

CS 5090 : LANGUAGE DESIGN AND IMPLEMENTATION

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| <i>Semester Hours:</i> | 3.0 | <i>Contact Hours:</i> 3 |
| <i>Coordinator:</i> | Yan Wu | |
| <i>Text:</i> | Selected Works from Multiple Sources | |
| <i>Author(s):</i> | VARIOUS | |
| <i>Year:</i> | Various | |

SPECIFIC COURSE INFORMATION

Catalog Description:

Fundamental concepts of languages. Processors, data, operations, sequence control, data control, storage management, syntax, translation. Prerequisite: Full Admission to MS in CS program or consent of department.

Course type: **ELECTIVE**

SPECIFIC COURSE GOALS

- I can explain the difference between a compiler and interpreter.
- I understand and can implement the different phases of a compiler (e.g., lexical, syntactic, semantic, code generation).
- I can explain parser error recovery techniques.
- I know how to translate abstract syntax trees into an intermediate language.
- I understand source code optimization techniques.
- I can analyze relevant research and communicate my findings.

LIST OF TOPICS COVERED

- Introduction (1 week)
- Compilers (4 weeks)
- Implementation of Language Features (3 weeks)
- Error Analysis and Recovery (1 week)
- Symbol Tables (1 week)

- Role of Linker (1 week)
- Code Optimization (2 weeks)
- Differences Between Compilers & Interpreters (1 week)