TO: The Engineering Faculty
FROM: The Faculty of the School of Electrical and Computer Engineering
RE: New Undergraduate-Level Course

The faculty of the School of Electrical and Computer Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

ECE 435 Object-Oriented Design Using C++ and Java
Sem. 2. Class 3, cr. 3.
Prerequisite: ECE 462.

Review of objected-oriented design with C++ and Java. Difficulties caused by multiple inheritance in C++. Taking advantage of Run-Time Type Identification in C++. Multi-threading, Abstract Window Toolkit, and Network Programming in Java. Discussion of Java applets, beans, and servlets. Unified modeling language. Use-case analysis. Constructing conceptual models. System sequence diagrams. "Gang of Four" design patterns. Case studies.

Reason: It is now widely recognized that just knowing objected-oriented languages and having access to a library of classes is not sufficient for creating objected-oriented designs. This realization has led to the emergence of a “patterns movement” in the objected-oriented community. Patterns are the “best practice” designs that have evolved over the years for tackling issues such as how to make objects sharable; how and when to assign responsibilities to objects; how to make the objected-oriented design reusable in other similar contexts, etc.

Leah H. Jamieson
Professor and Interim Head

Supporting Documentation:

1. Level: Undergraduate Level

2. Course Instructor: Avinash C. Kak

3. Course Outline:

	Topics	*Lectures*
1.	Course Introduction	1
2.	Software Development Process for Large OO Programs	1
3.	Use Cases, Class Digrams	1
4.	Class Diagrams (Advanced Concepts)	1
5.	Interaction, Package, State, and Activity Diagrams	3
6.	Extending Classes in C++ and Java	5
7.	OO Design using Multiple Inheritance in C++	4
8.	Design Patterns	6
9.	OO for GUI Design with Java, C++, and C (AWT/Swing in Java, Qt in C++, and GNOME/GTK+ in C)	7
10.	Multithreading for OO Design	3
11.	Network Programming in Java	3
12.	Java Database Programming	3
13.	Remote Method Invocation	2
14.	Servlets	2
15.	Exams	2
	Total	44

4. Text:

   1. UML Distilled, Applying the Standard Object Modeling Language, Martin Fowler and Kendall Scott, Addison-Wesley, 1997, ISBN 0-201-32563-2.

   2. Java Design Patterns, James Cooper, Addition-Wesley, 2000, ISBN 0-201-48539-7.