**COURSE SYLLABUS**

|  |
| --- |
| **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 breakdown1. 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 difference1. Capacitance-Voltage Characteristics
2. The basic MOSFET operation

- MOFET structure- Current-voltage relationship- Substrate bias effects4. Organic Field-Effect Transistors |
| Practical training: OFET engineering | 1. Photolithograph
2. Thermal evaporation
3. Measurement
 |