After the first three classes, students must attend 39 of the remaining 42 lectures to receive 100% of their attendance grade. For each class missed the attendance grade will be lowered by 5 points. If you come to class without your clicker, you will only receive half credit for your attendance that day. If your clicker comes to class without you, you will lose all attendance points.

Cheating: Instances of cheating will be handled according to College of Engineering policy. Academic integrity is critical to maintaining high standards within the academic community. All students enrolled in the College of Engineering are expected to demonstrate academic integrity when submitting course-related work (e.g., assignments, quizzes, individual projects, and exams). Cheating covers any case in which a student has received unauthorized aid in his/her performance that contributes to a course grade or submits material contributing to a course grade with the intent to deceive the instructor or grader. Plagiarism or submitting material copied from another source without providing a reference to the source is considered cheating. If the unauthorized aid includes help from another student, then that student is considered to have cheated as well. Students are expected to submit assignments that are entirely their own work. A common example of cheating is to copy another person's program or homework assignment.

If a student cheats on a homework or programming assignment, then he/she will receive a grade of zero (a grade of F) for that item as will anyone assisting him/her in an unauthorized way. If a student cheats on an exam or the final or cheats more than once on an assignment, the violation will be reported to the College of Engineering Academic Integrity Committee with the recommendation of a grade of 'F' for the course, subject to the review and endorsement of the chairperson and the dean. All cases of cheating will be reported to the Director of Undergraduate Studies.

Repeated academic integrity violations may lead to dismissal from the University. To review the University's Academic Dishonesty Policy, please see
http://www.ncat.edu/divisions/academic-affairs/bulletin/2016-2017/academic-info-and-regs/academic-dishonesty-policy.html

Special needs: Students with special needs (e.g. hearing, vision, etc.) should inform the instructor at the beginning of the semester.

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Class Schedule

Monday, January 9 *Snow* *(no classes)*	Wednesday, January 11 Introduction scan chapter 1	Friday, January 13 Programming Language History
Monday, January16 *Martin Luther King Day holiday* *(no classes)*	Wednesday, January 18 Programming paradigms	Friday, January 20 Programming in assembler
Monday, January 23 Programming in assembler	Wednesday, January 25 Computing theory read 2.4	Friday, January 27 Language translation read section 2.1
Monday, January 30 Lexical scanning read section 2.2	Wednesday, February 1 Lexical scanning	Friday, February 3 Parsing read section 2.3
Monday, February 6 Parsing	Wednesday, February 8 Parsing	Friday, February 10 Semantics read chapter 4
Monday, February 13 Semantics	Wednesday, February 15 review	Friday, February 17 **Exam 1**
Monday, February 20 Interpreted languages read chapter 14	Wednesday, February 22 Memory layout read 3.1 & 3.2	Friday, February 24 Memory layout
Monday, February 27 Object Oriented programming read sections 10.1 - 10.2	Wednesday, March 1 OO programming read 10.3	Friday, March 3 OO programming
Monday, March 6 *Spring Break* *(no classes)*	Wednesday, March 8 *Spring Break* *(no classes)*	Friday, March 10 *Spring Break* *(no classes)*
Monday, March 13 OO inheritance	Wednesday, March 15 OO dynamic dispatch read 10.4	Friday, March 17 OO dynamic dispatch
Monday, March 20 review	Wednesday, March 22 **Exam 2**	Friday, March 24 Type systems read section 7.1
Monday, March 27 Type checking read 7.2	Wednesday, March 29 Types read chapter 8	Friday, March 31 Functional programming read sections 11.1, 11.2, 11.5-11.9
Monday, April 3 Haskell	Wednesday, April 5 Haskell	Friday, April 7 Haskell
Monday, April 10 Haskell	Wednesday, April 12 Haskell	Friday, April 14 *Good Friday* *(no classes)*
Monday, April 17 Haskell	Wednesday, April 19 Logic Programming read chapter 12	Friday, April 21 Prolog Quiz 5
Monday, April 24 Prolog	Wednesday, April 26 Drag & drop programming	Friday, April 28 Drag & drop programming
Monday, May 1 **Exam 3**	Wednesday, May 3 final review	
Tuesday, May 9 **Final Exam** 10:30am – 12:30pm		