

2023 Winter–Online Bridge Program

College Mathematics Syllabus

1 Basic Information

Term	2023 Winter semester	
Course Title	College Mathematics	MAS100
Professor	Andreas Holmsen	
Department	Department of mathematical sciences	
Language	English	
Students	Online Bridge Program / College Mathematics Applicants	
Learning Period	2024.1.2 ~ 2024.3.11 (10 weeks in total)	
Reviewing Period	2024.3.12 ~ 2024.3.22 (1 week in total)	
Final Exam Date	2024.3.23	

2 Course Details

Course Description	<p>This course offers a thorough introduction to Calculus. Topics such as Limits, Differentiation, and Integration will be dealt with through formal definitions such as precise definition of limits, continuity, derivatives, and integrals as limits of Riemann sums. We also include formal proofs of important results such as the Limit Laws and Differentiation Rules. Integration techniques such as substitution and integration by parts will be covered in detail together with applications such as volume and surface area of solids of revolution, and arc length of parametrized curves. Polar coordinates will also be treated.</p>
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Textbook/ References	Thomas' Calculus. Early Transcendentals. (13th edition), (by George B. Thomas, Maurice D. Weir, and Joel R. Hass) International Edition, publisher: Pearson					
Evaluation	Attendance	Quiz	Assignment	Discussion/ Others	Final Exam	Total
	0%	0%	50%	0%	50%	100%

3 Weekly Schedule

Week	Subject / Content
Week 1	Functions and their graphs (Chapter 1)
Week 2	Limits (Chapter 2) + Assignment 1
Week 3	Derivatives and differentiation rules (Chapter 3)
Week 4	Chain rule and implicit differentiation (Chapter 3) + Assignment 2
Week 5	Extreme values and the mean value theorem (Chapter 4)
Week 6	L'hopitals rule, applied optimization, and Newton's method (Chapter 4) + Assignment 3
Week 7	The definite integral and the fundamental theorem of calculus (Chapter 5)



Week 8	Integration by substitution and integration by parts (Chapter 5 and Chapter 8) + Assignment 4
Week 9	Volume, arc length, and surface area (Chapter 6)
Week 10	Parametric curves and calculus in Polar coordinates (Chapter 11) + Assignment 5
Week 11	Reviewing Period