**COURSE SYLLABUS**

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| **Course Title**：Plasma Processes and Applications | | | | |
| **Credits / Hours** | 3/3 | **Course Number** |  | **□Required ■Elective** |
| **Course Description**  This course is an introduction to the field of plasma, with a focus on the plasma processes and their applications. Topics covered include characters of plasmas, fundamentals of plasma processes and plasma-chemical reactions. The course will also cover the types of plasma process, such as CVD (Chemical vapour deposition), PVD (Physical vapour deposition) and ALD (Atomic layer deposition), and their applications in nanotechnology and industries.  **Course Goals and Objectives:**   1. To introduce students to the properties and characteristics of plasma 2. To provide an understanding of different plasma processes 3. To explore the use of plasma processes in various applications, including   conventional industry, electro-optical industry, nanotechnology and biomedical industry.  Textbook: Prepared by professors and other references (papers) | | | | |
| **Course Topics** | | | | |
| **Topic** | | **Content** | | |
| Topic 1 Plasma processes | | Vacuum pumps and measurement | | |
| Topic 2 Thin films | | Chemical or physical adsorption, growth of film | | |
| Topic 3 Introduction to plasma | | Glow discharge and low-temperature plasma | | |
| Topic 4 Characters of plasmas | | Electrons, radicals, photons, etc. | | |
| Topic 5 Equipment | | Equipment for plasma thin film preparation | | |
| Topic 6 Types of plasma I | | Sputtering, Ion plating, CVD and etching | | |
| Topic 7 Types of plasma II | | Polymerization and surface modification | | |
| Topic 8 Analysis I | | Thickness, XRD, WCA, and FTIR | | |
| Topic 9 Analysis II | | UV-Vis, Raman, SEM, Eds-SEM and XPS | | |
| Topic 10 Application types I | | Electro-optical industry and sensors | | |
| Topic 11 Application types II | | Biosensor and biomedical | | |
| Topic 12 Future development | | Future development | | |