In lieu of listing Graduate Internship Program experience on student resumes, we have provided a summary of the proficiencies students from each track will have gained through their coursework. If there are any questions, please reach out to Dr. Stacey York (syork@uoregon.edu) or Dr. Fuding Lin (flin@uoregon.edu).

Semiconductor & Photovoltaic Device Processing

Device Physics

- Understand the origin of energy bands and band gaps as well as how they relate to the conductivity of extended solids.
- Understand the effect of impurity doping, light excitation, and carrier recombination on electron Fermi level and quasi-Fermi levels.
- Ability to relate band bending diagram to charge carrier concentration profile, electric field / potential distribution, and use band bending diagrams to explain the current-voltage and capacitance-voltage characteristics of foundational structures such as metal-semiconductor interface, p-n junction, MOSFET, and bipolar transistor.

Semiconductor processing technologies

- Ability to analyze the impact of each process parameter on the outcome of a process based on existing theoretical models.
- In-depth experience in optimizing common processes such as oxide growth, plasma/wet etching, diffusion doping, CVD/PVD, and photolithography.

Device fabrication and characterization

- Hands-on experience in p-n junction solar cell and MOSFET fabrication through multi-step processing, including designing and making chrome photo masks.
- Conceptual understanding and practical knowledge about common instruments such as digital multimeter, source-measure unit, impedance analyzer, and 4-point probe station.
- Experienced in electrical characterization of diodes and transistors to extract device parameters, evaluate device performance, and analyze failure mode.
- Applied device knowledge and processing skills to optimize the performance of a commercial ChemFET through a sponsored project.

Fall term electives:

- Commonly chosen electives (3) for students remaining at UO through the fall term include: Design of Experiments with JMP software, Electron Microscopy (FIB-SEM,TEM), and Surface Elemental Composition Analysis (EDX, XPS, ToF-SIMS).