

MAT8100
Essential Mathematics

Course Section Information – MAT8100 Section 010

Text: Basic Technical Mathematics with Calculus – SI Version, 9th Edition, Allyn Washington, Pearson

Topics	References	Hours
1. The Trigonometric Functions of Acute Angles <ul style="list-style-type: none">Angles and their measureDefining the primary trigonometric functions for acute anglesDefining the reciprocal trigonometric functions for acute anglesValues of the trigonometric functions (acute angles): sin, cos, tanValues of the trigonometric functions (acute angles): sec, csc, cotThe right triangle	Chapter 4 Sec. 4.1 Sec. 4.2 Sec. 4.3 Sec. 4.4	3
2. Trigonometric Functions of Any Angle <ul style="list-style-type: none">Signs of the trigonometric functionsValues of the primary trigonometric functions (any angle): sin, cos, tanRadians	Chapter 8 Sec. 8.1 Sec. 8.2 Sec. 8.3	2
QUIZ ONE (Chapters 4, 8): 23 Sep 09 – 5% of course mark Use of Pearson Education Formula Sheet Permitted.		
3. Vectors <ul style="list-style-type: none">VectorsComponents of vectorsVector addition by components given angle and direction of the vectorsApplications of vectors	Chapter 9 Sec. 9.1 Sec. 9.2 Sec. 9.3 Sec. 9.4	4
4. Graphs of the Trigonometric Functions <ul style="list-style-type: none">Review of numerical fractions in simplest form, addition, subtraction, multiplication and division of numerical fractions (with particular emphasis on fractions involving π)Graph of the functions $y = \sin x$ and $y = \cos x$Graph of the functions $y = \sin bx$ and $y = \cos bx$Graph of the functions $y = \sin(bx + c)$ and $y = \cos(bx + c)$	Chapter 10 Sec. 10.1 Sec. 10.2 Sec. 10.3	4

QUIZ TWO (Chapters 9, 10): 14 Oct 09 – 5% of course mark
Use of Pearson Education Formula Sheet Permitted.**Term Test One (Chapters 4, 8, 9, 10): 21 Oct 09 – 20% of course mark**
Use of Pearson Education Formula Sheet Permitted.

10. The Exponential and Logarithmic Functions

- Definition of the exponential and logarithmic functions
- Conversion between exponential and logarithmic forms
- Properties of logarithms
- Logarithm to the base 10
- Natural Logarithm
- Finding the logarithm to any base of a number using change of base
- Solving exponential equations:
 - Using same base
 - Using logarithms
- Logarithmic equations

Chapter 13**6**

Sec. 13.1

Sec. 13.2

Sec. 13.3

Sec. 13.4

Sec. 13.5

Sec. 13.6

Sec. 13.6

QUIZ FOUR (Chapters 7, 11, and 13): 9 Dec 09 – 5% of course mark

Use of Pearson Education Formula Sheet Permitted.

11. Complex Numbers

- Basic definitions, complex numbers in rectangular form
- Basic operations with complex numbers in rectangular form
- Graphical representation of complex numbers
- Polar form of a complex number
- Exponential form of a complex number
- Products, quotients, powers, and roots of complex numbers in polar form

Chapter 12**5**

Sec. 12.1

Sec. 12.2

Sec. 12.3

Sec. 12.4

Sec. 12.5

Sec. 12.6

Teaching hours: 38**Evaluation**

• MyMathLab Quizzes	10%	-
• 4 In Class Quizzes (20 minutes maximum)	20%	2
• 2 Tests	40%	2
• 1 Final Exam (2 hour exam)	30%	3

**Evaluation
hours: 7**

Total hours: 45

MyMathLab Quizzes will be scheduled by the course professor – typically there is one quiz per week. Check MyMathLab for further information.

The Final Exam is a comprehensive assessment of your overall understanding of the course material. It is administered during Final Assessment Week 12 – 19 Dec 09.