Course Name	**IBM CE - Software Foundation (Advanced) Course with C ++Programming**
Course Code	RATSWF4BIN
Course Duration	25 Hours

About Technology

Software is the invisible thread that exists today in all systems that we see or experience, be it while travelling, shopping, banking, connecting with friends or performing any other routine task. Software not only integrates information, empowers people, connects global ecosystems, and optimizes business processes but, also brings business, people, and the world together.

The technologies and concepts like XML, Information Management and Java form the conceptual foundation of current day software development platforms.

About Course

This course provides conceptual and <u>practical</u> knowledge of the Fundamentals of technologies in the context of building <u>enterprise web based applications</u>.

The contents of this course will ensure that a student interest in the subject is well founded and sows a seed for a conceptual understanding of software and computing practices of current generation.

Target Audience

The Software Foundation course enables students in early stages of undergraduate studies who want to make a career in Information Technology industry.
Students of:
- CS/IT/ECE/EEE Engineering - 1st / 2nd Year
- BCA/ BSC – 1st / 2nd year

Pre-requisites

No previous Software knowledge, other than basic computer/Windows usage required. Basic web Programming/HTML and basic database conceptual knowledge is desired.

Contents

1. Introduction to C++

- OOPS
- Essentials of Programming
- Features of C++
- Inheritance, Polymorphism & Encapsulation
  Operator Overloading
- I/O in C++
- Advanced Topics

2. Information Management

- Information as a Service
- IBM Information Management Software
- Order Fulfillment System – Example Case
- Open Source: Derby
- Cloudscape
- DB2 9 pureXML Technology
- DB2 Express-C
- DB2 Data Server Editions
- Information Integration Business Drivers

3. Introduction to XML and Related Technologies

- Issues in information exchange
- What is XML?
- Exercise: XML basics
- Document type definitions (DTDs)
- Exercise: Working with DTDs
- XML namespaces
- Exercise: XML namespaces
- XML schema, part 1
- Exercise: Generating XML schemas
- XML schema, part 2
- Exercise: XML schemas
- XPath
- Exercise: XPath (and quiz)
- XSL transformation: part 1
- Exercise: XSLT part 1 - simple XSL transforms
- XSL transformation: part 2
- Exercise: XSLT part 2 - simple XSL transforms

4. Introduction to Integrated Development Environment – Eclipse

- What is Eclipse
- Eclipse Architecture
- Eclipse Platform Architecture
- Eclipse Plug-in Architecture
- Eclipse Case Studies
- Eclipse Terms and Concepts

5. Java Development Tools

- The JDT environment
- Creating and running a program
- Automating testing with JUnit
- Using Ant and javadoc

6. Debugging Applications

- Using the debugger:
- Starting the debugger
- Setting breakpoints
 - Stepping through the code
- Inspecting variables and expressions
- Hot code replace

7. The Eclipse Architecture

- A brief discussion of the Eclipse plug-in architecture
- Finding, installing and updating plug-ins
- Some popular plug-ins

8. Eclipse Web Tools Platform Project 1.0

- Eclipse Web Tools Platform (WTP 1.0) Project
- Web Standard Tools
- J2EE Standard Tools
- The Data Tools Project
- The AJAX Tools Framework

9. Software in Real World:

The IBM Canvas - some of the tools that students shall learn about and use in their future trainings and projects on the IBM technologies.

10. Software in Real World: The Road Ahead

The Road Ahead is woven with the overall course content, especially the IBM Canvas to help students in selection of the right career path and the related IBM courses.

Applicable Prometric Certification	- NA -
Follow on courses	- IBM CE Minor Projects - IBM CE – Introduction to Object -Oriented Programming using Java - IBM CE - Basics of Information Management with DB2 - IBM CE - Basics of IBM Rational Rhapsody - IBM CE - Introduction to Cloud Computing