**ABET Course Syllabus – CS3034**

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| **Code** | CS3034 | **Credits** | 3 |
| **Title** | Widely-used Programming Languages | **Coordinator** | Russ Abbott |

**Course Information**

1. **Catalog Description:** Introduction to the most widely used contemporary programming languages such as C++, JavaScript, and Python. Graded ABC/NC.
2. **Prerequisites:** CS 2013, CS2148
3. **Contact Hours:** Lecture 2 hours, Laboratory 3 hours /week
4. **Required/Elective:** This course is an elective course in the BS program.

**Textbook**

No formal textbook. Different textbooks or web resources assigned by the instructor.

**Course Goals**

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

*SLO1. Students will be able to apply concepts and techniques from computing and mathematics to both theoretical and practical problems.*

*SLO2. Students will be able to demonstrate fluency in at least one programming language and acquaintance with at least three more.*

*SLO3. Students will have a strong foundation in the design, analysis, and application of many types of algorithms.*

*SLO5. Students will have the training to analyze problems and identify and define the computing requirements appropriate to their solutions.*

*SLO8. Students will have the knowledge, skills, and attitudes for lifelong self-development.*

Other outcomes of instruction:

At the end of the course, students are able to

* Write programs in the selected programming languages.
* Acquire skills to learn new programming languages.

**Topics covered**

1. Survey of widely-used programming languages other than Java
2. Selection of programming languages other than Java such as C++, Python, JavaScript.
3. Comparison of the chosen languages.
4. Review of the chosen programming languages

* Basic syntax
* Data structures implementation
* Application program development

1. C++ is one of the chosen language, the topics covered are:

* Basic syntax
* Pointers; Arrays; Pointer Arithmetic; References
* Structs; Pass By Value and Pass By Reference; Bitwise Operations
* Standard Template Library
* Data Structures
* Projects

1. Python is one of the chosen language, the topics covered are:

* Python Basics
* Python List Operations
* Python OOP part I
* Python OOP Part II; Python Functional Programming
* Apache HTTPD, Postgresql, Django Part I
* Django Part II
* Numpy and scikit-learn