Course Description

Instructor: Prof. Richard Chang <chang@umbc.edu>

In-person office hours (ITE 326): Tue & Thu 12:30pm – 2:00pm

Online office hours: Wed 2:00pm - 3:00pm

Teaching Assistant: Shivanand Kundargi <shivank2@umbc.edu>

Office hours TBA

Grader: Amanjot Singh <asingh22@umbc.edu>

Course Web Page: http://umbc.edu/~chang/cs331

Time & Place.

Tue & Thu 2:30pm – 3:45pm, Sherman 015

Textbooks.

Programming Language Pragmatics 4th edition, Michael L. Scott.
Morgan Kaufmann, 2016 (ISBN: 9780124104099)

Programming in Haskell, 2nd edition, Graham Hutton.
Cambridge University Press, 2016 (ISBN: 9781316626221)

Prerequisites. Students enrolled in this class must have completed CMSC 202 Computer Science II and CMSC 203 Discrete Structures with a grade of C or higher.

Objectives. The key learning objectives for this course are:

- To understand how programming languages have and continue to evolve
- To learn about formal definition and specification of programming languages
- To learn about different programming paradigms, and gain some experience in several
- To study how programming languages are implemented

Grading. Grades will be based upon the following distribution

Attendance	4%
Homework (12)	36%
Haskell Quizzes (4)	16%
Midterm Exam	20%
Final Exam	24%

The schedule as planned has 12 homework assignments. However, if a homework assignment is canceled and not made up, homework assignments would still be 36% of your final grade — each homework assignment would be worth more.

The final letter grade is based on the standard formula:

$$0 \le F < 60, \quad 60 \le D < 70, \quad 70 \le C < 80, \quad 80 \le B < 90, \quad 90 \le A \le 100$$

Grades will not be "curved" — that is, the percentages of A's, B's and C's are not fixed. However, depending upon the distribution of grades in the class, there may be adjustments in the students' favor, but under no circumstances will the letter grades be lower than in the standard formula.

Grades are given for work done *during* the semester; incomplete grades will only be given for medical illness or other such dire circumstances. In particular, taking a heavy course load is not a legitimate excuse for receiving an incomplete.

Attendance. Lectures will be recorded but attendance will be taken starting the second week of classes (after the add/drop period is over). You may be excused for up to 3 absences. If you miss a lecture, you can make up the points by completing an online attendance quiz before 9:00am on the next Monday. Note that you will receive 100% of attendance points by being physically present for a lecture, but you will lose credit if you answer the questions of the attendance quiz incorrectly.

Haskell Quizzes & Exams. There are four Haskell quizzes, one midterm exam and one final exam. (See class schedule.) The Haskell quizzes and exams must be taken in-person.

Homework Submission. Written work will be submitted online in PDF. You can prepare your written work electronically or scan in handwritten sheets. If you scan in your work, please make sure that you use a good scanning app that corrects the lighting and keystoning. Both the Apple App Store and the Google Play Store have many good inexpensive scanning apps.

Programming assignments will be submitted on GL.

Late Homework. Homework assignments are due by 11:59pm on Thursdays. Unexcused late homework will be penalized as follows:

1 day late (by Friday 11:59pm)	-5%
2 days late (by Saturday 11:59pm)	-10%
3 days late (by Sunday 11:59pm)	-20%
4 days late (by Monday 11:59pm)	-40%
before next class (by Tuesday **2:30pm**)	-100%

Late homework will not be accepted after the start of the next lecture. This allows for timely grading and discussion.

Three times during the semester, you will be allowed to submit a late homework assignment without excuse and without penalty one lecture late (e.g., homework due on Thursday may be submitted on Tuesday without penalty). One full-credit unexcused late assignment will be accepted for Homework 1-4, one for Homework 5-8 and another for Homework 9-12. You do not accrue any credit for submitting homework assignments on time. For example, if you submitted all of Homework 1-8 on time, you can still only turn in one of Homework 9-12 late for full credit.

Homework Policy. You are allowed to discuss the homework assignments including the programming portions with other students verbally. However, you should *never* look at another student's code. Homework should be written up *independently*. All cases of academic misconduct will be reported to the UMBC Academic Conduct Committee.

University Policies and Resources.

The UMBC academic integrity policy is available at: <https://tinyurl.com/yd26tx2d>

UMBC Policies on Accessibility & Disability Accommodations; Sexual Assault, Sexual Harassment, Gender Based Violence & Discrimination; Pregnancy and Parenting; Religious Observances & Accommodations; and Hate, Bias Discrimination & Harassment are described at the Office of Equity & Inclusion's website.

CMSC 331 Principles of Programming Languages, Section 01, Class Schedule

		PL Concepts	ML Scott	Haskell	Hutton	HW Assign	HW Due
1	**Thu Aug 29**	Introduction	Ch1				
2	**Tue Sep 03**	Logic Programming	Ch12.1-2	Intro to Haskell	1.1-1.4		
3	**Thu Sep 05**	FORTH		Installing Haskell	2.1-2.5	HW1	
4	**Tue Sep 10**	Functional Progamming		Lists, tuples and functions	3.1-3.9		
5	**Thu Sep 12**	Object-oriented Programming		Haskell functions	4.1-4.3	HW2	HW1
6	**Tue Sep 17**	Interpreters & Compilers	2.1	Haskell functions	4.4-4.6		
7	**Thu Sep 19**	Lexical Analysis	2.2	List comprehensions	5.1-5.3	HW3	HW2
8	**Tue Sep 24**	Regular Expressions	2.3	List comprehensions	5.4-5.6		
9	**Thu Sep 26**	Context-free Grammars		Recursion	6.1-6.2	HW4	HW3
10	**Tue Oct 01**	Recursive Descent Parsing		Recursion	6.3-6.6		
11	**Thu Oct 03**	Predictive Parsing		Higher-order functions	7.1-7.2	HW5	HW4
12	**Tue Oct 08**	Bottom-up Parsing		Higher-order functions	7.3-7.5		
13	**Thu Oct 10**	lex & yacc		***Haskell Quiz 1***		HW6	HW5
14	**Tue Oct 15**	Automata Theory	2.4	Higher-order functions	7.6-7.7		
15	**Thu Oct 17**	Stack frames	9.1-9.2	Types and classes	8.1-8.3	HW7	HW6
16	**Tue Oct 22**	Closures & Lambdas	3.6	Types and classes	8.4-8.6		
17	**Thu Oct 24**	Review		***Haskell Quiz 2***		HW8	HW7
18	**Tue Oct 29**	***Midterm Exam***					
19	**Thu Oct 31**	Names, Scopes & Binding	3.1-3.5	Haskell Input & Output	10.-10.5	HW9	HW8
20	**Tue Nov 05**	Semantics	4.1-4.4				
21	**Thu Nov 07**			Monads	12.1 - 12.3	HW10	HW9
22	**Tue Nov 12**	Control Flow	6.1-6.6	Monads			
23	**Thu Nov 14**	Type Systems	7.1-7.3	***Haskell Quiz 3***		HW11	HW10
24	**Tue Nov 19**	Parameter Passing	9.3	Foldables	14.2		
25	**Thu Nov 21**	Exception Handling	9.4	Traversables	14.3	HW12	HW11
26	**Tue Nov 26**	Object-oriented Programming	10.1-10.4	Lazy Evaluation	15.1-15.4		
	Thu Nov 28	***Thanksgiving break***					
27	**Tue Dec 03**	Concurrency	13.-13.4	Lazy Evaluation	15.5-15.7		
28	**Thu Dec 05**	OpenMP, Java Threads		***Haskell Quiz 4***			HW12
29	**Tue Dec 10**	Review					
	Thu Dec 12	**1:00pm - 3:00pm Final Exam**					