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PUSAT PENGAJIAN SAINS FIZIK  
UNIVERSITI SAINS MALAYSIA

**First Semester, 2016/17 Academic Session**

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## **COURSE DETAILS**

Course name: Calculus  
Course code: ZCA 110  
Credit hours: 4 (i.e. 4 lectures per week for 14 weeks, plus tutorial sessions)

## **LECTURERS**

- Three separate classes for ZCA 110 (Groups: A, B, and C) handled concurrently by three lecturers:

A group: Dr. Norhaslinda Mohamed Tahrin (NMT)  
B group: Dr. Yoon Tiem Leong (YTL)  
C group: Dr. Wong Khai Ming (WKM)

## **COURSE DESCRIPTIONS**

- A core course offered by School of Physics
- Course conducted in English, but the students can answer the final exam either in Bahasa Malaysia or English

Duration: 5<sup>th</sup> September 2016 – 16<sup>th</sup> December 2016

Semester Break: 24<sup>th</sup> – 30<sup>th</sup> October 2016

Meeting times: Mon 12.00 noon – 12.50 pm  
Wed 9.00 – 9.50 am  
Thurs 11.00 – 11.50 am  
Fri 11.00 – 11.50 am

Pre-requisite: None, BUT will assume that students are familiar with basic mathematics at STPM or Matrikulasi level (i.e. arithmetic of

addition, subtraction, division and multiplication; basic algebra, geometry, trigonometry, simple differentiation, and integration)

E-learn: For updates, announcements, assignments, etc.

## **CONTENTS**

**Preliminaries:** Sets, real numbers, rational and complex numbers (read the Appendix section of Thomas' calculus)

The Calculus course offered by School of Physics covers the following topics:

- Functions, limits, and continuity
- Differentiation and its applications
- Integration, techniques of integration, and its applications
- Transcendental functions
- Sequences and series

## **OBJECTIVES**

1. Differentiation: learn the different rules of differentiation, and its applications
2. Integration: learn the different techniques of integration, and its applications
3. To learn the calculus of transcendental functions, and the basic concepts on series

## **COURSE EXPECTATIONS**

After completing this course, students should be:

- Well-versed in the so-called foundation mathematics that will be needed for numerous applications in physics
- Well-prepared for more advanced mathematics courses as well (e.g. ZCT 112/3, ZCT 210/4, ZCT 219/4, etc.)

## **CONSULTATION HOURS**

Consult your respective lecturers for details.

## ASSESSMENT

COMPONENTS	DESCRIPTION	WEIGHTAGE
Course work	Three (3) tests – 15% (at 5% each) Quizzes – 5% Assignments – 20%	40%
Final examination	Will cover all topics	60%
Attendance	<ul style="list-style-type: none"><li>• will be recorded</li><li>• students missing tests without valid reasons/M.C. will get zero</li><li>• students with attendance less than 70% will be barred from sitting for the final examination</li></ul>	
Total		100%

## TESTS

	Dates	Time	Venue
<i>Test 1</i>	21 <sup>st</sup> October 2016 (F)	11.00 – 12.00 noon	E41*
<i>Test 2</i>	28 <sup>th</sup> November 2016 (M)	12.00 – 1.00 pm	E41*
<i>Test 3</i>	9 <sup>th</sup> December 2016 (F)	11.00 – 12.00 noon	E41*

\* Basement of PHS II (Adjacent to Eureka building)

Note: All students (A, B, C groups) will sit for the same tests and final examination. Topics covered will be announced later.

## **ASSIGNMENTS and TUTORIALS**

- About eight (8) assignments to be completed by students throughout the course duration
- Students are required to submit them to the respective lecturers
- All assignments will be graded by the tutors
- Assignments received after the respective due date will not be graded (which means that you will get zero for that particular assignment)
- Tutorial sessions – each session is to be held during one of the usual lecture hours. Details of which will be announced later by your respective lecturers

## **REFERENCES**

### *Main textbook*

**Thomas' Calculus Early Transcendentals**, 11<sup>th</sup> Edition, G.B. Thomas, as revised by MD Weir, J Hass and F.R. Giordano, Pearson International Edition, 2008

### *Additional references*

1. S.L. Salas, E. Hille, and G.J. Etgen, Calculus, John Wiley & Sons, New York, 9th Edition, 2003, John Wiley & Sons.
2. Edwards and Penny, Calculus, 6th Edition, 2002, Prentice Hall.
3. Gerald L. Bradley and Karl J. Smith, Calculus, 2nd Edition, 1999, Prentice Hall.

Enjoy! ☺