

AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH

Faculty of Science & Information Technology

Department of Computer Science

Undergraduate Program

**COURSE OUTLINE**

**Term:** Fall 2017-2018

**I - Course Code and Title:** CSC3220 Compiler Design

**II - Credit:** 3

**III - Nature:** Major Course for CSSE, SE, CS, CSE

**IV-** **Prerequisite:** CSC3113 Theory of Computation

**V- Course Description:**

As a continuation of Theory of Computation, in this course we will try to design a simple compiler. Here, students will learn the basics of compiler design, necessary theory and finally, they will participate a compiler design project

**VI – Objectives:**

At the end of the course, the following objectives shall have been attained:

1. Understood the basics of Compiler Design.
2. Able to find new rules for problem.
3. Prepared and presented a group project

**VII – Topics to be Covered**

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| --- | --- | --- | --- | --- |
| **TOPICS** | **Specific Objective(s)** | **Time Frame** | **Suggested Activities** | **Teaching Strategy(s)** |
| Mission & Vision of AIUB;  Introduction to Compilers  and  Simple  one-pass compiler | * Analysis of Source Programs * Compiler Construction tools * Syntax. * Translation basics * Parsing * Lexical Analyzer | Week  1,2 | Group Discussion | Lecture  Homework assignment  Power point slide |
| Syntax Analysis  &  Syntax Analysis  Contd. | * Context Free Grammar * Ambiguous Grammar * Syntax Tree * Quiz 1 | Week  3 | Group Discussion |  |
| Syntax Directed Translation | * Basics * Methods of translation * Syntax Directed Definition * Translation Scheme * Quiz 2 | Week  4,5 | Group Discussion | Lecture  Power point slide  Homework assignment |
| Syntax Directed Translation  Contd. | * Top-Down Parsing * Bottom up parsing * LR parsers * Quiz 3 | Week  5,6 | Group Discussion | Lecture  Power point slide  Homework assignment |
| Midterm Exams (Week 7) | | | | |
| Lexical Analysis  &  Lexical Analysis  Contd.  &  Syntax Analysis | * Rules * Input Buffering * Tokens * Language * Finite Automata * Regular Expression to NFA | Week 8,9 | Group Discussion | Lecture  Power point slide  Homework assignment |
| Syntax Directed Translation  Contd.  &  Type Checking | * Quiz 4 * Predictive Parser * Implementing LL1 parser * Type System * Type | Week 10,11 | Group Discussion | Lecture  Power point slide  Homework assignment |
| Type Checking  Contd. | * Conversions * Space & Time Complexity * Quiz 5 | Week 12 | Group Discussion | Lecture  Power point slide  Homework assignment |
| Type Systems  &  Type Systems  Contd. | * Type Checkers * Type Systems * Quiz 6 | Week 13 | Group Discussion | Lecture  Homework Assignment in a group. |
| Final Exams (Week 14) | | | | |

**VI - Course Requirements**

1. Must appear at least two quizzes before the midterm examination and also before the final term examination.
2. Must appear at the Midterm and the Final term examination.
3. Students must have 80% attendance to pass the course.

**VII – Evaluation**

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| **Theory** | Quiz (Best Two) | 30~40 |
|  | Class Attendance/performance | 20~10 |
|  | Term Exam | 40~50 |
|  | Total | 100 |
| **Midterm** | 100% of Theory | |
| **Final Term** | 100% of Theory | |
| **Grand Total** | 40% of Midterm + 60% of Final Term | |

**VIII – Textbook/ Reference**

**Materials**

1. **Compilers-Principles, techniques and tools**,(2nd Edition)

* V. Aho, Sethi and D. Ullman

1. **Principles of Compiler Design (**2nd Revised Edition 2009)

* A. A. Puntambekar

1. **Basics of Compiler Design**

* Torben Mogensen