ALGONQUIN COLLEGE

COURSE SECTION INFORMATION

SCHOOL OF ADVANCED TECHNOLOGY

COMPILERS

Computer Engineering Technology – Computing Science

Professor's Name: Svillen Ranev

Email: ranevs@algonquincollege.com

Phone: 613 727 4723 x3466

Office: T-318

Out of Class Assistance: regular office hours as posted on Blackboard, scheduled appointments, Blackboard Discussions, Email

Course Number: CST8152

Course Section: 010

Academic Year: 2015 - 2016

Term: 16 Winter

Academic Level: 04

Section-Specific Learning Resources

- The textbooks for this course are the same as those listed in the approved Course Outline available on Blackboard.
- Software resources are the same as listed in the Course Outline.

Evaluation Breakdown

Essential:

- Assessments (by name and number) corresponding to assessment categories in the Course Outline's Predefined Evaluation/Earning Credit section
- Percentage weight of each assessment adding up to 100%
- Link between assessments and Course Learning Requirements (CLRs)

Assessment	Value	CLRs
Midterm exam	30%	1,2,3,4
Final Exam	30%	1,2,3,4
Assignments	40%	1,2,3,4,5

Learning Schedule (This schedule is subject to changes based on students' needs and input, and course scheduling constrains.)

Essential:

- Week number and dates when known

- ❖ Topics or subjects to be covered each week
- ❖ Learning activities and learning resources
- ❖ Assessments: what, when and weight (%) and other key dates (e.g., drop deadlines)
- ❖ Readings (by author and page numbers), websites, videos or other required resources
- ❖ Link between weekly themes and CLRs

Date	Weekly Theme and Learning Outcomes	Learning Activities	Assessments (%)	Resources	CLRs
Week 1 Jan. 11-15	• **Course Overview** • Introduction to Compiling. Why compilers? A brief history. • Language processors: Translators, Compilers, Interpreters.	Classroom lectures **Lab:** Building a project. C data types. **Assignment 1:** Building a Memory Buffer, due in 3 weeks	Lab exercise	Topic specific resources are included in the course materials available on Blackboard Text Chapter 1: Introduction, sections 1.1-1.2	1, 2
Week 2	**The phases and the components of a compiler** • Major data structures in a compiler. • Compiler run-time environment. • Programs related to compilers. • Compiler generators. • Planning and developing a compiler.	Classroom lectures **Lab:** C memory management. Working on Assignment 1.	None Sept. 12: drop deadline for full tuition refund	Topic specific resources are included in the course materials available on Blackboard Text Chapter 1: Introduction, sections 1.2-1.6	1,2,3
Week 3	**Language Definition.** • Informal and formal language specifications. Grammars. • Context-free grammars. BNF (Backus-Naur Form) grammars. • Lexical and syntax grammars. Problems with grammars. • Writing a grammar for a simple programming language.	Classroom lectures **Lab:** Working on Assignment 1.	Assignment 1 due (**5% of term mark)**	Topic specific resources are included in the course materials available on Blackboard Text Chapter 2: Simple Syntax-Directed Translator, sections 2.1, 2.2. Text Chapter 4: Syntax-Analysis, sections 4.2.1	1,2,3
Week 4	**Lexical Analysis (Scanning)** • The scanning process - recognition of symbols and words (tokens). • Regular expressions.	Classroom lectures **Lab:** Advanced data types in C. **Assignment 2:** Building a Scanner, **15% of term mark**, due in 4 weeks	Lab exercise	Topic specific resources are included in the course materials available on Blackboard Text Chapter 3: Syntax Analysis, sections 3.1 - 3.2	1,2,3,4,5

Week 5	**Lexical Analysis** • Regular expressions and grammars. • State transition diagrams.	Classroom lectures **Lab:** Advanced data types in C - Pointers to functions. Arrays of pointers to functions. Working on Assignment 2.	Lab exercise	Topic specific resources are included in the course materials available on Blackboard Text Chapter 3: Syntax Analysis, section 3.3	1,2,3,4,5
Week 6	**Lexical Analysis** • Finite automata - DFA and NFA.	Classroom lectures **Lab:** Working on Assignment 2.	None	Topic specific resources are included in the course materials available on Blackboard Text Chapter 3: Syntax Analysis, sec 3.4 - 3.9	1,2,3,4,5
Week 7	**Lexical Analysis** • From regular expressions to NFAs and DFA.	Classroom lectures **Lab:** Working on Assignment 2.	Assignment 2 due (1**5% of term mark)**	Topic specific resources are included in the course materials available on Blackboard Text Chapter 3: Syntax Analysis, sec 3.4 - 3.9	1,2,3,4,5
Week 8	**Lexical Analysis** • Implementing a scanner. Scanner generators. • Review of course material	Classroom lectures Preparation for Midterm Test. **Lab:** Generating a scanner using Flex scanner generator. Working on late Assignment 2. **Assignment 3:** Building a Symbol Table, due in 3 weeks	Lab exercise	Topic specific resources are included in the course materials available on Blackboard Text Chapter 3: Syntax Analysis, sec 3.4 - 3.9	1,2,3,4,5
Week 9	**Semantics** • A language variable attributes. • Symbol and literal tables. • A symbol table interface. Basic implementation techniques.	Classroom lectures **Lab:** The C Language variable attributes. Working on Assignment 3.	**Midterm Exam** (**30% of term mark)**	Topic specific resources are included in the course materials available on Blackboard Text Chapter 2: Simple Syntax-Directed Translator, section 2.7	1,2,3,4,5

Week 10	**Run-time Environment**	Classroom lectures **Lab:** Working on Assignment 3.	Assignment 3 due (**6% of term mark)**	Topic specific resources are included in the course materials available on Blackboard Text Chapter 7: Run-Time Environment sections 7.1, 7.4	1,2,3,4,5
Week 11	**Syntax Analysis (Parsing)** • Overview of the parsing process. • Top-down parsing.	Classroom lectures **Lab:** Working on late Assignment 3. Assignment 4: Building a Parser, due in 4 weeks	None	Topic specific resources are included in the course materials available on Blackboard Text Chapter 2: Simple Syntax-Directed Translator, section 2.4	1,2,3,4,5
Week 12	**Syntax Analysis** • Recursive-Descent Predictive parsers. • Building First and Follow sets.	Classroom lectures **Lab:** Working on Assignment 4.	None	Topic specific resources are included in the course materials available on Blackboard Text Chapter 4: Syntax Analysis, sections 4.1-4.5	1,2,3,4,5
Week 13	**Syntax Analysis** • Non-recursive predictive parsers. • Resolving the “Dangling Else” ambiguity. • Error handling and error recovery in parsers.	Classroom lectures **Lab:** Recursion. Writing a Language Grammar. Working on Assignment 4.	Lab exercise	Topic specific resources are included in the course materials available on Blackboard Text Chapter 4: Syntax Analysis, sections 4.4,4.8	1,2,3,4,5
Week 14	**Syntax Analysis** • Bottom-up parsing. LR parsers. • Parser generators. **Review of course material**	Classroom lectures **Lab:** Working on Assignment 4.	Assignment 4 due (**14% of term mark)**	Topic specific resources are included in the course materials available on Blackboard Text Chapter 4: Syntax Analysis, sections 4.5,4.9	1,2,3,4,5
Week 15 Apr. 25-30	**Final Exam**	Preparation for Final exam	**Final Exam (30% of the term mark)**	All of the above	1,2,3,4

Other Important Information

Please consult the Course Outline for important information about attendance and classroom policies specific to the course.

Please consult the Evaluation/Earning Credit section of the Course Outline for the list of Course Learning Requirements validated by assignments and tests.

Please consult the Getting Started folder on Blackboard for the Assignment Submission standard and Assignment Marking Guide.