COURSE DESCRIPTION

Dept., Number	CS441	Course Title	Current Topics in Programming Languages
Semester hours	3	Course Coordinator	Dr. Tzilla Elrad, Research Professor

Current Catalog Description

New topics in programming language design such as concepts of concurrent and distributed programming, communicating sequential processes, and functional programming. System development tools and language features for programming. An introduction to programming language semantics. Prerequisite: CS 331 or CS 401 or CS 403. (3-0-3) (T)

Textbook

Java: How to Program, 7th Edition, Deitel and Deitel, Prentice Hall
Java: Web Development Illuminated, 2007 Edition, Kai Qian, et al, Jones and Bartlett Publishers

References

See http://www.cs.iit.edu/~cs441/index.html

Course Outcomes

The course is basically language independent. Any language that can support the course goals may be selected. An example of a choice language might be Java. A student should be able to:

- Outline the evolution of the architectural neutral, secure, OO programming languages in order to illustrate how this evolution has led to the occurrence of the JAVA programming model. The course builds on the students ' knowledge of Object Oriented Programming concepts, which is a prerequisite for the course.
- Design, implement, test, and debug Applets, Servlets, and Applications.
- Design and implement Graphical User Interfaces.
- Learn the programming language mechanisms that support distribution transparency and development of distributed applications.
- Recognize the underlying concurrency language model; Multithreading and monitor-based concurrency model.
- Demonstrate the supportive language constructs and mechanisms for the design and development of 3-tier architectures; server-side programming.

Relationship between Course Outcomes and Program Outcomes

The following Program Outcomes are supported by the above Course Outcomes:

- b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- c. An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs
- h. Recognition of the need for, and an ability to engage in, continuing professional development
- i. An ability to use current techniques, skills, and tools necessary for computing practices.
- k. An ability to apply design and development principles in the construction of software systems of varying complexity.

Prerequisites by Topic

Strong object-oriented programming experience.

Major Topics Covered in the Course

1. Object-Oriented Programming Oveview	3 hours
2. Event-driven programming for building GUI	3 hours
3. Security and Web Servers	3 hours
4. Multithreading	3 hours
5. Animation and Serialization	3 hours
6. Database Connectivity	3 hours
5. Networking and Multicasting	6 hours
6. Client/Server Models	18 hours
7. Aspect-Oriented Programming	3 hours
Total hours	45 hours

Assessment Plan for the Course

End of every semester Course Objective Assessments by CS department. End of semester Course Evaluations by IIT. Reviewed every Spring semester by CS Undergraduate Studies Committee for possible updates in the following Fall. Once every 4-5 years a detailed review of all materials for the course is made by the CS Undergraduate Studies Committee.

How Data in the Course is Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

See the assessment discussion under Criterion 4

For a computer science program

Estimate Curriculum Category Content (Semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms			Software design		
Data structures			Concepts of programming languages		3