FACULTY MENTOR   Maralani, Ayden

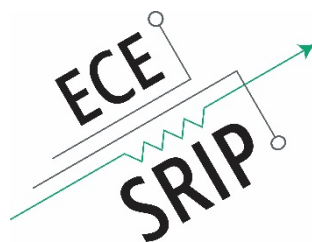**PROJECT TITLE**   Transistor Design and Simulation

PROJECT DESCRIPTION

In this project, the students will be designing various transistor structures based on advanced semiconductor material. Synopsys and Silvaco TCADs will be used to simulate the design and develop fabrication processes. The designed devices will be fabricated in the cleanroom.

INTERNS NEEDED   2 MS Students OR 2 Undergrad Students

PREREQUISITES

Master's students in EE with strong understanding of the semiconductor device principles (and familiar with simulation tools). Highly motivated undergraduate students with the same knowledge are also welcome to apply.

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FACULTY MENTOR   Maralani, Ayden

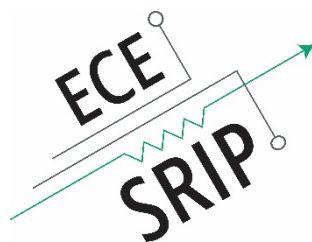**PROJECT TITLE**   Transistor Characterization and Modeling

PROJECT DESCRIPTION

In this project, the student will characterize already fabricated devices and develop SPICE models. After validating the models, custom circuit design and simulation tools will be setup with the developed models to design custom integrated circuits.

INTERNS NEEDED   1 MS Student OR 1 Undergrad Student

PREREQUISITES

Master's student in EE with understanding of semiconductor device and circuit design principles. Strong C, C++, Python, and/or MATLAB programing skills is required. Highly motivated undergraduate students with the same knowledge are also welcome to apply.

FACULTY MENTOR Maralani, Ayden

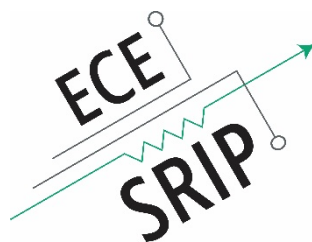**PROJECT TITLE** Solid State Detector Design and Simulation

PROJECT DESCRIPTION

In this project, the student will be designing various detector structures based on advanced semiconductor material. Synopsys and Silvaco TCADs will be used to simulate the design and develop fabrication processes. The designed detectors will be fabricated in the cleanroom.

INTERNS NEEDED 1 MS Student OR 1 Undergrad Student

PREREQUISITES

Master's student in EE with strong understanding of the semiconductor device principles (and familiar with simulation tools). Highly motivated undergraduate students with the same knowledge are also welcome to apply.

ECE
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FACULTY MENTOR   Maralani, Ayden

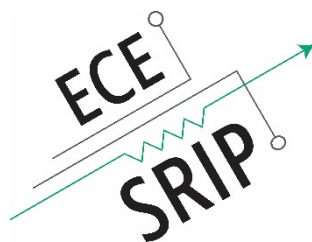**PROJECT TITLE**   SOI CMOS IC Design and Simulation

PROJECT DESCRIPTION

In this project, the student will design and simulate a number of analog and mixed-signal ICs using Cadence custom IC design tools. The design will range from concept to layout development.

INTERNS NEEDED   1 MS Student OR 1 Undergrad Student

PREREQUISITES

Master's student in EE with strong understanding of semiconductor device and CMOS analog and mixed-signal integrated circuit design principles (and familiar with simulation tools). Highly motivated undergraduate students with the same knowledge are also welcome to apply.

ECE
SRIP

FACULTY MENTOR   Maralani, Ayden

PROJECT TITLE   Power Converter Design and Simulation

PROJECT DESCRIPTION

In this project, the student will design and simulate advanced DC to DC converters and inverters using the state of the art semiconductor devices. The designs will be tested and validated.

INTERNS NEEDED   1 MS Student OR 1 Undergrad Student

PREREQUISITES

Master's student in EE with strong understanding of the semiconductor device, analog and digital circuit design, and power electronics design principles (and familiar with simulation tools). Highly motivated undergraduate students with the same knowledge are also welcome to apply.