

Syllabus 2017-18 - I semester

<p>Lecture 1</p>	<p>Why Learning Mathematics for Economics, Finance and Management? (Part 1)</p> <ul style="list-style-type: none"> · Applications in Economics · Applications in Finance · Applications in Management
<p>Lecture 2</p>	<p>Introductory Topics</p> <ul style="list-style-type: none"> · Integer numbers and real numbers · Powers · Intervals and Inequalities · Algebra rules · Summation notation · Set theory <p>Reference:</p> <ul style="list-style-type: none"> · Sydsaeter et al. 1.1, 1.2, 1.3, 1.6, 2.1, 2.2, 3.1, 3.6
<p>Lecture 3</p>	<p>Functions of One Variable I</p> <ul style="list-style-type: none"> · Definitions, Domain and Range · Linear functions · Quadratic Functions · Graphs of Functions <p>References:</p> <ul style="list-style-type: none"> · Sydsaeter et al. 4.1, 4.2, 4.3, 4.4, 4.6 · Jacques 1.5
<p>Lecture 4</p>	<p>Functions of One Variable II</p> <ul style="list-style-type: none"> · Polynomials · Power functions · Exponential functions · Logarithmic functions <p>References:</p> <ul style="list-style-type: none"> · Sydsaeter et al. 4.7, 4.8, 4.9, 4.10 · Jacques 2.2
<p>Lecture 5</p>	<p>Properties of Functions</p> <ul style="list-style-type: none"> · Shifting graphs · Inverse functions · Composite functions · Distance in the plane, circles <p>References:</p> <ul style="list-style-type: none"> · Sydsaeter et al. 5.1, 5.2, 5.3, 5.4, 5.5
<p>Lecture 6</p>	<p>Differentiation I</p> <ul style="list-style-type: none"> · Slopes of curves · Tangents and derivatives · Increasing and decreasing functions · Rates of change · Limits: an introduction <p>References:</p> <ul style="list-style-type: none"> · Sydsaeter et al. 6.1, 6.2, 6.3, 6.4, 6.5 · Jacques 4.3
<p>Lecture 7</p>	<p>Differentiation II</p> <ul style="list-style-type: none"> · Rules for differentiation

	<ul style="list-style-type: none"> · Sum, Products and Quotients · Chain Rule References: <ul style="list-style-type: none"> · Sydsaeter et al. 6.6, 6.7, 6.8
Lecture 8	Differentiation III <ul style="list-style-type: none"> · Higher order derivatives · Derivatives of Exponential functions · Derivatives of Logarithmic functions References: <ul style="list-style-type: none"> · Sydsaeter et al. 6.9, 6.10, 6.11
Lecture 9	Derivatives in Use I <ul style="list-style-type: none"> · Implicit differentiation · Differentiating the inverse References: <ul style="list-style-type: none"> · Sydsaeter et al. 7.1, 7.2, 7.3
Lecture 10	Derivatives in Use II <ul style="list-style-type: none"> · Linear Approximation · Polynomial Approximation · Taylor's Formula References: <ul style="list-style-type: none"> · Sydsaeter et al. 7.4, 7.5, 7.6 · Jacques 4.5
Lecture 11	Derivatives in Use III <ul style="list-style-type: none"> · Continuity · Limits · Intermediate value theorem · Infinite sequences · L'Hôpital's rule References: <ul style="list-style-type: none"> · Sydsaeter et al. 7.8, 7.9, 7.10, 7.11, 7.12
Lecture 12	Single Variable Optimization I <ul style="list-style-type: none"> · Simple Tests for Extrema · Convex and concave functions References: <ul style="list-style-type: none"> · Sydsaeter et al. 8.1, 8.2, 8.3
Lecture 13	Single Variable Optimization II <ul style="list-style-type: none"> · Extreme value theorem · Mean value theorem References: <ul style="list-style-type: none"> · Sydsaeter et al. 8.4, 8.5
Lecture 14	Single Variable Optimization III <ul style="list-style-type: none"> · Local extreme points · Inflection points References: <ul style="list-style-type: none"> · Sydsaeter et al. 8.6, 8.7 · Jacques 4.6