**COURSE SYLLABUS**

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| **Course Title**：Physics of Semiconductor Devices | | | | |
| **Credits/Hours** | 3 /3 | **Course Number** | 158042 | **□Required ■Elective** |
| **Course Description**  This course covers the basic theory regarding pn junction, current–voltage, metal-semiconductor junction, metal-oxide-semiconductor field-effect transistor. Therefore, we believe that such materials on the underlying physics will be beneficial to the understanding and perhaps in developing new semiconductor devices for master students. | | | | |
| **Topics** | | | | |
| **Topic** | | **Content** | | |
| Fundamental semiconductor devices | | 1. The pn junction   - Basic structure of the pn junction  - Zero, reverse, forward Applied bias  - Junction breakdown   1. The pn junction diode | | |
| Metal-Oxide-Semiconductor Field-Effect Transistor | | 1. The two-terminal MOS structure   - Energy-band diagrams  - Depletion layer thickness  - Surface charge density  - Work function difference   1. Capacitance-Voltage Characteristics 2. The basic MOSFET operation   - MOFET structure  - Current-voltage relationship  - Substrate bias effects  4. Organic Field-Effect Transistors | | |
| Practical training: OFET engineering | | 1. Photolithograph 2. Thermal evaporation 3. Measurement | | |