OADII Software Foundry: Programming Language Skills Essentials

Introduction to C++

Fundamentals of software development in C++

**Instructor:** Dean Hougen, Associate Professor, University of Oklahoma, [hougen@ou.edu](mailto:hougen@ou.edu), 405-325-3150

**Meetings:** Thursdays, 5:00 – 7:00 pm, 8 weeks

**Expectations/Goals:** Assumes familiarity with programming / Provides familiarity with object-oriented programming in C++

**Topics:** Learning to design and implement software in terms of objects and their relationships, handle events, and make use of core C++ libraries

**Schedule**

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| **Session** | **Topic** | **Activity** | |
| 1a | Software Foundry and Course Overview |  |
| 1b | C++ Compiler, Linker, Loader, and IDE | Hello World in C++ | |
| 2a | Abstraction & Modularization | Modularizing Code | |
| 2b | OO Design | Class Design and Implementation (D&I) | |
| 3a | Inheritance | Subclasses and Superclasses D&I | |
| 3b | Polymorphism | Polymorphic Methods D&I | |
| 4a | Abstract Classes | Polymorphism via Virtual Classes D&I | |
| 4b | Interface Classes | Polymorphism via Pure Virtual Classes D&I | |
| 5a | Templates | Polymorphism via Templates D&I | |
| 5b | Event-Driven Programming | Hardware Events | |
| 6a | Event Handling | Handling Hardware Events | |
| 6b | Exceptions & Assertions | Generating and Handing Software Events | |
| 7a | Standard Library Containers: Overview | Handling More Data More Easily | |
| 7b | Standard Library Containers: Lists | Classes with Lists D&I | |
| 8a | Standard Library Containers: Sets & Queues | Classes with Sets & Queues D&I | |
| 8b | Standard Library Containers: Maps | Classes with Maps D&I | |