

# IS 525 - Object-Oriented Systems Development

## Course Overview

**Dr. Nesrine Zemirli**

Assistant Professor.

IS Department – CCIS / King Saud University

E-mail: [nzemirli@ksu.edu.sa](mailto:nzemirli@ksu.edu.sa)

Web: Coming Soon

# Grade Distribution and Important Dates

## ■ Assessment:

- Assignments and presentation of research papers 10%

- **date :**

- **Given week 4**
- **Presentation Week 12**

- Mid-Term Exams 25%

- **date : Week 8**

- Project (Report and Presentation) 25%

- **date :**

- **Given week 3**
- **Report: Week 14**
- **Presentation: Week 15**

- Final Exam 40%

- **date : To be determined**

Total 100%

# Summary of Methods

- Lectures
- Directed Reading – a vast reservoir available on the Web!
- Discussion sessions – happy to talk after lecture
- Coursework
- Examination

# Course Policies

- No late project will be accepted
- Students are encouraged to discuss project problems but not copy
- Copying project or home assignments results in zero grading
- All exams are closed book

# Course Goals

- Understand different methodologies to model and develop software systems
- Provide an overview of the Unified Modeling Language
- Learn the concepts and skills needed to develop information systems using object oriented methodology
- The course concentrates on the OO analysis & OO design
  - Concepts
  - Terminology

# Techniques, Methodologies and Tools

## ■ Techniques:

- ☐ Formal procedures for producing results using some well-defined notation

## ■ Methodologies:

- ☐ Collection of techniques applied across software development and unified by a philosophical approach

## ■ Tools:

- ☐ Instruments or automated systems to accomplish a technique

# Software Engineering: A Working Definition

Software Engineering is a collection of techniques, methodologies and tools that help with the production of

*A high quality software system developed with a given budget before a given deadline while change occurs*

Challenge: Dealing with complexity and change

# Software Engineering: A Problem Solving Activity

## ■ Analysis:

- Understand the nature of the problem and break the problem into pieces

## ■ Synthesis:

- Put the pieces together into a large structure

For problem solving we use techniques, methodologies and tools.



# Course Outline (proposition)

## ■ SYSTEMS ANALYSIS FUNDAMENTALS

- ☐ The concepts of object orientation
- ☐ Methodology

## ■ ANALYSIS

- ☐ Gathering requirements
- ☐ Behavioral modeling: use cases
- ☐ Structural modeling

## ■ DESIGN

- ☐ Application Design I: Flow & Control
- ☐ Application Design II: User Interface
- ☐ Application Design III: Database & Persistence

## ■ SOFTWARE IMPLEMENTATION

# Reference Material

## ■ Required:

- Object Oriented Systems Analysis and Design  
Noushin Ashrafi Hessam Ashrafi ISBN-10: 0131824082  
ISBN-13: 9780131824089 Publisher: Prentice Hall  
Copyright: 2009

## ■ Optional:

- Jim Arlow, Ila Neustadt. (2005). UML 2 and the Unified Process: Practical Object-Oriented Analysis and Design, 2/E. Addison-Wesley Professional

# UML® Resource Page

■ <http://www.uml.org/>



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## UML® Resource Page

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NEW OMG WHITEPAPER:  
**Visual Modeling: Past, Present and Future**  
by Andrew Watson, Object Management Group



 **UML Use Case Narratives Survey**

### Getting Started With UML:

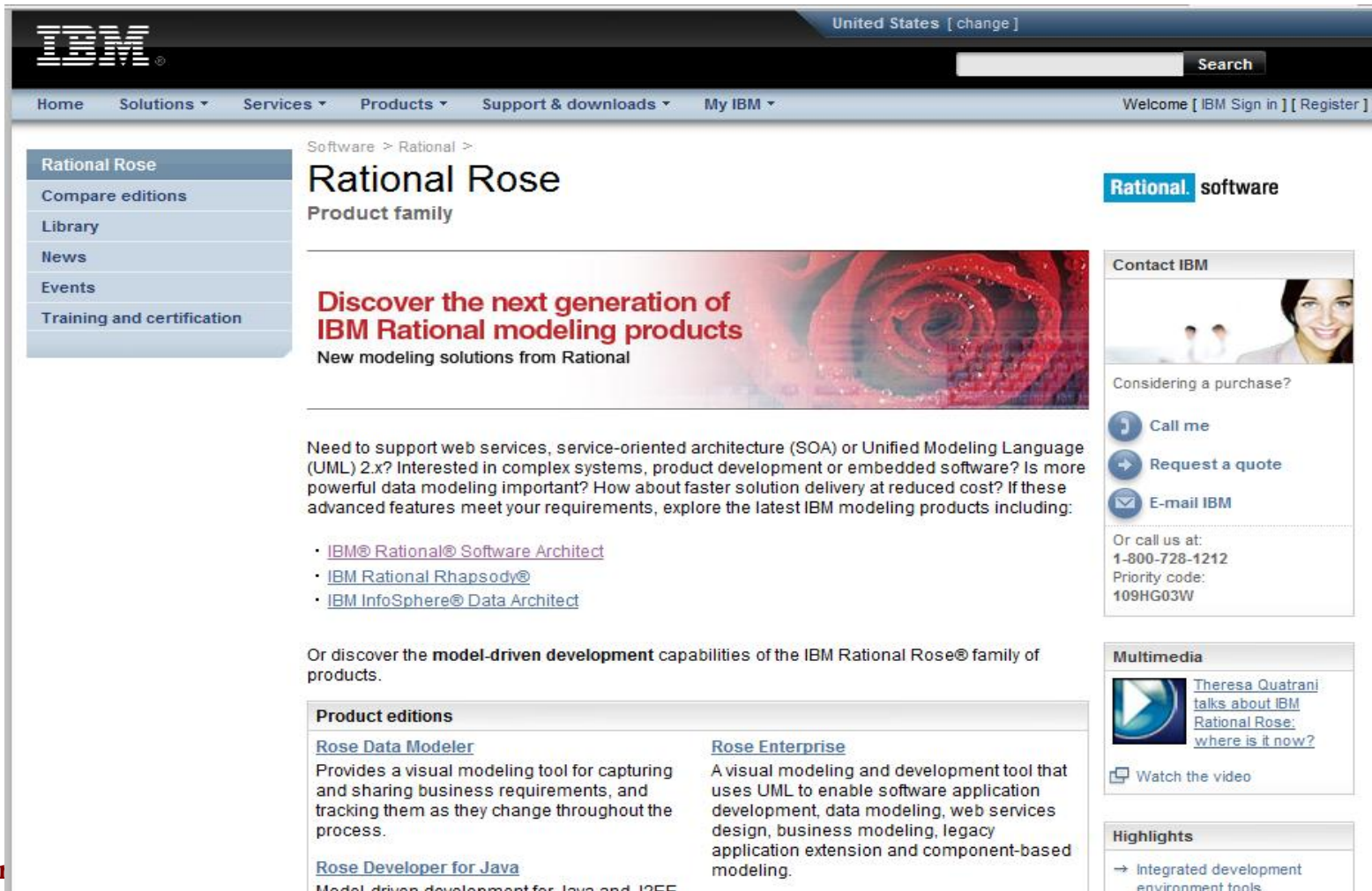
The Unified Modeling Language™ - UML - is OMG's most-used specification, and the way the world models not only application structure, behavior, and architecture, but also business process and data structure.

UML, along with the [Meta Object Facility \(MOF™\)](#), also provides a key foundation for OMG's [Model-Driven Architecture®](#), which unifies every step of development and integration from business modeling, through architectural and application modeling, to development, deployment, maintenance, and evolution.

OMG is a [not-for-profit computer industry specifications consortium](#); our members define and maintain the UML specification which we publish in the series of documents linked on this page for your free download. Software providers of every kind build tools that conform to these specifications. To model in UML, you'll have to obtain a compliant modeling tool from one of these providers and learn how to use it. The [links at](#)

# UML & Tools: IBM | Rational Rose

- <http://www-01.ibm.com/software/awdtools/developer/rose/>



The screenshot shows the IBM Rational Rose website. The top navigation bar includes the IBM logo, a search bar, and links for Home, Solutions, Services, Products, Support & downloads, and My IBM. The main content area features a large banner for Rational Rose with the text "Discover the next generation of IBM Rational modeling products" and "New modeling solutions from Rational". Below the banner, there is a paragraph about the need to support web services, SOA, or UML 2.x, and a list of products including IBM Rational Software Architect, IBM Rational Rhapsody, and IBM InfoSphere Data Architect. The right sidebar contains a "Contact IBM" section with a "Call me" button, a "Request a quote" button, and an "E-mail IBM" button. Below this is a "Multimedia" section with a video player and a "Watch the video" button. The bottom section is titled "Highlights" and includes a link to "Integrated development environment tools".

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**Multimedia**

Theresa Quatrani talks about IBM Rational Rose: where is it now?


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**Highlights**

→ Integrated development environment tools


# UML & Tools: Altova UModel® 2012


■ <http://www.altova.com/umodel.html>





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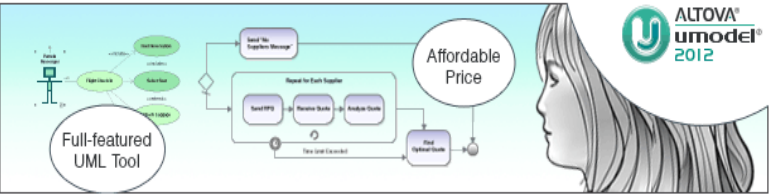
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 **umodel**

- UML Modeling Tools
- UML Use Case Diagrams
- UML Structure Diagrams
- UML Application Flow Diagrams
- UML Code Engineering
- UML Project Documentation
- UModel Integration
- XML Schema in UML
- UML Database Diagrams
- Business Process Modeling
- SysML
- Model Driven Architecture
- Teamwork Support

## UModel - UML tool for software modeling and application development



Altova UModel® 2012 is the starting point for successful software development. Visually design application models in UML and generate Java, C#, or Visual Basic .NET code and project documentation. Or, reverse engineer existing programs into UML 2 diagrams, then fine tune your designs and complete the round trip by regenerating code. UModel is the UML tool that makes visual software design practical for any project. It is the simple, cost-effective way to draw on UML.

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### Feature Highlights


- > [Support for all 14 UML 2.3 diagram types](#)
- > [Modeling of XML Schema in UML diagrams](#)
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