**COURSE SYLLABUS**

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| **Course Title**：Plasma and thin film technologies I | | | | |
| **Credits / Hours** | 3/3 | **Course Number** |  | **■Required □Elective** |
| **Course Description**  This course is an introduction to the field of plasma and thin film technologies, with a focus on the plasma and its application in thin films. Topics covered include the introduction to plasma, equipment for plasma thin film preparation and fundamentals of plasma processes and technology. The course will also cover characters of plasmas and plasma-chemical reactions.  **Course Goals and Objectives:**   1. To introduce students to the fundamentals of plasma processes and technology 2. To provide an understanding of the processing methods used in the manufacture of thin films 3. To explore characters of plasmas and the plasma-chemical reactions   Textbook:  Prepared by professors and other references (papers) | | | | |
| **Course Topics** | | | | |
| **Topic** | | **Content** | | |
| Topic 1 Vacuum technology | | Pumps, gauges, pin holes and cleanrooms | | |
| Topic 2 Thin films | | Chemical or physical adsorption, growth of film | | |
| Topic 3 Introduction to plasma | | Glow discharge, low-temperature plasma | | |
| Topic 4 Characters of plasmas | | Electrons, radicals, photons, etc. | | |
| Topic 5 Types of plasma I | | Thermal electron discharge and two-pole discharge type | | |
| Topic 6 Types of plasma II | | Magnetron discharge and electrodeless discharge type | | |
| Topic 7 Application types I | | Sputter, ion plating, CVD and etching | | |
| Topic 8 Application types II | | Polymerization and surface modification | | |
| Topic 9 Equipment | | Equipment for plasma thin film preparation | | |
| Topic 10 Substrate transfer | | Fundamentals of plasma processes and technology | | |
| Topic 11 Future development | | Future development | | |