DEPARTMENT OF GEOMATICS ENGINEERING
UNDERGRADUATE PROGRAM IN GEOMATICS ENGINEERING
COURSE SYLLABUS

COURSE	Name	Marine Optic
	Code	RM184943
	Credits	3 (three)
	Semester	Elected

COURSE DESCRIPTION

This course is a continuation of Applied Remote Sensing and be devoted to obtain and analyze the remote sensing data, as well as the utilization in water studies. For this reason, besides being related to satellite image processing, the concepts related to water characteristics, optical and physical properties of water also need to be studied.

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,
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.

COURSE LEARNING OUTCOME

1	Able to understand the characteristics and constituents of water, and its classification
2	Able to understand the optical, physical, chemical and biological nature of water
3	Able to apply the bio-optical algorithms
4	Able to obtain in-situ data and validate the results of calculations

COURSE MATERIALS

1	Introduction to Marin Optics
2	Water Constituents
3	Optical Properties of Water
4	Physical, Chemical and Biological Properties of Water
5	Water classification
6	Remote Sensing For Water
7	Atmospheric Correction Algorithm
8	Bio-optical algorithm
9	Measurement in situ
10	In situ Database
11	Image processing
12	Validation

PREREQUISITE

Applied remote sensing

REFERENCES

A.	Main References
1	Martin, Seelye. An introduction to ocean remote sensing. Cambridge University Press, 2014.

2	Gordon, Howard R., and André Y. Morel. Remote assessment of ocean color for interpretation of satellite visible imagery: A review. Vol. 4. Springer Science & Business Media, 2012.
3	Richardson, Laurie L., and Ellsworth F. LeDrew, eds. Remote sensing of aquatic coastal ecosystem processes. Dordrecht: Springer, 2006.
4	Arst, Helgi, and Kh ÎU Arst. Optical properties and remote sensing of multicomponental water bodies. Springer Science & Business Media, 2003
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B.	Additional References
1	Mueller, J., et al. "Ocean Optics Protocols For Satellite Ocean Color Sensor Validation, Revision 3, volumes 1 and 2." NASA tech. memo 210004 (2002).
2	Kondratyev, K. Ya, and Nikolai Filatov, eds. Limnology and remote sensing: a contemporary approach. Springer Science & Business Media, 1999.
3	Grew, Gary W., and Leonard S. Mayo. "Ocean color algorithm for remote sensing of chlorophyll." (1983).
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