



MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS

Ketintang Campus, Jalan Ketintang, C3 Building, Surabaya 60231
 Website: <http://s1-fisika.fmipa.unesa.ac.id/>, email: s1-fisika@unesa.ac.id

Undergraduate Programme In Physics

Module Handbook

Module Name :	<i>Metode Fabrikasi Bahan</i> Material Fabrication Method
Module level :	Bachelor degree/Undergraduate Programme
Course Code :	4520103130
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	7/Fourth Year
Module coordinator(s)	Dr. ZA Imam Supardi, M.Si.
Lecturer(s):	Dr. Munasir, S.Si., M.Si. Prof. Dr. Budi Jatmiko, M.Pd.
Language:	<i>Bahasa Indonesia</i> (Indonesian Language)
Classification within the curriculum:	Compulsory / Elective
Teaching format/class hours per week during the semester:	2 contact hours of lectures (<i>sks</i> or credit unit*)
Workload :	Lecture: 2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester. 79.33 total hours per semester ~ 3.18 ECTS **
Credit Point:	2 <i>sks</i> (3.18 ECTS)
Requirements:	Solid Physics Materials Science
Learning goals/competencies:	1. Students are able to apply processing methods for ceramics, polymers and metals. 2. Students are able to apply composite material fabrication methods.. 3. Students are able to apply chemically functional material synthesis methods, such as: sol-gel; co-precipitation, electrochemistry, maceration and so on. 4. Students are able to apply the method of synthesis of physical chemistry functional materials, such as: electrospinning, 5. Students are able to apply thin layer conductive material fabrication methods using CVD, PLD, MBE and Sputtering techniques.
Content	In this lecture, various processing methods for ceramics, polymers and alloys are discussed; and methods of fabricating



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	composite/nanocomposite materials; methods of synthesis of nanostructured materials (physics and chemistry), such as sol-gel; co-precipitation, alkalifusion, continuous, etc.; also various methods of fabricating conductive materials (semiconductors, superconductors) with CVD techniques (such as: MOCVD, PECVD, HW-PECVD), PLD, MBE and Sputtering.										
Attribute Soft skill:	Scientific report, public speaking, and team work										
Study/exam achievements:	Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio: <table border="1"> <thead> <tr> <th>Assessment Components</th><th>Percentage of contribution</th></tr> </thead> <tbody> <tr> <td>Participation</td><td>20%</td></tr> <tr> <td>Assignment</td><td>30%</td></tr> <tr> <td>Mid-semester test</td><td>20%</td></tr> <tr> <td>Final semester test</td><td>30%</td></tr> </tbody> </table>	Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%
Assessment Components	Percentage of contribution										
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Final semester test	30%										
Learning Methods :	Student-centered approach, lecture and discussion, and presentations (structured activities)										
Form of Media:	<i>Power Point</i> slides, e-book file, and multimedia.										
Literature (primary references):	1. Materials Fabrication Methods Book, compiled by Dr. Munasir, S.Si., M.Sc. 2. A collection of articles from various international journals covering the field of materials science and relevant ones, which have a novelty aspect in the field of materials technology. 3. Williem D. Callister, Jr., Materials Science and Engineering an Introduction., Sixth Edition, Wiley International Editions., John Wiley & Sons. Inc., 2003. 4. Masuo Hosokawa, Kiyoshi Nogi, Makio Naito, Toyokazu Yokoyama, Nanoparticle Technology Handbook, Elsevier, Tokyo, First Edition, 2007. 5. Hari Singh Nalwa, Nanostuctural Materials and Nanotechnology, Concise Edition, Academic Press, Hitachi Research Laboratory, Tokyo, Japan, 2002. 6. Suresh G. Advani, Processing and Properties of Nanocomposite, University of Dalaware USA, World Scientific Publishing Co.Pte.Ltd, 2007. 7. Jeremy Ramsden, Nanotechnology, Free Study Books, www.BOOKBOON.COM, @Jeremy Ramsden & Ventus Publishing ApS, 2009.										



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	8. Jasprit Singh, Optoelectronic Semiconductor, Physics and Technology. McGRAW-Hill International Editions, 2005. 9. Munasir, Nano SiO₂ Particle Reinforced Aluminum Composite as Anti-Corrosion Material in Geothermal Medium, Dissertation-ITS, 2015. 10. Journal of Materials Letters: https://www.journals.elsevier.com/materials-letters/ 11. Journal of Material Science-Poland: https://content.sciendo.com/view/journals/msp/mspoverview.xml?lang=en&tab_body=container-toc
Notes:	*1 credit unit or <i>sks</i> in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018. **1 credit unit or <i>sks</i> = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2019