



MINISTRY OF EDUCATION, CULTURE, RESEARCH, AND TECHNOLOGY
UNIVERSITAS NEGERI SURABAYA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES

Ketintang Campus, D-1 Building, Surabaya 60231 +6231-8296427

Website: www.fmipa.unesa.ac.id, email: info_fmipa@unesa.ac.id

Master Program of Mathematics Education

Module Handbook

Module Name:	Discrete Mathematics
Module Level:	Master (S-2)
Abbreviation, if applicable:	
Sub-heading, if applicable:	-
Course included in the module, if applicable:	-
Semester/term:	1/First year
Module Coordinator(s):	Prof. I Ketut Budayasa, Ph.D.
Lecturer(s):	1. Prof. I Ketut Budayasa, Ph.D. 2. Dr. Budi Rahadjeng, M.Si.
Language:	Indonesia
Classification within the curriculum:	Compulsory course / elective studies
Teaching format/class hours per week during the semester	Teaching format: lectures, tutorial assignment, and individual study. 3×240 minutes = 720 minutes = 12 hours lectures
Workload:	15 weeks per semester consisting of: <ul style="list-style-type: none">• 1 hour lecture (1×50 minutes) per week,• 2 hours assignments (2×45 minutes) per week,• 2 hours individual study (2×50 minutes) per week, Total workload: $14 \times 3 \times 240$ minutes = 10,080 minutes \approx 6.72 ECTS*
Credit Point:	3
Requirements:	N/A
Learning Goals :	Knowledge (KNO-1) CLO-1: able to understand the basic concepts of counting, multiplication rules, addition rules, permutations, combinations, and the Pigeonhole principle and its applications. CLO-2: able to understand the concept of generating functions as a more 'advanced' enumeration technique and its applications. CLO-3: able to understand the concept and principle of inclusion-exclusion and its application



	<p>Skill (SKI-1) CLO-4: able to solve problems via modeling in the form of recursive relations.</p> <p>Competency (COM-1) CLO-5: able to communicate ideas and solving problems related to the application of enumeration rules, generating functions, inclusion-exclusion principles, and recursive relations orally and in writing</p> <p>Social (SOC-1) CLO-4: able to collaborate and be responsible professionally and ethically in completing tasks</p>																														
Content:	Studying mathematical induction, multiplication rule, addition rule, permutations and combinations, Binomial Theorem, inclusion-exclusion principle, the Pigeonhole principle, generating functions, and recursive relations.																														
Study/exam achievements	<ul style="list-style-type: none"> Students are considered competent and pass if the final score calculated from the score of midterm exam, assignments, participation, and final exam is at least 55 or C. Final score is calculated as follows: 20% midterm exam + 30% assignments + 20% participation + 30% final exam Final index is defined as follows: <table border="1"> <thead> <tr> <th>Index</th> <th>Converted Score</th> <th>Score Range</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>4.00</td> <td>$85 \leq A \leq 100$</td> </tr> <tr> <td>A-</td> <td>3.75</td> <td>$80 \leq A- < 85$</td> </tr> <tr> <td>B+</td> <td>3.50</td> <td>$75 \leq B+ < 80$</td> </tr> <tr> <td>B</td> <td>3.00</td> <td>$70 \leq B < 75$</td> </tr> <tr> <td>B-</td> <td>2.75</td> <td>$65 \leq B- < 70$</td> </tr> <tr> <td>C+</td> <td>2.50</td> <td>$60 \leq C+ < 65$</td> </tr> <tr> <td>C</td> <td>2.00</td> <td>$55 \leq C < 60$</td> </tr> <tr> <td>D</td> <td>1.00</td> <td>$40 \leq D < 55$</td> </tr> <tr> <td>E</td> <td>0.00</td> <td>$0 \leq E < 40$</td> </tr> </tbody> </table>	Index	Converted Score	Score Range	A	4.00	$85 \leq A \leq 100$	A-	3.75	$80 \leq A- < 85$	B+	3.50	$75 \leq B+ < 80$	B	3.00	$70 \leq B < 75$	B-	2.75	$65 \leq B- < 70$	C+	2.50	$60 \leq C+ < 65$	C	2.00	$55 \leq C < 60$	D	1.00	$40 \leq D < 55$	E	0.00	$0 \leq E < 40$
Index	Converted Score	Score Range																													
A	4.00	$85 \leq A \leq 100$																													
A-	3.75	$80 \leq A- < 85$																													
B+	3.50	$75 \leq B+ < 80$																													
B	3.00	$70 \leq B < 75$																													
B-	2.75	$65 \leq B- < 70$																													
C+	2.50	$60 \leq C+ < 65$																													
C	2.00	$55 \leq C < 60$																													
D	1.00	$40 \leq D < 55$																													
E	0.00	$0 \leq E < 40$																													
Media employed	Slides and LCD projectors, white board																														
Reading list	[1] Budayasa, I. K. 2008. <i>Matematika Diskrit</i> . Unesa University Press.																														



MINISTRY OF EDUCATION, CULTURE, RESEARCH, AND TECHNOLOGY
UNIVERSITAS NEGERI SURABAYA

FACULTY OF MATHEMATICS AND NATURAL SCIENCES

Ketintang Campus, D-1 Building, Surabaya 60231 +6231-8296427

Website: www.fmipa.unesa.ac.id, email: info_fmipa@unesa.ac.id

	[2] Townsend, M. 1987. <i>Discrete Mathematics: Applied Combinatorics and Graph Theory</i> . Benjamin/Cummings
Note	*Total hours per 1 credit in 1 semester = $\{(1 \text{ credit} \times 240 \text{ minutes} \times 14 \text{ weeks})/60 \text{ minutes}\} = 56 \text{ hours}$. Each ECTS equals 25 hours, so 1 credit in 1 semester is equivalent to 2.24 ECTS.
Last amendment	January 2023