**ABET Course Syllabus – CS4188**

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| **Code** | CS4188 | **Credits** | 3 |
| **Title** | Compilers | **Coordinator** | Raj Pamula |

**Course Information**

1. **Catalog Description:** Compiler construction; syntax directed compiler study; organization of a compiler and overall design: parsing, semantic analysis, code generation and optimization.
2. **Prerequisites:** CS3035, CS 3112, CS3186
3. **Contact Hours:** 3 hours/week
4. **Required/Elective:** This course is an elective course in the BS program.

**Textbook**

Aho, Alfred V. and Sethi, Ravi and Ullman, Jeffrey D. Compilers - Principles, Techniques, and Tools, Addison Wesley,

**Course Goals**

The Student Learning Outcomes that are addressed by the course are:

* SLO 1. Students will be able to apply concepts and techniques from computing and mathematics to both theoretical and practical problems.
* SLO 2. Students will be able to demonstrate fluency in at least one programming language and acquaintance with at least three more.
* SLO 3. Students will have a strong foundation in the design, analysis, and application of many types of algorithms.
* SLO 4. Students will have a fundamental understanding of computer systems.

Other outcomes of instruction:

At the end of the course, students are able to

* Undertake complex software projects.
* Understand the complexity of the various stages of a compiler design.

**Topics Covered**

* Introduction to compiler design.
* Symbol tables.
* Lexical analysis.
* Syntactic analysis – top down and bottom up parsing schemes.
* The use of compiler-writing tools: automated parsers and lexical analyzers.
* Error recovery.
* Semantic analysis.
* Translation of source to an intermediate language.
* Translation of intermediate language to object code.
* Optimization of object code.
* Runtime organization
* Operational semantics
* Liveness analysis
* Register allocation
* Garbage collection