ECE 5973-900  Reconfigurable Computing  Spring 1998
MW 5:30-6:45 PM  SEC N202A
Instructor:  Prof. Monte P. Tull  -  CEC 414  -  Tel. 325-4278  -  Email: tull@ou.edu
Office Hours:  MW 3:00-4:30 PM (Or Appmt.)

Text:  Foundation: Xilinx Student Edition 1.5

Prerequisites:  ECE 4613, Computer Architecture

Course Outline: Advanced computing structures are examined in the context of spatial
verses temporal computing paradigms, configurable hardware vs. ASIC designs, gate
reuse, and preservation of legacy designs using configurable core designs.  Run-time and
dynamically reconfigurable capabilities are studied using FPGA and CPLD
programmable logic devices.  The Splash and GARP machines are considered as
examples of highly reconfigurable machines.  Emerging dynamically reconfigurable
devices such as the X62xx are reviewed.  Design of all structures is considered using
VHDL as the basic design language.  VHDL simulation and design verification tools are
surveyed and used.  Students are expected to pursue novel reconfigurable design
capabilities such as DSP algorithm implementation, alternative computer architectures,
dynamic or run-time computer instruction sets, adaptive computing hardware, neuro-
fuzzy hardware implementations, automated computer generation of hardware designs,
design tool enhancements, or other related hardware design issues that achieve an
advantage using configurable hardware.  Graduate credit requires a comprehensive
project or research effort.

Grading:  
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Homework Exercises</td>
<td>20% *</td>
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<tr>
<td>Mid-Term Exam</td>
<td>20% *</td>
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<tr>
<td>Project Proposal</td>
<td>5%</td>
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<tr>
<td>Project/Research Paper/Presentation</td>
<td>20%</td>
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<td>Final Exam</td>
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<td>Class Participation</td>
<td>5%</td>
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<td>Web Publication Bonus</td>
<td>Up to 5%</td>
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*Elements used to determine midterm standing.

Violations of the academic misconduct code will be strictly enforced.

Any student who has a disability that may prevent him/her from fully demonstrating
her/his abilities should contact me personally as soon as possible so we can discuss
accommodations to insure full participation and facilitate your educational opportunity.
Project Proposal Outline Suggestions

Project/research proposals are due March xx, 1999, by 5:00 PM. Some elements to include in your proposal are:

1. Cover letter addressed to me
2. Introduction
3. Technical description and system features, hypothesis
4. Block diagram of the design showing all major inputs and outputs
5. Major contributions expected
6. Preliminary bibliography

Project/Research Guidelines

1. All project/research proposals must be approved by the instructor.
2. All projects/papers should have strong emphasis on configurable computing, design software tools, hardware algorithm implementation, or novel application of configurable devices.
3. Projects/papers may be theoretical and/or applied.
4. All projects must be original or a substantial extension over existing work. Previous (non-original) work must be acknowledged.
5. Projects that capture existing designs in VHDL are acceptable if approved by the instructor.
6. All designs should be captured using VHDL and verified with simulation.