



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

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Undergraduate Programme in Science Education

Module Handbook

Module Name:	<i>Matematika IPA</i> (Mathematics for Science)				
Module Level:	Bachelor degree/Undergraduate Programme				
Course Code:	8420103088				
Abbreviation, if applicable:	-				
Courses included in the module, if applicable:	Not applicable				
Semester/term	II/first year (freshmen)				
Module coordinator(s):	Dr. Mohammad Budiyanto, M.Pd.				
Lecturer(s):	Dr. Mohammad Budiyanto, M.Pd. Tutut Nurita, S.Pd., M.Pd. Muhamad Arif Mahdiannur, S.Pd., M.Pd.				
Language:	<i>Bahasa Indonesia</i> (Indonesian Language)				
Classification within the curriculum:	Compulsory / Elective				
Teaching format/class hours per week during the semester:	3 contact hours of lectures (Indonesia credit semester or <i>sks</i> *)				
Workload:	3 x 50 minutes lectures, 3 x 60 minutes structured activity, 3 x 60 minutes individual activity, 14 weeks per semester, 119 total hours per semester ~ 4.77 ECTS**				
Credit point:	3 <i>sks</i> (4.77 ECTS)				
Requirements:	General Physics (8420103045) General Chemistry (8420103074) General Biology (8420103023)				
Learning goals/competencies:	Course Learning Outcomes (CLOs): After taking this course, students will be able to: 1. Apply substantive and procedural concepts of linear algebra and vector calculus to solve the real-world problem related to science phenomena; 2. Apply substantive and procedural concept of differential and integral to solve the real-world problem related to science phenomena; and 3. Apply substantive and procedural concepts of ordinary differential equations (ODEs) to solve the real-world problem related to science phenomena.				
Content:	Linear algebra, vector calculus, differential, integral, and ordinary differential equations				
Attribute Soft skill:	Discipline, collaboration, responsibility, and argumentation in the natural classroom setting				
Study/exam achievements:	Students are considered to be competent and pass if at least get 40% of the maximum final grade. The final grade (NA) is calculated based on the following weight: <table border="1" data-bbox="683 1966 1372 2042"> <thead> <tr> <th>Assessment Components</th><th>Percentage Contribution</th></tr> </thead> <tbody> <tr> <td>Participation</td><td>20%</td></tr> </tbody> </table>	Assessment Components	Percentage Contribution	Participation	20%
Assessment Components	Percentage Contribution				
Participation	20%				

	Assignment	30%
	Mid-semester test	20%
	Final semester test	30%
	Total	100%
Learning Methods	Constructivism, student-centred approach, project-based learning, lecturing, discussion, and presentation (structured activities), and flip learning	
Form of Media:	LCD, PowerPoint slides, worksheets, software (Matlab/Octave/Scilab), and e-learning Vinesa (https://vlearning.unesa.ac.id/course/view.php?id=3806)	
Literature (primary references):	<ol style="list-style-type: none"> 1. Boas, M. L. (2006). <i>Mathematical methods in the physical science</i> (3rd Ed.). John Wiley & Sons. 2. Kreyszig, E. (2006). <i>Advanced engineering mathematics</i> (9th Ed.). John Wiley & Sons. 3. Arfken, G. B., Weber, H. J., & Harris, F. E. (2013). <i>Mathematical methods for physicists: A comprehensive guide</i> (7th Ed.). Academic Press. 4. Goodson, D. Z. (2011). <i>Mathematical methods for physical and analytical chemistry</i>. Wiley. 5. Logan, J. D., & Wolensensky, W. (2009). <i>Mathematical methods in biology</i> (Vol. 96). John Wiley & Sons. 	
Notes:	<p>*1 sks in learning process = three contact hours that 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.</p>	
	**1 sks = 1,59 ECTS	