Computer Science 3361
Concepts of Programming Languages
Course Syllabus and Policy Statement
Spring 2015

Instructor: Dr. Richard Watson   **Email Address:** richard.watson@ttu.edu
Office: Engineering Center 316   **Office Phone:** 834-0685
TA: TBA (if any)   **TA Office:**_____ **TA E-mail:**_____

Office Hours: 10 - 11 MWF or by appointment. (Tentative, any changes to office hours will be announced)

Course Prerequisites: CS 2413

Textbook: "Programming Language Pragmatics" (3rd Edition) by M. Scott, Published by Morgan Kaufmann

Additional Material: Chapters from "A Concise Introduction to Computer Language" by D. Cooke, Published by Thompson – Books/Cole (out of print – will be provided)

Software: Petite Chez Scheme (Free download from www.scheme.com)
Clingo (Free download from potassco.sourceforge.net)

Catalog Listing: Study of programming language design. The investigation and comparison of different programming language paradigms.

Course Objectives: This course will cover fundamental concepts of the majority of the thousands of programming languages: techniques for syntax and semantic analysis of programming languages and the major constructs and concepts of procedure, functional and logic languages. It aims to provide not only a unified view of (many) programming languages, but also the foundation which makes it easier for students to grasp/evaluate new languages and enables better programming (modeling) skills.

KeyTopics:

---

1. Brief history of the programming languages and tradeoffs in language design
2. Formal syntax
    a. Regular expression and tokens
    b. Context free grammar and parsing
3. Semantics
4. Procedural paradigm
5. Logic programming paradigm
6. Functional programming paradigm

Learning Outcomes:
Students who have completed this course should:

---

1. Be capable of specifying the simplified syntax of programming languages (a)
2. Comprehend the formal semantics of simplified programming languages (a)
3. Know how to construct the simplified tokenizer and parser (a,j)
4. Comprehend and apply the program paradigms to simple problems (a,h)

Methods of Assessment of Learning Outcomes:
The expected learning outcomes for the course will be assessed through two non-comprehensive exams, a comprehensive final exam, homework and programming assignments, and (possibly) pop quizzes.

Homework Policy:
Homework problems will be given during the semester. Homework will be graded solely on whether it attempted (check) or not (zero). Students should view homework as a means of identifying weaknesses in their understanding of a subject. This will hopefully lead to questions in class.

Programming assignment policy:
Late work will only be accepted within 24 hours of the due date and will be graded on a 90% basis. Deadlines will not be extended due to system failures or disk crashes. Please always back up work. Code must be properly commented and submission must contain proper instructions on how the code it to be run.

Test Policy:
All tests will count towards the final grade; i.e. no exam grades will be "dropped". Only students that miss an exam due to a university-approved absence are eligible to take the makeup exam. After the exams are returned to the class, if there are any questions concerning the grading of the exam, the student must return the test along with a written explanation of their concern to the instructor by the beginning of the class period after the exams are returned.

Cheating on tests and programming assignments will not be tolerated. Any student caught cheating on an exam or assignment will receive a grade of 'F' for the course, and will be reported to the Judicial Programs office for possible further sanctions from the University.

Course Average Determination:		**Course Grade Division:**	
40%	Test 1 & 2	90 – 100	A
30%	Final	80 – 89	B
5%	Homework/Quizzes	70 – 79	C
25%	Programming Assignments	60 – 69	D
		0 – 59	F

(There will be no extra-credit or curving of grades in the class.)

Lecture Schedule: (subject to change as necessary)
1/14	Introduction to course
1/16	Brief overview of different paradigms
1/19	MLK Day Holiday, No classes
1/21	Compilation versus interpretation
1/23	Overview of how a compiler works
1/26	Formal Syntax - tokens, regular expressions and parsing
1/28	Formal Syntax - tokens, regular expressions and parsing (continued)
1/30	Formal Syntax - Context-Free Grammars, BNF
2/2	Formal Syntax - Context-Free Grammars, BNF (continued)
2/4	Formal Syntax - Context-Free Grammars, BNF (continued)
2/6	Syntax Analysis
2/9	Syntax Analysis - automatic encoding
2/11	Overview of Syntax of "While" Language
2/13	Review for Test 1 (Tentative)
2/16	Test 1 (Tentative)
2/18	Introduction to Denotational Semantics (WCOE Job Fair)
2/20	Return and go over Test 1 (Tentative)
2/23	Denotational Semantics (Continued)
2/25	Denotational Semantics (Continued)
2/27	Denotational Semantics (Continued)
3/2	Adding semantics to syntax analysis code
3/4	Compiler optimizations
3/6	Answer Set Programming
3/9	Answer Set Programming
3/11	Answer Set Programming (Continued)
3/13	Answer Set Programming (Continued)

3/14 – 3/22   Spring Break, No classes
3/23   Answer Set Programming (Continued)
3/25   Overview of a Functional Language (Scheme)
3/27   Review for Test 2 (Tentative)
3/30   Test 2 (Tentative)
4/1   Scheme (continued)
4/3   Scheme (continued)
4/6   No classes
4/8   Return and go over Test 2 (Tentative)
4/10   Scheme (continued)
4/13   Scheme (continued)
4/15   Imperative Languages, history, changes over time
4/17   Imperative Languages (Continued)
4/20   Imperative Languages (Continued)
4/22   Imperative Languages (Continued)
4/24   Object Oriented Languages
4/27   Object Oriented Languages (Continued)
4/29   Object Oriented Languages (Continued)
5/1   Object Oriented Languages (Continued)
5/4   Last Day of Class – Review for Final Exam
5/8   Final Exam, 7:30 AM - 10:00 AM (in our normal classroom)

Academic Conduct: Policy of the Department and the University will be followed. All work done in this course should conform to the *Statement of Academic Conduct for Engineering Students, College of Engineering, Texas Tech University*.

Attendance Policy:
• You are expected to be present for each class session.
• If you are absent, it is your responsibility to obtain class notes and handouts (if any) from your classmates; I will not necessarily keep extra copies of materials after they are initially distributed;
• There are no makeup exams or tests for unexcused absences.
• Absence due to religious observance -The Texas Tech University Catalog states that a student who is absent from classes for the observance of a religious holy day will be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence (p.49). Notification must be made in writing and delivered in person no later than the 15th class day of the semester.
• Whether an absence is excused or unexcused is determined solely by the instructor with the exception of absences due to religious observance and officially approved trips. The Center for Campus Life will notify faculty, at the student's request, when a student is absent for four consecutive days with appropriate verification of a health related emergency. This notification does not excuse the student from class, it is provided as a courtesy. The service is explained as follows and can be found on the Center for Campus Life web site at: http://www.campuslife.ttu.edu/crisis/

Illness and Death Notification: The Center for Campus Life is responsible for notifying the campus community of student illnesses, immediate family deaths and/or student death. Generally, in cases of student illness or immediate family deaths, the notification to the appropriate campus community members occur when a student is absent from class for four (4) consecutive days with appropriate verification. It is always the student's responsibility for missed class assignments and/or course work during their absence. The student is encouraged to contact the faculty member immediately regarding the absences and to provide verification afterwards. The notification from the Center for Campus Life does not excuse a student from class, assignments, and/or any other course requirements. The notification is provided as a courtesy.

Academic Integrity:
"It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity. The attempt of students to present as their own any work that they have not honestly performed is regarded by the faculty and administration as a serious offense and renders the offenders liable to serious consequences, possibly suspension."

"Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

"Cheating" includes, but is not limited to, the following:
1. Copying from another student's test paper.
2. Using materials during a test that have not been authorized by the person giving the test.
3. Failing to comply with instructions given by the person administering the test.
4. Possessing materials during a test that are not authorized by the person giving the test, such as class notes or specifically designed "crib notes." The presence of textbooks constitutes a violation only if they have been specifically prohibited by the person administering the test.
5. Using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program.
6. Collaborating with or seeking aid or receiving assistance from another student or individual during a test or in conjunction with an assignment without authority.
7. Discussing the contents of an examination with another student who will take the examination.
8. Divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructor has designated that the examination is not to be removed from the examination room or not to be returned to or kept by the student.
9. Substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course related assignment.
10. Paying or offering money or other valuable thing to, or coercing another person to obtain an un-administered test, test key, homework solution, or computer program, or information about an un-administered test, test key, homework solution, or computer program.
11. Falsifying research data, laboratory reports, and/or other academic work offered for credit.
12. Taking, keeping, misplacing, or damaging the property of the university, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct.

"Plagiarism" includes, but is not limited to, the appropriation of, buying, receiving as a gift, or obtaining by any means material that is attributable in whole or in part to another source, including words, ideas, illustrations, structure, computer code, other expression and media, and presenting that material as one's own academic work being offered for credit. Any student who fails to give credit for quotations or for an essentially identical expression of material taken from books, encyclopedias, magazines, Internet documents, reference works or from the themes, reports, or other writings of a fellow student is guilty of plagiarism.

"Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

Civility in the Classroom:
Students are expected to assist in maintaining a classroom environment that is conducive to learning. To ensure that all students have the opportunity to gain from time spent in class, faculty members are encouraged to include a statement in their course syllabi relating to behavioral expectations in the classroom.

Students with Disabilities
ADA Statement:
• Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as possible to make necessary arrangements. Students must present appropriate verification from Student Disability Services during the instructor's office hours. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services office in 335 West Hall or call 806-742-2405.