**UE\_\_\_\_\_\_\_\_\_\_ - Generic Programming(4:0:0:0:4)**

**# of Hours: 56**

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| **Class #** | **Topics to be Covered** | **% of Portion covered** | |
|  |  | **Syllabus** | **Cumulative** |
| 1 | Motivation for the course.  Scheme of the course.  Introduction | 20/56% | 20/56% |
| 2 | Function call resolution in C++; overloading; generic function; implicit and explicit instantiation; specialization of function |
| 3 | Variable – name, location, value, type, storage class, qualifier, life and scope – build cycle – linkage concept |
| 4 | Class - fundamental operators |
| 5 | tutorial |
| 6 | Template function – orthogonal template parameters – callback – functor  intro to lamdda |
| 7 | Lambda – capture – life and scope – generic lambda – auto - decltype |
| 8 | Template class – type paramenter |
| 9 | Iterator |
| 10 | tutorial |
| 11 | Introduction to STL; philosophy of STL | 40/56 | 40/56 |
| 12 | Use of STL algorithms and containers |
| 13 | Use of STL algorithms and containers |
| 14 | Use of STL algorithms and containers |
| 15 | tutorial |
| 16 | Template Metaprogramming - programming with types at compile time |
| 17 | Template metaprogramming - - Traits & policies |
| 18 | Design of classes, algorithms and iterators |
| 19 | Design of classes, algorithms and iterators |
| 20 | Tutorial |
| 21 | Generics in Java | 56/56 | 56/56 |
| 22 | Generics in Java |
| 23 | Generics in C# |
| 24 | Generics in C# |
| 25 | Generics in C# |
| 26-28 | Tutorial |

**Literature**

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| --- | --- | --- | --- | --- |
| **Book Type** | **Title & Author** | **Publication Information** | | |
| **Edition** | **Publisher** | **Year** |
| Text Books | A tour of C++, Bjarne Stroustrup | 2 | Pearson | 2018 |
|  | C++ templates the complete guide  David Vandevoorde, Nicolai M. Josuttis, and Douglas Gregor | 2 | Addison-Wesley Professional | 2017 |
|  | STL Tutorial and Reference Guide: C++ Programming with the Standard Template Library;Musser and Saini | 2 | Addison-Wesley Professional; 2nd edition | 2001 |
|  | Java Documentation: \*generics  https://docs.oracle.com/javase/tutorial/java/generics/index.html  \*collections  https://docs.oracle.com/javase/10/docs/api/java/util/Collections.html |  |  |  |
|  | Microsoft documentation:[C# Programming Guide](https://docs.microsoft.com/en-us/dotnet/csharp/programming-guide/)  <https://docs.microsoft.com/en-us/dotnet/csharp/programming-guide/> |  |  |  |
| Reference Book | Effective C++, Scott Meyers |  |  |  |
|  | More effective c++, Scott Meyers |  |  |  |
|  | Effective Modern C++, Scott Meyers |  |  |  |
|  | Effective STL, Scott Meyers |  |  |  |
|  | Exceptional C++ : Herb Sutter |  |  |  |
|  | More Exceptional C++ : Herb Sutter |  |  |  |