	UNIVERSITAS PADJADJARAN FACULTY OF MATHEMATICS AND NATURAL SCIENCES MASTER PROGRAM IN CHEMISTRY	COURSE CODE: D20B.299

Module designation	Solid and Surface Chemistry
Semester(s) in which the module is taught	2
Lecturers	Dr. Engela Evy Ernawati Dr. Eng. Irwan Kurnia
Medium of instruction	English and Indonesian
Relation to curriculum	Mandatory elective courses Functional Material Master of Science in Chemistry
Teaching methods	Lecture and discussion
Workload	Total workload : 80 hours **CLASS** Lecture and Discussion : 20 hours Test and Examination : 20 hours Independent Study : 40 hours
Credit points	3 (3-0) 3 Credits = 5.43 ECTS

Required and recommended prerequisites for joining the module	-

Module objectives/intended learning outcomes	1. Students are able to master the theoretical concepts of solid and surface chemistry. [C2] 2. Students are able to produce appropriate conclusions regarding the latest topics of solid and surface chemistry, both personally and in group work, as well as present them. [C3]

Contents	Surface structure thermodynamics surface, electrical aspects of the interface. sorption; Physisorption, energy transfer at the surface, isotherm adsorption, chemisorption, interaction between adsorbates. preparation method; solid reaction, crystallization, structure modification, electrochemical reduction methods, preparation, thin films, single crystal growth, high pressure and hydrothermal methods. Solid characterization; diffraction methods, microscopy, spectroscopy, thermal analysis. Crystal chemistry; some types of important structures, factors affecting crystal structure, crystal defects.

Examination forms	Test, Presentation, and Assignment
Study and examination requirements	Minimum attendance at lectures is 80%. Final score is evaluated based on individual assignment (20%), mid semester exam (40%), and end semester exam (40%).
Reading lists	1. Nadeem Baig et al., Nanomaterials: a review of synthesis methods, properties, recent progress, and challenges, Mater. Adv., 2021, 2, 1821. 2. Handbook of Applied surface and Colloid Chemistry, 2002, Holmberg Krister, Shah Dinesh O., Schwuger Milan L., John Wiley & Sons, LTD. 3. Recent journals related to solid and surface chemistry with index factor > 5.