



DEPARTMENT OF GEOMATICS ENGINEERING
UNDERGRADUATE PROGRAM IN GEOMATICS ENGINEERING
COURSE SYLLABUS

COURSE	Name	Altimetry Satellite System
	Code	RM184935
	Credits	3 (three)
	Semester	Elective

COURSE DESCRIPTION

In this course, students will study one study of satellite geodesy, satellite altimetry. Satellite altimetry is a method of measuring sea level height and its variations use radar altimeters. The basic concept of satellite geodesy in general and satellite altimetry in particular will be provided so that students will have knowledge of the principles of sea level measurement using satellite altimetry. In addition, some corrections and biases related to data processing in the calculation of sea level anomaly (SLA) were also conveyed. To better understand the knowledge of altimetry satellites, students will be given the task of doing calculations and data processing and analysis in determining sea level and its variations. Satellite altimetry applications that are related to the oceanic phenomena will also be given in this lecture. Students will be invited critically about the use of satellite altimetry technology for survey and mapping purposes.

EXPECTED LEARNING OUTCOME

C	Able to identify, formulate, analyze and solve problems in the fields of geodesy, surveying, hydrographic, remote sensing, photogrammetry, and cadastral.
D	Able to perform spatial data acquisition using modern measurement methods, geospatial data processing, using industry standard software, and making standard designs and analyzes in the fields of geodesy, surveying, hydrography,
E	Able to apply information & communication technology and the latest technological developments in the fields of geodesy, surveying, hydrographic, remote sensing, photogrammetry, geographic information systems, and cadastral.
F	Able to compile scientific reports and provide solutions based on leadership, creativity and communication skills as well as being responsible for the work done.

COURSE LEARNING OUTCOME

1	Able to explain the basic concepts of satellite altimetry.
2	Able to explain the basic theories and measurement methods to determine sea level using altimetry satellites.
3	Able to do simple data processing to determine sea level using altimetry satellites.
4	Able to explain sea level and its variations and their influence in global and regional sea phenomena.
5	Able to think critically about the use of altimetry satellites for practical purposes in the fields of geodesy, geophysics, and marine based on their understanding of the concept of determining sea level based on altimetry satellites.
6	Able to express their ideas orally and in writing related to interpretation of altimetry satellite data.

COURSE MATERIALS

1	Introduction of altimetry satellites.
2	The basic principle of an altimeter.
3	Corrections and biases in the altimetry data due to the atmosphere: troposphere (dry and wet components) and ionosphere, sea state bias and geophysical effects: Tides and dynamic atmospheric.
4	Mean sea surface model.
5	Sea level anomaly (SLA) analysis: along-tracks and crossovers.
6	Satellite altimetry applications in the fields of: geodesy & geophysics, oceanography, etc.

PREREQUISITE

Satellite Geodesy, Hydrography

REFERENCES

A.	Main References
1	Cipollini, P., J. Benveniste, F. Birol, M. J. Fernandes, E. Obligis, M. Passaro, P. T. Strub, G. Valladeau, S. Vignudelli and J. Wilkin (2017). Satellite altimetry in coastal regions. Satellite Altimetry Over Oceans and Land Surfaces. D.
2	Church, J. A., P. U. Clark, A. Cazenave, J. M. Gregory, S. Jevrejeva, A. Levermann, M. A. Merrifield, G. A. Milne, R. S. Nerem, P. D. Nunn, A. J. Payne, W. T. Pfeffer, D. Stammer and A. S. Unnikrishnan. 2013. Sea Level Change.
3	Fu, L.L. and Cazenave, A. 2001. Satellite Altimetry and Earth Sciences: A Handbook of Techniques and Applications,
4	Vignudelli, S., et al. 2011. "Satellite Altimetry: Sailing Closer to the Coast." 217-238.
5	Vignudelli, S., Kostianoy, A. G., Cipollini, P. and Benveniste, J. , 2011. Coastal Altimetry, Berlin Heidelberg,
B.	Additional References
1	Related journals.
2	
3	
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