

Module Handbook

Module Name:	Material Characterization
Module Level:	Bachelor
Abbreviation, if applicable:	FI3221
Sub-heading, if applicable:	
Courses included in the module, if applicable:	
Semester/term:	Third Years
Module coordinator(s):	
Lecturer(s):	
Language:	Bahasa Indonesia
Classification within the curriculum:	General Studies/ Major Subject / Elective Studies
Teaching format / class hours per week during the semester:	2 hours lectures
Workload:	2 hours lectures, 4 hours individual study and Laboratories work, 16 weeks per semester, and total 96 hours a semester
Credit Points:	2
Requirements:	
Learning goals/competencies:	<p>Knowledge:</p> <ul style="list-style-type: none"> – demonstrate basic knowledge on appropriate characterization techniques to determine quality of material – demonstrate comprehension on the quality criterion of a materials <p>Skills:</p> <ul style="list-style-type: none"> – demonstrate ability to make qualitative analysis on a measurement
Content:	This course is offered to equipped students with knowledge of materials characterization techniques such as imaging, scattering, spectroscopy. Topics covered in this course are : Introduction to quantitative quality criterion of materials; microscopy, scattering and spectroscopy techniques; qualitative analysis of SEM, TEM and AFM data; X-ray and Neutron imaging techniques; X-ray and Neutron diffraction techniques; vibrational spectroscopy (infrared and Raman); photoelectron spectroscopy (EDS, XPS, XAS)
Study/exam achievements:	Students are considered to be competent and pass if at least get 50% of examinations (mid-term test, final test, quizzes), homework, Research based learning.
Forms of Media:	Slides and LCD projectors, blackboards, lab.
Literature:	<ol style="list-style-type: none"> 1. R. F. Egerton, Physical Principles of Electron Microscopy, , Springer, 2005 2. V. K. Pecharsky and P. Y. Zavalij, Fundamental of Powder Diffraction and Structural Characterization of Materials, , Springer, 2009 3. B. Schrader (editor), Infrared and Raman Spectroscopy, , Wile-VCH, 1995 4. S. Hüfner, Photoelectron Spectroscopy: Principle and Application, , Springer, 2003
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