TO: The Faculty of the College of Engineering

FROM: School of Electrical and Computer Engineering of the College of Engineering

RE: ECE 66300 Changes in Title, Description, and Content

The faculty of the School of Electrical and Computer Engineering has approved the following changes in ECE 66300. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: **ECE66300 – Compiler Code Generation, Optimization, and Parallelization**
Sem. 2. Class 3, cr. 3.

This course presents the concepts needed to design and implement production quality code generators for any of the more popular languages and families of computer architecture (including various pipelined and macro-parallel machines). Flow analysis and concurrency detection, as well as optimizations and loop and irregular code parallelizations, are covered in detail. Using C on ECN UNIX, each student will complete a project implementing a simple optimizer/parallelizer.

To: **ECE 66300 – Advanced Compilation and Automatic Programming**
Sem. 2. Class 3, cr. 3.

This course presents the concepts needed to design and implement production quality code generators for any of the more popular languages and families of computer architecture (including various pipelined, superscalar, and macro-parallel machines). Flow analysis, concurrency detection, loop and irregular code optimization/parallelization, as well as automation of these tasks using program synthesis techniques, are covered in detail. Each student will complete a project implementing a simple optimizer/parallelizer/synthesizer.

Reason: The course description has been updated to reflect the updated content of the course and to include 15 weeks of lectures in the outline. Also the coure title has been updated to a more precise description of the scope of the course.

Weeks	Principle Topics
1	Static Single Assignment form
1	Partial Redundancy Elimination (PRE)
1	Loop Transformations
1	Inductive Synthesis
1	Functional Synthesis
1	Synthesis for Architecture
1	Synthesis for Optimization
1	Synthesis for Concurrency
1	Project proposal
5	Paper presentation (covering topics points-to analysis, shape analysis, program slicing, autotuning and parallelization, programming by example, programming by learning)
2	Project presentation

Michael R Melloch, Associate Head
School of Electrical and Computer Engineering