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| **Course** | Formal Languages and Compilers | |  |
| **Title :** |  |
|  |  |  |
| [Sylabus] |  |  |  |
|  |  |  |  |
|  | Category | Major selection (major selection) |  |
|  |  |  |  |
|  | Number(section) | 40105(01) |  |
|  |  |  |  |
|  | Title | Formal Languages and |  |
|  | Compilers |  |
|  |  |  |
| Course |  |  |  |
| Credit(Hours) | 3 Credit(3 Hours) |  |
|  |  |
|  |  |  |  |
|  | Type | lecture |  |
|  |  |  |  |
|  | Time(Room) | Mon 07,08,09/19-108/109 |  |
|  |  |  |  |
|  | school year | 4 years |  |
|  |  |  |  |

**2022-1st Semester**

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| --- | --- | --- | --- |
|  | Department or | School of Electrical and |  |
|  | Division | Computer Engineering |  |
|  | Name |  |  |
|  |  |  |  |
|  | Phone |  |  |
| Instructor |  |  |  |
| E-mail |  |  |
|  |  |  |
|  |  |  |  |
|  | Homepage |  |  |
|  |  |  |  |
|  | Office Hours |  |  |
|  |  |  |  |
| Assistant | name & phone |  |  |
|  |  |  |  |

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|  |  | Evaluation Method | |  | absolute evaluation |  |
|  |  |  |  |  |  |  |
|  |  | □ Attendance (10%) | | □ Portfolio (0%) | □ Participation (0%) |  |
|  | Grading |  |  |  |  |  |
|  |  | □ Assignment (10%) | | □ Quiz (0%) | □ Midterm Report (0%) | □ Midterm Exam (40%) |
|  |  | □ Final Report (0%) | | □ Final Exam (40%) | □ Other (0%) |  |
|  |  |  |  |  | |  |
|  | Type | | Lecture and Practice , PBL , Foreign Language , Convergence | | |  |
|  |  |  |  |  |  |  |
|  | Teaching Method | | Lecture , Practice , Design , Project | |  |  |
|  |  |  |  |  |  |  |
|  |  |  | It is considered plagiarism to draw any idea or any language from someone else wihout adequately crediting that | | | |
|  | Plagiarism Policy | | source in your work. It doesn't matter whether the source is a published author, another student, a Web site without | | | |
|  |  |  | clear authorship, a Web site that sells academic papers, or any other person: Taking credit for antone else's work | | | |
|  |  |  | is stealing, and it is unacceptable in all academic situations, whether you do it intentionally or by accident. | | | |

Any student with a disability is welcome to contact the instructor to get academic accommodations, and may be in touch with the Student Accessibility Services by calling 02-6490-6273 to discuss the process for requesting accommodations.

Course Objectives

This course provides fundamental concepts of formal languages and skills to design a compiler. Topics included are finite automata, regular expressions, regular languages, regular grammar, finite automata with output, pushdown automata, context-free languages and context-free grammars, parsing techniques, turing machine and unrestricted grammars.

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| --- | --- | --- |
|  | Course Description | Textbooks and Reference Materials |
|  |  |  |
|  | Yuhan Automata, Pushdown Automata, Regular Language, Non-Context Language, Turing Machine, etc. | David Galles, Modern Compiler Design |
|  | Learn the basic theory of compiler in |  |
|  | Vocabulary analysis, syntax analysis, semantic analysis, code generation, optimization, etc. |  |
|  | The roles and principles of each step are covered. Also, the compiler auto-generation tool |  |
|  | Learn the skills to implement a small-scale compiler using |  |

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| --- | --- | --- |
|  | Specialty competency | Representative competency |
|  |  |  |
|  | Knowledge Application | Primary |
|  |  |  |
|  | Analysis Experiment |  |
|  |  |  |
|  | Problem Definition |  |
|  |  |  |
|  | Resource Utilization | Secondary |
|  |  |  |
|  | Planning Ability |  |
|  |  |  |
|  | cooperative ability |  |
|  |  |  |
|  | Communicative Skills |  |
|  |  |  |
|  | Continuous Learning |  |

|  |  |
| --- | --- |
| Specialty competency | Representative competency |
|  |  |

Effect Understanding

Vocational Ethics

**Course Title:** Formal Language and Compiler **2022year 1st Semester**

[Weekly Lesson Plan]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Week | Contents | Teaching | Teaching | Requirements, |  |
| Method | Materials | Assignments, etc. |  |
|  |  |  |
| One | Introduction | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 2 | Lexical Analysis I | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 3 | Lexical Analysis II | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 4 | Context-free Grammers | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 5 | Top-down Parsing I | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 6 | Top-down Parsing II | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 7 | Bottom-up Parsing | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 8 | Review and Evaluation | Questions and |  | Textbook |  |
| Answers, Test |  |  |
|  |  |  |  |  |
|  |  |  |  |  |  |
| 9 | Abstract Syntax Trees | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 10 | Semantic Analysis I | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 11 | Semantic Analysis II | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 12 | Supplementary Week |  |  |  |  |
|  |  |  |  |  |  |
| 13 | Assembly Trees | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 14 | Code Generation | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 15 | Memory Management | Lecture |  | Textbook |  |
|  |  |  |  |  |  |
| 16 | Review and Final exam | Questions and |  | Textbook |  |
| Answers, Test |  |  |
|  |  |  |  |  |
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