PUSAT PENGAJIAN PENDIDIKAN JARAK JAUH

Academic Planner

JIM 319
VECTOR CALCULUS

Academic Session 2019/2020

VIDEO CONFERENCE (WEBEX) CLASS		
Session	**Date**	**Time**
1		
2		
3		
4		
5		
6		
7		
8		

Students need to fill in the date and time of video conference (WEBEX) sessions. Please refer to the video conference timetable for the Academic Session 2019/2020 provided.

JIM 319/4 - VECTOR CALCULUS

COURSE INSTRUCTOR: Dr. Mohd. Asyraf Mansor

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🏙 Room Number: KB/23

☎ Tel: 04-6535906

"It does not matter how SLOW you go so long as you do not STOP" - Confucius

COURSE SYNOPSIS

The course presents a thorough study of vectors in two and three dimensions, vector algebra, vector calculus, including velocity and acceleration, space curves, gradient, divergence and curl using the del operator, line, surface and volume integrals, conservative fields, Green's theorem, the divergence theorem, and Stokes' theorem.

Simple applications to Newtonian mechanics, fluid mechanics and electromagnetism will also be discussed.

E-LECTURE MODULE

PPPJJJ JIM 319 E-lecture Series (Kindy log in PPPJJ e-portal).

REQUIRED TEXT

VECTOR CALCULUS (Hardcover)
by MIROSLAV LOVRIĆ, John Wiley & Sons (2007)

TOPICS COVERED

The topics covered in this course are based on the e-lecture series (refer to the e-portal). There are 8 video conference (WEBEX) sessions will be conducted by the instructor throughout the academic year. Check the agenda/material on the E-Learning portal for any updates. The outline below is provided only as a guideline to assist you in your study. Things may change slightly as the course progresses, in which case the entries below will be updated.

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WEBEX Session	Lecture/Topics	Remarks
1	**E-Lecture 1** 1.1 Introduction of Vectors and Vector Algebra 1.2 The Dot Product 1.3 The Cross Product	
2	**E-Lecture 2** 2.1 Equation of Lines and Planes 2.2 Vector Function, Limits and Derivatives	
3	**E-Lecture 3** 3.1 Arc Length and Curvatures 3.2 Vector Motion: Velocity, Speed and Acceleration	
4	**E-Lecture 4** 4.1 Partial Derivatives 4.2 Gradient and Directional Derivatives	
5	**E-Lecture 4** 4.3 Divergence and Curl of the Vector Field 4.4 The Vector Identities	
6	**E-Lecture 5** 5.1 Ordinary Integral of Vector-Valued Function 5.2 Line Integrals 5.3 Surface and Volume Integrals	
7	**E-Lecture 5** 5.4 Integral Vector Theorems	
8	**E-Lecture 5** 5.4 Integral Vector Theorems **Additional Material** Application of Vector Calculus: Newtonian mechanics, fluid mechanics and electromagnetism. **Final Revision**	

The **exercises and WEBEX agenda** will be uploaded to USM e-Learning portal before the WEBEX sessions. As a PPPJJ student, you are entirely responsible for your own success. Kindly manage your time wisely with all the assigned work completed and keep on practice. Students are encouraged to attempt solving the given questions before attending each session as you are expected to participate in the live WEBEX discussions.

ASSIGNMENTS

Assignments are for your own benefit in order to retain your mathematical skills. Please take it seriously as assignments will carry 20% weightage of your grade. There will be 2 written assignments. *(Questions will be posted on e-Learning portal)*

Assignment 1:   Based on topics in WEBEX 1 until WEBEX 3.
                          Due date – To Be Announced During WEBEX Session

Assignment 2:   Based on topics in WEBEX 4 onwards.
                          Due date - To Be Announced During WEBEX Session

NOTE:

1. Assignments must be *hand written*.

2. Please be advice that the assignments must *reached PPPJJ's office or e-portal submission platform* no later than the due date. *Late assignment will not be entertained nor graded.* Therefore please submit your assignment on time.

3. Plagiarism and copycat is prohibited; *zero mark* will be given to both, i.e. the one who copy the answer and also the one who let other to copy his/her assignment.

4. Assignments that have been submitted may not be returned, so please make your own copy for your keepsake.

The full solutions will be posted sometime after the due date on the e-Learning portal. I expect that you do your assignments on your own or discuss them with your coursemates at some level. This is a positive learning ethic. What you most emphatically should NOT do is copy answer from your coursemates.

Academic dishonesty is unacceptable and will be penalized accordingly.

CONTINUOUS ASSESSMENT (PB)

As part of the continous assessment of the course, a test will be given during the intensive course.
Materials that will be tested: Topics covered from Webex 1 until Webex 4.

INTENSIVE COURSE

PPPJJJ Intensive Course will be held from **28th January 2020 – 13th February 2020**. More information about the activities during the Intensive Course will be given later. Kindly check the e-Learning portal religiously for the latest announcement about intensive course.

FINAL EXAMINATION

Final exam will be held during the month of **8th June 2020 – 28th June 2020** (tentatively). Please refer to e-portal from time to time for the final examination schedule. ALL topics covered during Webex 1 until Webex 8 will be tested.

COURSE GRADE

There will be 2 assignments, 1 continuous assessment (PB) and and a comprehensive final exam. The final course grade will be based on the following distribution:

Final Examination			**60%**
Coursework	**Assignment 1** **Assignment 2**	10% 10%	**40%**
	Continuous Assessment	20%	

FURTHER REFERENCES

1. Colley, S. J., Vector Calculus, 4th Edition, Pearson, 2012.
2. Hass, J. R., Weir, M. D., and Thomas, G. B., University Calculus: Early Transcendental, 2nd Edition, Pearson, 2014.
3. Anton, H., Bivens I., and Davis, S., Calculus: Early Transcendental, 10th Edition, John Wiley & Sons, 2013.
4. Gorguis, A., Vector Calculus, 3rd Edition, Xlibris, 2015.

CONSULTANCY AND QUESTIONS

You can send me an e-mail if you need my assistance on Vector Calculus. You are also advised to utilize the e-learning portal inbox to pose any inquiries.

Kindly scan the QR code below to see my availability and the consultation hours for JIM319.

OR

URL: bit.ly/drasyrafpjj

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