

A Course Title & Number	Mathematics for Architects - MTH 111									
B Pre/Co-requisite(s)	Prerequisites: MTH 001 or MTH 003 or Architecture Math Placement Test or Engineering Math Placement Test or SAT II Math Level 1 test with a score 600 and above									
C Number of credits	3-0-3									
D Faculty Name	Ayman Badawi									
E Term/ Year	Spring 2025, MW: 11-12:15, Nab 009									
G Instructor Information	<table border="1" data-bbox="500 594 1450 699"> <thead> <tr> <th data-bbox="500 594 722 646">Instructor</th> <th data-bbox="722 594 938 646">Office</th> <th data-bbox="938 594 1161 646">Telephone</th> <th data-bbox="1161 594 1450 646">Email</th> </tr> </thead> <tbody> <tr> <td data-bbox="500 646 722 699">Ayman Badawi</td> <td data-bbox="722 646 938 699">NAB 262</td> <td data-bbox="938 646 1161 699">-----</td> <td data-bbox="1161 646 1450 699">abadawi@aus.edu</td> </tr> </tbody> </table> <p data-bbox="456 709 1494 751"><u>Office Hours: M, W: 14 – 15:15 pm and TR: 12:40–1:40 , other by appointment, email me</u></p>		Instructor	Office	Telephone	Email	Ayman Badawi	NAB 262	-----	abadawi@aus.edu
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H Course Description from Catalog	Introduces the topics of geometry and calculus needed for architecture. Reviews trigonometry, areas and volumes of elementary geometric figures, and the analytic geometry of lines, planes, and vectors in two and three dimensions. Covers differential and integral calculus, including applications on optimization problems, areas, and volumes by integration. Restricted to CAAD									
I Course Learning Outcomes	<p data-bbox="699 1077 951 1108" style="text-align: center;">Learning Outcomes</p> <p data-bbox="472 1119 1125 1150">Upon completion of the course, students will be able to:</p> <p data-bbox="472 1161 1157 1224">CLO1 Solve problems involving conic sections (Parabola, Ellipse, and Hyperbola).</p> <p data-bbox="472 1266 1157 1350">CLO2 Find the derivative of a function and apply it to solve a variety of problems involving optimization and curve sketching</p> <p data-bbox="472 1392 1157 1465">CLO3 Apply the Fundamental Theorem of Calculus to find the area under a curve and compute volumes of revolution.</p> <p data-bbox="472 1507 1157 1602">CLO4 Find equations of lines and planes in 3-dimensional spaces using the concept of dot product and cross product of vectors.</p>	<p data-bbox="1268 1077 1422 1140" style="text-align: center;">Assessment Instruments</p> <p data-bbox="1243 1171 1446 1203" style="text-align: center;">Midterm 1 & Final</p> <p data-bbox="1203 1287 1414 1318" style="text-align: center;">Midterm 2 & Final</p> <p data-bbox="1317 1423 1382 1455" style="text-align: center;">Final</p> <p data-bbox="1243 1528 1446 1560" style="text-align: center;">Midterm 2, Final</p>								
J Textbook and other Instructional Material and Resources	Class notes are the primary source. Class notes (very crucial), and Materials posted on I-Learn , and my personal webpage (for old quizzes, exams, and finals, see http://ayman-badawi.com/MTH%20%20111.html)									

<p>K Teaching and Learning Methodologies</p>	<p>This is a traditional lecture-based course. All old class notes, quizzes, exams, and finals are available on my personal webpage http://ayman-badawi.com/MTH%20%20111.html</p>																																																
<p>L Grading Scale, Grading Distribution, and Due Dates</p>	<p><u>Grading Distribution</u></p> <table border="1" data-bbox="522 415 1490 653"> <thead> <tr> <th>Assessment</th> <th>Weight</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Quizzes</td> <td>20%</td> <td>Every WEDNESDAY</td> </tr> <tr> <td>Exam one</td> <td>25%</td> <td>Wednesday, March 5, in class</td> </tr> <tr> <td>Exam Two</td> <td>25%</td> <td>Wednesday, April 16, in class</td> </tr> <tr> <td>Final Exam</td> <td>30%</td> <td>TBA</td> </tr> <tr> <td>Total</td> <td>100%</td> <td></td> </tr> </tbody> </table> <p><u>Grading Scale</u></p> <table border="1" data-bbox="781 747 1232 1167"> <tbody> <tr> <td>93.00 – 100</td> <td>A</td> <td>4.0</td> </tr> <tr> <td>89.00 – 92.99</td> <td>A-</td> <td>3.7</td> </tr> <tr> <td>86.00 – 88.99</td> <td>B+</td> <td>3.3</td> </tr> <tr> <td>81.00 – 85.99</td> <td>B</td> <td>3.0</td> </tr> <tr> <td>77.00 – 80.99</td> <td>B-</td> <td>2.7</td> </tr> <tr> <td>73 .00– 76.99</td> <td>C+</td> <td>2.3</td> </tr> <tr> <td>66 .00– 72.99</td> <td>C</td> <td>2.0</td> </tr> <tr> <td>60 .00– 65.99</td> <td>C-</td> <td>1.7</td> </tr> <tr> <td>50.00 – 59.99</td> <td>D</td> <td>1.0</td> </tr> <tr> <td>Less than 50</td> <td>F</td> <td>0</td> </tr> </tbody> </table>	Assessment	Weight	Date	Quizzes	20%	Every WEDNESDAY	Exam one	25%	Wednesday, March 5, in class	Exam Two	25%	Wednesday, April 16, in class	Final Exam	30%	TBA	Total	100%		93.00 – 100	A	4.0	89.00 – 92.99	A-	3.7	86.00 – 88.99	B+	3.3	81.00 – 85.99	B	3.0	77.00 – 80.99	B-	2.7	73 .00– 76.99	C+	2.3	66 .00– 72.99	C	2.0	60 .00– 65.99	C-	1.7	50.00 – 59.99	D	1.0	Less than 50	F	0
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<p>M Explanation of Assessments</p>	<p>There will be two exams, final and quizzes. The lowest quiz score will be dropped.</p> <ul style="list-style-type: none"> With a valid written excuse and making immediate arrangements with the instructor, a missed exam might be possible. 																																																
<p>N Student Academic Integrity Code Statement</p>	<p>All students are expected to abide by the Student Academic Integrity Code as articulated in the AUS undergraduate catalog.</p> <p>It is considered an academic integrity violation to represent the output of a generative artificial intelligence tool as your own work.</p>																																																
<p>0 Attendance Policy</p>	<p>Students in this course are required to follow the AUS Attendance Policy as outlined in the AUS Undergraduate Catalog.</p>																																																

SCHEDULE

CHAPTER	Week
Conic sections, ellipse, parabola, and hyperbola	One
Continue: Conic sections, ellipse, parabola, and hyperbola	• Two
Lines in 2D , Vectors in 2 D , and projection	• Three
Dot Product, Cross Product and applications	• Four
Line and planes in 3 dimensional space , and Parametric Equations	• Five
Continue: Line and planes in 3 dimensional space, and Parametric Equations	• Six
Definition of derivatives and apply derivative to polynomials, exponential function, and logarithms	• Seven
Tangent lines and normal lines, product formula, quotient formula, and chain rule	Eight
Applications of Derivatives: Maximize and Minimize	Nine
Integration (anti-derivative), techniques and properties	• Ten
Integration by substitution	Eleven
Calculating areas by definite integrals	Twelve
More integration techniques	Thirteen
Volume by definite integrals	Fourteen
Volume /Area and Reviews	Fifteen