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| **ELEMENT** | **CONTENT** |
| DEPARTMENT | CIS |
| AUTHOR (S) | Peter Chapin |
| COURSE NUMBER | **CIS 3030** |
| COURSE TITLE | **Programming Languages** |
| SHORT TITLE | Prog Languages |
| COURSE LEVEL | 3000 |
| DATE CREATED |  |
| CHECKED/CHANGED | 5/4/2017 |
| PREREQUISITES | CIS 2260 |
| COREQUISITES | CIS 3050 |
| RESTRICTIONS |  |
| SPECIAL FEES | No |
| CREDITS | 3 |
| HOURS | 3 hours of lecture per week |
| SEMESTER | Fall |
| COURSE DESCRIPTION | This course covers fundamental concepts in programming language design from the perspective of the practical programmer. Topics include the syntactic representation of programs; functional programming; static vs. dynamic programming languages; selected advanced object oriented topics; and an introduction to the theory of computation as it applies to programming languages. The student gains useful experience with at least two new languages: one the focus of the instructor and one chosen by the student for a project. |
| SUGGESTED TEXTS | *Concepts of Programming Languages*; Robert W. Sebesta |
| OPTIONAL TEXTS |  |
| COURSE OUTCOMES | The successful student will be able to:   1. Write and analyze BNF grammar notation 2. Understand the alternatives for language translation (compilation, interpretation, and virtual execution environments) 3. Demonstrate proficiency with functional programming 4. Understand the differences and relative advantages of static vs. dynamic programming languages 5. Understand different approaches to storage management as provided by programming languages 6. Learn a new language readily 7. Understand how to select the language best suited for a given task |
| COURSE CONTENT | 1. Introduction 2. Language paradigms 3. Relationship between machine architectures and programming languages 4. Syntax, translation, and BNF 5. Language characteristics and semantics 6. Storage management 7. Functional programming 8. Inheritance, multiple inheritance, and its variations 9. Dynamic vs. static programming languages 10. Turing machines 11. Exposure to a number of programming languages and significant experience with at least two |
| LAB/STUDIO OUTCOMES |  |
| LAB/STUDIO CONTENT |  |
| LECTURE CAPACITY | 21 |
| LAB CAPACITY |  |
| GRADED OR P/NP | Graded |
| EVALUATION | Homework, exams, project with report and presentation |
| DELIVERY METHOD | ONL |
| ROOM REQUIREMENTS | No room |
| AUTHOR’S NOTES |  |