Proposal for Introduction of New Industry Elective in Engineering Curriculum

"Building Enterprise Applications"
-a practitioners perspective of software engineering

Designed in collaboration with Infosys Technologies Limited

<College Name>
< Address >
<Date>

Version 1.0
2010

Contents

1. Background

Our college has partnered with Infosys Technologies Limited to roll-out Campus Connect Program. Under this program we have been conducting training leveraging IT Industry-Ready program for CS students. Our faculty was enabled in delivering these courses.

Infosys is willing to extend the relationship with our college by collaboratively designing a new industry elective **Building Enterprise Applications - a practitioners perspective of software engineering**. The purpose of this proposal is to describe the contents of the new elective, its benefits and seek approval to start the elective offering effective June 2010.

2. Overview of the Course Design

2.1 Synopsis:

The proposed elective course exposes the CS/IT/B.Sc (IT)/M.Sc.(IT)/MBA(IT/IS) students to essentials of building enterprise applications. The Core Modules of this elective includes designing and developing high quality enterprise applications and other task related to it. This course is independent of any organization / product / technology.

2.2 Prerequisites:

Exposure to any object oriented programming language (such as Java) and RDBMS.

2.3 Assumptions:
1. This elective will be applicable to CS/IT/B.Sc (IT)/M.Sc(IT)
2. The duration of the course will be One Semester
3. The elective design follows University Curriculum standards
4. There will be a compulsory final Examination
5. The elective will be designed in exclusive collaboration with Infosys
6. The college will leverage existing Lab & IT infrastructure

3. Learning outcomes

At the end of this elective, student shall be able to:
1. Familiarize with concept of Enterprise Analysis and Business Modeling.
2. Understand requirements validation, planning and estimation.
3. Design and document the application architecture.
4. Understand the importance of application framework and designing other application components.
5. Construct and develop different solution layers.
6. Perform Code review, Code analysis, build process.

7. Understand different testing involved with enterprise application and the process of rolling out an enterprise application.

4. Course Schedule Summary (Illustrative only)

Here it is illustrated for one semester course.

Duration of the Course	Number of Weeks	Total Lecture hours	Total Tutorial hours	Total Practical hours	Total Credit
One semester	12 – 13 Weeks	3 hours per week	2 hour(s) per month	2.5 hour per week	3

5. Course contents (Draft only)

Unit I: 3 Hrs
Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications

Unit II: 6 Hrs
Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation

Unit III: 12 Hrs
Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design

Unit IV: 9 Hrs
Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis – code profiling and code coverage

Unit V: 6 Hrs
Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability

testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

6. Tutorial/Optional Assignments

The purpose of 2 hour tutorial per month is to help the students to explore points outside the prescribed material and to enhance their learning. The assignments for elective could include the following.

•   Seminars from the topics related to building enterprise applications such as enterprise architecture, business modeling, application security and code analysis
•   Relevant lab exercises to get exposure to various tools such as like WebScarab, Jmeter, and Eclipse to raise enterprise applications

7. Practical/Project work

Students should implement (and learn to use the tools to accomplish this task) the following during Practical hours: (illustrative only)

1. Understand a given business scenario and document the use case diagrams for the given scenario
2. Identify the non functional requirements for the given scenario and document it in the given template
3. Create a logical architecture for the given business scenario documented in use case diagrams
4. Create a data architecture for the given logical architecture
5. Create a subset of design for the given logical architecture
6. Create test cases (subset) as per the given template
7. Code analysis of the given code base (case study)
8. Testing the application of the given code base (case study) – Performance and Penetration testing

8. Infrastructure Requirements

HARDWARE / SOFTWARE REQUIREMENTS

Machine:

Pentium P4, 2.8 GHz or higher
512MB (or higher) RAM, 40 GB (or higher) HD
Windows XP with SP2 (or higher)

MSOffice 2003, IE 6.0, IIS 6.0,
Anti-Virus Software

Software required for Tutorials and Practical:

Sl. No	Course	S/W on Students Machine	Remarks
1.	Building Enterprise Applications	Eclipse IDE, MySQL, Relevant JAR files.	

9. Mode of Examination:

- The final examination carries 50 Marks. The Institute will conduct all the assessments.

- Internal assessments carry 50 Marks which includes Theory Assessment (30 Marks), Practical / Project Work (20 marks)

Theory assessments to be conducted based on CAMP methodology

10. Faculty enablement

The Faculty will be enabled on the course contents; Industry practices case studies etc. for duration of one week before the commencement of elective. Faculties from various colleges are required to stay in the Infosys Campus for their Enablement.

11. Courseware & reference books:

The courseware including PowerPoint is available for the Elective. In addition, following reference book can also be used:

- Text Book
    - o Raising Enterprise Applications – Published by John Wiley, authored by Anubhav Pradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, Veerakumar Esakimuthu
    - o Building Java Enterprise Applications – Published by O'Reilly Media, authored by Brett McLaughlin

- Reference Book
    - o Software Requirements: Styles & Techniques – published by Addison-Wesley Professional
    - o Software Systems Requirements Engineering: In Practice – published by McGraw-Hill/Osborne Media
    - o Managing Software Requirements: A Use Case Approach, 2/e – published by Pearson
    - o Software Architecture: A Case Based Approach – published by Pearson

- o Designing Enterprise Applications with the J2EE Platform (PDF available at-
  http://java.sun.com/blueprints/guidelines/designing_enterprise_applications_2e/)
- o Software Testing, 2/e – published by Pearson
- o SOFTWARE TESTING Principles and Practices – published by Oxford University Press

12. Actions:

1. The college needs to send the Board of Studies Approval letter on college letter head to Infosys.
2. Identify one department to own the responsibility of course content, assignments, projects, software tools etc. (Preferable CS/IS Department)
3. Identify faculty from CS/IS/MCA department for rollout and faculty training
4. Identify and allocate resources like classrooms, labs, necessary hardware and software for rollout.
5. Complete readiness check before the rollout

13. **Contact Details:**

The Infosys point of contact can be reached for more info. In addition, the Institute SPoC can also be reached for additional info.

Department owning the responsibility of Course Content:

The HOD'S / Faculty Names and their Email Id, owning the course content of Elective are to be mentioned.

S. No.	Name	E-Mail	Phone Number
1			
2			
3			
4			
5			

Faculties handling the Elective rollout:

The faculty names and their Email Id, handling the Elective rollout are to be mentioned.

S. No.	Name / Dept	E-Mail	Phone Number
1			
2			
3			
4			
5			

14. Conclusion:

Introduction of the collaboratively designed elective will significantly help the students to be industry aligned and leverage IT as a competitive edge in their career while working in their own discipline or specialization.

Hence, we request for approval the introduction of this elective.

From,   DATE: _____

_____

_____

To,   REF NO.: _____

_____

Campus Connect Anchor,

Infosys Limited.

Dear Sir,

REGD: Introduction of industry based electives

We are happy to inform you that the Board of Studies of respective departments of our college has decided to offer electives co-designed by Infosys. Further details are below:*<<Please add columns for each unique elective offered>>*

Title	Elective - 1	Elective - 2
Course Code		
Course Name		
Date of BOS sign off		
Department		
Credits		
L-T-P		
Semesterin which elective will be offered		
Name of HOD/Faculty handling elective		
Contact details of HOD/Faculty		
BOS sign off letter attached? Yes/No		
Syllabus copy attached? Yes/No		

<<Please attach a copy of BOS sign off letter/Minutes of Meeting and a copy of the syllabus for each unique elective>>

Thanking you,

Yours Sincerely,

_____

Principal/Director

<<<College Seal>>>