The University of Texas at Tyler
Master of Science in Computer Science

Syllabus

Course Objectives[1]: By the end of this course students are expected to:
1. Describe the salient characteristics of several language paradigms (procedural, object-oriented, imperative, declarative/logic, functional) [1,2,7].
2. Understand the concept of data binding and its effect upon the semantic level of the language [1,2,4,7].
3. Understand the standard mechanisms of realizing language semantics at execution time [1,2,4,7].
4. Understand the spectrum of source-to-executable language translation, its effect upon efficiency and expressivity the corresponding relation to data binding [1,2,7].
5. Use formal techniques (e.g. BNF) in the specification of language syntax [1,2,4,7].
6. Recognize the relationship between the semantic level of the language and its expressivity, efficiency, control mechanisms, and data types [1,2,4,7].
7. Apply the conceptual material covered in this course (i.e. binding times, run-time support etc.) to the analysis of specific languages [1,2,4,7].
8. Identify the core semantics of data types and control constructs and to recognize the similarity and differences between data and control representations of various languages [1,2,4,7].
9. Code programs that illustrate the core semantics of each set of languages that represent the paradigms covered in the course [1,4].
10. Discuss the technological, software-engineering, and educational issues that affected the evolution of programming languages [1,7].
[1] *Numbers in bracket refer to method(s) used to evaluate the course objective.*

Relationship to Program Outcomes: (only items in dark print apply)[2] **This course supports the following computer science graduate program outcomes, which state that our students at the time of graduation are expected to:**
1. possess an enhanced breadth of knowledge in computer science, combined with a depth of knowledge in critical core areas of computing [1-10];
2. possess the skills and knowledge for lifelong learning in computer science [1-10];
3. possess knowledge of the theoretical foundations of computing and have strong practical application experience [1-10];
4. posses and demonstrate oral and written communication skills;
5. understand and respect the professional standards of ethics expected of a computer scientist and be knowledgeable concerning the history of computing field [1,10];
6. possess a knowledge of computer security and computer security management;
7. analyze and compare relative merits of alternative software design, algorithmic approaches, and computer system organization, with respect to a variety of criteria relevant to the task (e. g. efficiency, scalability, security) [1,6,7,8]; and
8. implement algorithms in multiple programming languages, on multiple hardware platforms, and multiple operating system environments [9].
[2]Numbers in brackets refer to course objective(s) that address the Program Outcome.

Prepared By: Stephen B. Rainwater	Date: 11-01-07
Reviewed By:	Date:

COSC 5340, Programming Languages: Fall 2010
Mon, Wed 6:30-7:45 PM, Room RBN 3039
Instructor: Prof. Sumit Ghosh
Instructor office hours, Mo 4:45-5:45, Tu 10:45-11:45, We 4:45-5:45, Th 10:45-11:15, or by appointment
Room RBN 3014, Tel 903-565-5566, Fax 903-565-5607, sumit_ghosh@uttyler.edu

Official Catalog Course Description:

Theoretical aspects of programming languages, design and implementation criteria, analysis and classification of programming languages. Topics include: language design principles; translation and formalization of syntax; generalization of primitive and abstract data types; sequence, data, and subprogram control; and language paradigms such as imperative, object-oriented, functional, logic, concurrent, and visual.

Prerequisites:

COSC 2315; COSC 2336; and Graduate standing in Computer Science, which includes prior exposure to programming and ability to write and execute programs correctly.

Text and Reference Books and Papers:

In prior years, the following had been used as the textbook.

1. Programming Languages: Design and Implementation, 4th edition, by Terrence W. Pratt and Marvin V. Zelkowitz, 2000, Publisher, Prentice Hall. (Amazon.com Used & new from $4.95)

In this class, I will use three books (including Pratt's book) as references.

2. Programming Language Structures by Elliott I. Organick, Alexandra I. Forsythe, and Robert P. Plummer, Dec 1978. (Amazon.com 16 Used & new from $0.27)

3. Programming Languages: Concepts and Constructs by Ravi Sethi, 1996. (Amazon.com 17 Used & new from $16.50)

In addition, from time to time, I will assign reading material from journal papers that you may obtain from the library (or electronic databases). You are highly encouraged to review the literature and access refereed journal and conference papers, electronically. This is one of the important requirements of this course. The key databases are IEEE XPLORE, ACM Digital Library, Elsevier's ScienceDirect, and Compendex and you can access them all at the UT Tyler library. Papers accessed from the World Wide Web are in general unrefereed and unreliable.

Grading:

In-class participation 10%; In-class or take-home midterm 20%; Final project (research, written report, and oral presentation) 30%; In-class or take-home final exam 40%

Course Outline: tentative list of topics

- Hardware vs. software
- origin and need for computer programming languages
- Relationship between natural and programming languages
- The need for grammar and its manifestations
- Syntax vs. semantics
- Machine Language/Assembly
- Fortran
- Cobol
- Algol-60
- PL/I
- Snobol (String object-oriented language)
- Pascal
- C
- Procedural languages and their fundamental limitations
- Block structured
- Co-routines
- Object oriented
- Memory and pointers

UNIVERSITY OF TEXAS AT TYLER

ADDITIONAL POLICIES:

Plagiarism:

Unless otherwise specified, all work submitted for a grade must be completed by you - no group effort. Plagiarism will result in disciplinary actions. To spare yourself accusations of plagiarism-

1. Do not show another student a copy of your work before it has been graded. The penalties for permitting your work to be copied are the same as the penalties for copying someone else's work.
2. Do not leave printouts of your work where other students may pick them up.

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www.uttyler.edu/wellness/StudentRightsandResponsibilities.html

Grade Replacement/Forgiveness

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to do so will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates will receive grade forgiveness (grade replacement) for only three course repeats; graduates, for two course repeats during his/her career at UT Tyler.

State-Mandated Course Drop Policy

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the 12th day of class (See Schedule of Classes for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office if you have any questions.

Disability Services

If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Services counselor. In order to assure approved services the first week of class, diagnostic, prognostic, and prescriptive information should be received 30 days prior to the beginning of the semester services are requested. For more information, call or visit Disability Services located in the University Center, Room 3150. The telephone number is (903) 566-7079. Additional information may also be obtained at the following UT Tyler Web address: http://www.uttyler.edu/disabilityservices.

Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement:

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation:

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do Not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.