

ECE 4900 Independent Research Summer I 2014

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Catalog Description:

ECE 4900 Independent Research and Development Individual research or special project in Electrical/Computer Engineering. Open only to juniors and seniors having the approval of the faculty member under whom the student will work and the approval of the department chair. Students may register more than once, not to exceed 4 hours. (1 to 4 hours)

Specific Description:

In this project you will design a scoring mechanism, upgraded airflow system, and computer/display interface to be implemented on a commercially available air hockey table. The preferred interface is a Raspberry Pi, so that the finished project can be used as a demonstration tool. Skills required include Python programming experience, transistor-level interfacing to a microcontroller, experience with designing optoelectronic circuits (e.g. for the puck detector).

Learning Outcomes:

- Practical experience with interface design and motor control
- Design of integrated systems
- Programming and interfacing with a Raspberry Pi computing platform

Prerequisite(s): Electronics and Programming courses plus approval of the department chair.

Text:

M. Richardson and S. Wallace, Getting Started with the Raspberry Pi. Sebastopol, CA: Maker Media, Inc. 2013.

Grading:

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| Weekly meetings | 10% |
| Project demonstration | 50% |
| Final report | 40% |

Project demonstration and final report due dates will be determined by mutual agreement.

Policies:

Regrade requests must be made in writing (hard copy) no later than one calendar week from when the assessment item is returned. A full explanation is required. Students are advised that the University student code applies at all times:

http://wmich.edu/conduct/docs/WMU_studentcode.pdf