



# HANYANG UNIVERSITY

## 2018 HISS Syllabus [Calculus I]

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Home Univ.: Hang-Yang/Arizona State University(Ph.D)  
Dept.: Mathematics

Description: This calculus course covers differentiation and integration of functions of one variable, and concludes with a brief discussion of infinite series. Calculus is fundamental to many scientific disciplines including physics, engineering, and economics. Furthermore, these mathematical tools and methods are used extensively in the applied mathematics, statistics, probability and computer graphics.

Objective: Calculus is fundamental to many scientific disciplines including physics, engineering, Statistics, Probability, Game Theory, Insurance, Stocks and economics

Preparations: Textbook needed: Calculus, Author : James Stewart (8<sup>th</sup> Edition)

Schedule:	Day 1	1.5 Inverse Functions and Logarithmic (Inverse Trigonometric Functions 만) (Review exercises: 63,67,68,69,71)
	Day 2	3.5 Implicit Differentiation (Review exercises:7,12,17,24,25,31,37,46,51,55,60,65)
		3.10 Linear Approximations and Differentials (Review exercises:3,9,13,16,19,27,31,36,38)
	Day 3	3.11 Hyperbolic Functions (Review exercises:5,9,11,15,21,31,34,36,43,45,51,55)
		4.4 Indeterminate Forms and L'Hospital Rule (Review exercises:17,28,31,39,49,52,57,65,74,84)
	Day 4	4.8 Newton's Method (Review exercises:6,11,16,17)
		5.2 The Definite Integral (Review exercises:11,24,29,41,47,53,74)
		5.3 The Fundamental Theorem of Calculus (Review exercises:12,16,38,42,63,65,76,83,84)
	Day 5	5.4 Indefinite Integrals and the Net Change Theorem (Review exercises:16,40,51)
		5.5 The Substitution Rule (Review exercises:21,30,37,38,43,68,88,91)
6.3 Volumes by Cylindrical Shells		

### Hanyang International Summer School

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	(Review exercises:2,5,8,14,19,31,39,41)
Day 6	6.5 Average Value of a Function (Review exercises:7,10,14,17,19) 7.1 Integration by Parts (Review exercises:9,11,14,30,38,42,50,53,62,71) 7.2 Trigonometric Integrals (Review exercises:2,11,22,28,36,49,67)
Day 7	7.3 Trigonometric Substitution (Review exercises:5,7,16,25,30,39) 7.4 Integration of Rational Functions by Partial Fractions (Review exercises:12,16,30,37,46,52) 7.5 Strategy for Integration (Review exercises:7,17,31,41,45,49,57,63,71)
Day 8	Midterm
Day 9	7.8 Improper Integrals (Review exercises:7,12,19,30,50,52,55,58,79)
	8.1 Arc Length (Review exercises:10,16,37,45)
Day 10	8.2 Areas of a Surface of Revolution (Review exercises:11,14,17,33,35) 10.2 Calculus with Parametric Curves (Review exercises:6,15,28,33,43,44,57,63)
Day 11	10.3 Polar Coordinates (Review exercises:10,18,25,29,35,42,45,56,61) 10.4 Areas and Arc Length in Polar Coordinates (Review exercises:3,5,10,21,28,32,41,48)
Day 12	11.1 Sequences(from p701 Definition) (Review exercises:81) 11.2 Series 11.3 The Integral Test and Estimates of Sums (Review exercises:6,13,18,22,24,29,36,46) 11.4 The Comparison Tests (Review exercises:3,9,13,25,31,38,45)
Day 13	11.5 Alternating Series (Review exercises:4,12,17,20,25,27,34) 11.6 Absolute Convergence and the Ratio and Root Tests (Review exercises:6,9,14,22,30,31,36,44,45)
Day 14	11.7 Strategy for Testing Series (Review exercises:1,6,11,17,23,29,36) 11.8 Power Series (Review exercises:4,7,14,15,17,24,26,30,31,37) 11.9 Representations of Functions as Power Series (Review exercises:4,8,10,14,16,20,28,30)
Day 15	11.10 Taylor and Maclaurin Series (Review exercises:4,11,14,22,34,37,42,51,62,74,79)
Day 16	Final

Evaluation:	Midterm (%)	Final (%)	Attendance (%)	Assignments (%)	Participation (%)	Etc. (%)
	40	40	5	00	5	10