# Nurturing
# Excellence

The **Software Engineering** in **Educational Development** (SEED) Program

# Back to Basics

The mass of engineering graduates passing out of universities every year in India face a grave problem of not unemployment but of employability. Despite the numbers, most engineering graduates lack important academic, technical and auxiliary skills that make them ready for the job.

The first step towards ensuring a greater degree of industry readiness amongst students graduating from colleges across the country is to collaborate closely with academia and bring innovative shifts in methods of learning.

It is with this intent to enhance the quality of human capital that our country needs that at IBM there is a constant endeavour across Engineering and Business Schools to arm faculty members with the best in class knowledge on software trends, tools and technologies prevalent in the industry, for them to then be able to transmit this knowledge to their students in sufficient numbers, to create a tangible positive impact on the average employability of students.

To give to the industry skills needed! To build capabilities inside institutions, especially those that are not ordinarily offered through the usual university curriculum.

## Software Engineering in Educational Development (SEED) as a Faculty Development Program

The Software Engineering for Educational Development Program (SEED) has achieved tremendous recognition and momentum within the field of engineering education. It is one of the most established FDPs adopted by over 1200 Engineering colleges in the country with over 12,000 teachers trained.

The Program trains the faculty members over 4 days using IBM software. Once enabled, the faculty members thereafter train the students. The aim is to give software engineers of tomorrow an edge over their peers, in the understanding and usage of industry leading IBM enterprise class software.

The SEED Program currently focuses on building following Software capabilities, assuring the teacher community is continuously skilled with new updates in technology:

- Software Architecture and Design using IBM Rational Software Architect

- Software Quality & Automated Testing using IBM Rational Quality Manager & Functional Tester

- Enterprise Mobile Applications using IBM Worklight

- Enterprise Applications for Cloud Environment using IBM Rational Application Developer & IBM SmartCloud

- Business Intelligence using IBM Cognos

Teachers are the biggest influence on students. Only an empowered faculty can create enlightened students and that is our endeavour at IBM.

# Enterprise Applications for Cloud Environment using
## IBM Rational Application Developer & IBM SmartCloud

Duration 4 Days

IBM

## Audience

This instructor-led, classroom course is intended for faculty members who teach Java Application Development, Cloud Computing, Software Engineering for programs such as:

- BTech/BE CS, IT
- MCA / Mtech
- BSc/BCA,

## Essential Requirements

The participants should have the following skills and experience:

- Skills to develop, test, and deploy Java applications
- To understand server-side Java applications

## Contents of the Program

**User manuals -11 set each of (10 Participants and 1 for Library)**

- Enterprise Application Development & Deployment (Servlet & JSP using Rational Application Developer) for Cloud Environment

**Media – 1 set of**

- Rational Application Developer & Websphere Application Server

## The Technology

Businesses today are much aware of the benefits and importance of Cloud Computing. It is now a key enabler of better service delivery and greater value. It offers a number of advantages over more traditional application deployment models, including the more efficient use of IT and development resources, easier and less expensive maintenance, and the ability to deliver consistent services through a variety of channels. Cloud computing also makes it easier for businesses to partner and bring enhanced composite service offerings to market very quickly.

Developing cloud-based applications requires new approaches that address the unique requirements of Software-as-a-service. IBM Application Development Services for Cloud delivers on the promise of Cloud application development by building custom applications from implementation planning to design, development and deployment.

## Course Curriculum

- Servlet and JSP Development with Rational Application Developer
- Deployment of Enterprise Application on Cloud Platform
- Creation of WebSphere Application Server on IBM SmartCloud
- Configuration and Deployment of Application on IBM SmartCloud

## The Course

This course is designed to introduce Java developers to the development and testing of server-side applications based on Java EE component model, using IBM WebSphere and IBM Rational tools.

Upon completion, participants will be able to:

- Develop, debug and test server-side applications using IBM Rational Application Developer and IBM WebSphere Application Server
- Learn how to use JavaBeans, JSPs and servlets in accordance with the Model/View/Controller (MVC) programming model
- Describe deployment and run-time issues of Java EE-based applications including ecurity, scalability, and work load management in the context of WebSphere Application Server
- Assemble and perform integration testing of Java EE-based applications using WebSphere Application Server
- Identify best practices for designing and building Web applications such as application frameworks and design patterns
- Define cloud computing, Identify the key characteristics of Cloud Computing
- Describe the service delivery models in Cloud Computing, and list the various cloud deployment scenarios
- Learn how to provision resources on the IBM SmartCloud
- Deploying a Web application on the IBM SmartCloud

# Enterprise Mobile Applications using
## IBM Worklight

Duration 4 Days

IBM

## Audience

This course is designed for faculty members who need to create applications and environments for mobile devices. The following departments may find it useful:

- Engineering (CS, IT, E&T)
- MCA/MTech
- Any other UG/PG with IT Courses

## Essential Requirements

Participants should have the following skills or experience:

- Basic knowledge of JavaScript, cascading style sheets, HTML 5, and XML.
- Skill to develop, test and deploy Java applications
- Some experience with Eclipse Integrated and development environment is useful, but not essential

## Contents of the Program

**User manuals -11 sets each of (10 participants, 1 for Library)**

- Introduction to HTML5 and JavaScript Programming
- Developing Mobile Web Applications with Dojo
- IBM Worklight – Enterprise Mobile Application Development and Deployment for Apple iOS, Google Android, Microsoft Windows Phone, Symbian, Blackberry platforms

**Media – 1 set of**

- Eclipse & IBM Worklight V5

## The Technology

The exponential growth of smart phone usage has created a sudden demand in mobile application development skills in the market. Today, there are handful of platforms (smart phones and tablets) that runs these smart devices like Apple iOS, Google Android and Microsoft Windows Phone.

### IBM Worklight - Overview

IBM Worklight enables organizations to develop rich, cross-platform applications that can access the full capabilities of a wide range of mobile devices. It's part of IBM's comprehensive mobile solution that helps:

- Build rich, cross-platform applications using standard technology, such as HTML5, the native client platform software development kits (SDKs), and integration with the growing ecosystem of third-party tools, libraries, and frameworks.

- Connect mobile applications to a variety of enterprise back-end systems and Cloud services through mobile-optimized middleware.

- Manage a portfolio of applications and the life cycle of their content from one centralized administration console.

- Secure mobile applications through numerous protection mechanisms, such as encrypted storage, online and offline authentication.

## The Course

The course explains how to develop mobile web applications by using IBM Worklight Studio, a plug-in for WebSphere Developer Tools (WDT) for Eclipse. It also covers how to deploy the applications to an IBM Worklight Server running on a WebSphere Application Server Liberty Profile.

The course covers applications and adapters, and looks at security issues such as user authentication and how to protect sensitive data that is held on a mobile device. Other topics include notification of updates, globalization and the various JavaScript languages that can be used.

## Course Curriculum

- Overview of Enterprise Mobile Applications and IBM Worklight
- Server-side development
- Mobile Client Development with examples of iOS , Android , Windows & Blackberry
- Client Side Application Debugging
- Authentication Concepts
- Dojo Mobile Concepts

# Software Architecture & Design using
## IBM Rational Software Architect

⏱ Duration 4 Days

**IBM**

## Audience

The course is for Faculty members who teach how to architect and develop enterprise applications. Faculty Members who are associated with the following departments may find it useful:

- Engineering (CS, IT,E&T)
- MCA/MTech
- Any other UG/PG with IT Courses

## Essential Requirements

To benefit from this course, participants should have the following skills or experience:

- Knowledge of Object Oriented Analysis & Design
- Knowledge of Visual Modeling with UML
- Experience in architecting and designing Java solutions

## Contents of the Program

**User manual – 10 sets each of**

- Essentials of Visual Modeling with UML 2.0
- Essentials of Rational Software Architect

**Library Material – 1 set each of**

- Mastering Object-Oriented Analysis and Design with UML
- Essentials of Rational RequisitePro For Rational RequisitePro
- Essentials of Rational® ClearCase® UCM for Windows
- Essentials of Rational Application Developer

**Media – 1 set of**

- Rational Software Architect  & Rational Suite Enterprise

## The Technology

A focus on architecture and design can help organizations turn complex software into simple design and deliver business goals. IBM architecture and design solutions help align products, systems, and IT. It also helps deliver quicker, based on changing business needs. The solution also helps gain control over your evolving architecture.

IBM Rational Software Architect provides comprehensive design, modeling and development tools for model-driven development (MDD) using robust support for Unified Modeling Language (UML). Rational Software Architect is built on the Eclipse open-source software framework and is extensible with a variety of Eclipse plug-ins.

## The Course

This course helps students get started with Rational Software Architect. Participants gain a hands-on experience with the application as they are introduced to a number of features, supporting concepts, and integration with other tools. They learn the basics of model templates and the UML diagram types that Rational Software Architect supports. With the help of Rational Software Architect products, the participants will be able to remove complexity, manage risk and help ensure development of high-quality software, while shortening the learning curve of new technologies.

## Course Curriculum

This course covers the following topics:

- Best Practices Of Software engineering
- Rational Unified Process
- Introduction to Rational Software Architect
- Getting Started with Rational Software Architect
- Creating UML Models
- Creating Use-case Diagrams

- Creating Activity Diagrams
- Creating Class Diagrams
- Creating Interaction Diagrams
- Creating Composite Structure Diagrams
- Creating Component Diagrams
- Creating Deployment Diagrams
- Creating State Diagrams

## Audience

Faculty members who have experience in Application design & development and will teach Software Quality & Testing. Faculty Members who are associated with the following departments may find the course useful:

- Engineering (CS, IT,E&T)
- MCA/MTech
- Any other UG/PG with IT Courses

## Essential Requirements

Participants should have the following skills or experience:

- Programming principles and techniques
- Develop, test, and deploy Java applications

## Contents of the Program

### User manual – 10 sets each of

- Rational Principles of Software Testing for Testers
- Essentials of Test Management with IBM Rational Quality Manager
- Essentials of IBM Rational Functional Tester Java Scripting

### Library Material – 1 set each of

- Rational Principles of Software Testing for Testers

### Media – 1 set of

- IBM Rational Quality Manager & IBM Rational Functional Tester Java Scripting & Rational Application Developer

## The Technology

Successful software delivery hinges on an efficient testing process to see if your applications have achieved validation that meets or exceeds expectations. One solution is automating their tests and results analysis, helping you shorten test-cycles, reduce delivery time, and improve quality.

**Rational Quality Manager** is a web-based centralized test management environment that provides a collaborative and customizable solution for test planning, workflow control, tracking and metrics reporting.

**IBM Rational Functional Tester** is an automated testing tool with capabilities for functional, regression, GUI, and data-driven testing. It supports a range of applications, such as .Net, Java, Siebel, SAP, terminal emulator-based applications, PowerBuilder, Ajax, Adobe Flex, Dojo Toolkit, GEF and Adobe PDF documents. The solution helps minimize test maintenance, enhances automation and builds speed test creation for new users. An integration with the IBM Rational Quality Manager solution aids in simplifying the testing process, helping ensure quality, reliability, performance and compliance of your product and software solutions.

## The Course

IBM provides the participants, knowledge and hands-on experience in Software Quality and Testing. It helps the students stay at the forefront in the industry and exposes them to the most advance software technologies and tools, thus boosting their careers. The course includes training sessions on:

- Rational Principles of Software Testing for Testers
- Essentials of Test Management with IBM Rational Quality Manager
- IBM Rational Functional Tester, Java Scripting

## Course Curriculum

This course covers the following modules:

- Understand and describe the basic concepts of functional software testing.
- Identify a number of test styles and techniques and assess their usefulness in a context.
- Understand the basic application of techniques used to identify useful ideas for tests.
- Write, review, and approve a test plan with Rational Quality Manager.
- Use defect capabilities to include duplicate defect detection.
- Add test cases and test suites to a test plan.
- Use IBM Rational Functional Tester with Rational Quality Manager.
- Create and execute a test suite.
- Run planning and execution status reports.
- Record and play back automated scripts. View and analyze results.
- Modify scripts to extend the capability to test the application.
- Create data-driven tests and use data pools.

## Audience

The course will be beneficial for Faculty Members who teach RDBMS, Advanced RDBMS Concepts, Data Warehousing, Business Intelligence for programs such as:

- BTech/BE CS, IT
- MCA / Mtech

## Essential Requirements

To benefit from this course, participants should have the following skills or experience:

- Concepts of RDBMS
- Basic concepts of Data Warehousing & Data Mining
- Understanding of Web Technologies & Web Based Reporting Tools

## Contents of the Program

**User manual – 10 sets each of**

- Changing Business with Data Insight
- Cognos Report Studio Author Professional Reports v10.1

**Library Material – 1 set each of**

- Cognos Report Studio Author Reports with Multidimensional Data

**Media – 1 set of**

- Cognos BI v10.1

## The Technology

Business Intelligence helps an organization drive better decisions, achieve better results, and gain a deeper understanding of trends, opportunities, weaknesses and threats.

From Business Intelligence to Financial Performance and Strategy Management to analytics applications, IBM Cognos software can provide what an organization needs to become top performing and analytics-driven. **IBM Cognos BI** lets them explore data, in any combination and over any time period with a broad range of analytics capabilities. With the ability to interact, search and assemble all perspectives of a business, **IBM Cognos BI** provides a limitless Business Intelligence workspace. **IBM Cognos Report** Studio is one of the main features of Cognos BI and it is a web-based report-writing tool. While professional BI Report Authors can create reports in a single environment and distribute them to the enterprise, at the same time business users create their own reports or modify existing reports with ease.

## The Course

- Concepts of Data Handling & Data Warehousing
- Architecture of Data Warehousing
- IBM Cognos Business Intelligence features
- Working with Cognos BI Report Studio v10.1

## Course Curriculum

This course is designed to provide the students with a fundamental understanding of Business Intelligence and how a Data Warehouse supports this environment. From a Data Warehouse perspective, the course gives an overview of the mechanisms used to build a Data Warehouse. From a Business Intelligence perspective, it covers some analysis techniques such as OLAP and data mining. Upon completion of the course, participants will be able to:

- Discuss the concept of placing business data into context thereby creating information
- Identify the components of a Data Warehouse architecture
- Explain the basic processes for moving data from the source systems to the Data Warehouse databases
- Describe information integration
- Plan for implementing a Data Warehouse and Business Intelligence system
- Work on Cognos BI Report Studio
- Author Reports through Query Models
- Enhance Reports with advanced formatting and exceptional data highlighting