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**Department of Computer Science**

**College of Science**

**University of Salahaddin**

**Subject: Compiler Construction**

**Course Book – *Semester2 for 3-CS***

**Lecturer's name PhD.Shaimaa Awadh Alaubi**

**Academic Year: 2022/2023**

**Course Book**

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| **1. Course name** | **Compiler** | |
| **2. Lecturer in charge** | **Dr.shaimaa Awadh** | |
| **3. Department/ College** |  | |
| **4. Contact** | **e-mail:** [**shaimaa.alaubi@su.edu.krd**](mailto:shaimaa.alaubi@su.edu.krd)  **Tel:** | |
| **5. Time (in hours) per week** | **Theory: 2**  **Practical: 2** | |
| **6. Office hours** | **Tuesday 8:30-10:30** | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** |  | |
| **9. Keywords** | **Lexical,token.symbol table** | |
| **10. Course overview:**  Interaction involving humans are most effectively carried out through the medium of language. In computer program a programmer language serves as a mean of communication between the person with a problem and the computer used to help solve it. | | |
| **11. Course objective:**  This course will cover all principles, methods and examples of compiler system that used in computer and how that system works inside computer in order to make a translation from high level language to low level language (0,1) this language which is only understood by computer machine. | | |
| **12. Student's obligation** The course consists of two parts; a theoretical part and practical or applied part, part I (theory) will be depend on lectures in the hall to explain the basic concepts associated with the course by using the Power Point.  Part II (practical) which is associated with training on the use and establishment of databases will be applied in the computer lab. | | |
| **13. Forms of teaching**  Using power point and word documents showing by data show and white board. | | |
| **14. Assessment scheme**  27%The students are required to do at least two closed book exam at the mid of semester  13%The students are required to perform specified tasks in the lab and provide a small project at the end of course  ‌ | | |
| **15. Student learning outcome:**  The student will learn how the computer take the user program then making compilation process first then do running process step by step. | | |
| **16. Course Reading List and References‌:**  1- Principles of compiler design  Alfred V. Aho & Jeffrey D. Ullman  2- Basics of compiler design  Torben Egidius Mogensen  3- Compilers: principles, techniques, and tools  Alfred V. Aho & Jeffry D. Ullman | | |
| **17. The Topics:** | | **Lecturer's name** |
| Week1:LL1 grammar  Week 2: Button up parsing, shift reduce parsing method, postfix  Week 3: **Operator­ precedence parser:**  Week 4: **LR parser**  Week 5: **SLR Parsing tables**  Week 6: **LALR Parser**  Week 7: second mid course exam  Week 8: **Conflict in shift-Reduce parsing**  Week 9: **Semantic Analysis**  Week 10: **Intermediate Code Generation**  Week 11:code optimization  Week 12: **Code Generation**  Week 13: discussion and general review  Final Exam: will be determined by the exam board | | Dr.Shaimaa |
| **18. Practical Topics** | |  |
| |  |  | | --- | --- | | **Week(s)** | **Lab** | | 1-7 | **Build a syntax program** | | 8-10 | **Semantic program** | | 11-13 | **Code optimizer program** | | 14 | **Finishing compiler program** | | 15 | **Exam** | | | Dr.Shaimaa |
| **19. Examinations:**  Q1: Explain the parts of compilation in a compiler.(2 marks)  Q2: What is the function of intermediate code generation phase? (1 mark)  Q3: How many types of errors in a compiler; explain? (2 marks) | | |
| **20. Extra notes:** | | |
| **21. Peer review** | | |