



DEPARTMENT OF GEOMATICS ENGINEERING
UNDERGRADUATE PROGRAM IN GEOMATICS ENGINEERING
COURSE SYLLABUS

COURSE	Name	Hidrographic Data Management
	Code	RM184944
	Credits	2 (two)
	Semester	Elective

COURSE DESCRIPTION

Hydrographic data management is an elective subject in the field of hydrographic which aims to lay the foundations of management on hydrographic data so that it can be used as useful information. In this course, students will be taught about the data needed in hydrographic surveys and how to manage these hydrographic data. It is hoped that through this lecture, students will understand the standards used in conducting hydrographic surveys and data processing of hydrographic survey results. Data acquisition techniques both vertically and horizontally will also be explained in this course. This course will also provide an overview of the implementation of the survey using multibeam echosounder and survey design planning to the processing of hydrographic survey data with various methods and software used.

EXPECTED LEARNING OUTCOME

A	Able to apply mathematics, science, and engineering in the fields of geodesy, surveying, hydrography, remote sensing, photogrammetry, geographic information systems, and cadastral to gain a thorough understanding of the principles of
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, remote sensing, photogrammetry, and cadastral.
G	Able to plan, perform and evaluate the process of surveying and mapping activities using the latest technology in the fields of geodesy, surveying, hydrographic, remote sensing, photogrammetry, and cadastral.

COURSE LEARNING OUTCOME

1	Able to explain data needed in hydrographic surveys.
2	Able to explain about marine spatial data infrastructure: understanding, parameters, framework and its application.
3	Able to understand metadata in hydrographic surveys.
4	Having knowledge about international hydrographic survey standards.
5	Able to explain the techniques used in data acquisition both vertically and horizontally.
6	Able to explain the implementation of patch tests (multibeam echosounder calibration) and the sequence of its procedures
7	Able to understand survey implementation using multibeam echosounder and survey design planning.
8	Able to do multibeam echosounder data processing with various methods and software.

COURSE MATERIALS

1	A variety of primary and secondary data and their application in hydrographic surveys
2	Definition, parameters and framework of marine data spatial infrastructure (MSDI)
3	Definition of metadata, importance of metadata, standards used in metadata, general format of metadata used in hydrographic surveys.
4	Types of standards used in conducting hydrographic surveys and reviews of IHO (international Hydrographic Organization)
5	The techniques used in data collection in hydrographic surveys both horizontally and vertically: mechanical, acoustic and optic
6	Understanding the patch tests, various patch tests, the sequence of patch tests procedures and how to carry out the patch tests.
7	Beam spacing modes, ping modes, line running and survey speed
8	Multibeam echosounder data processing methods: line mode and area mode

PREREQUISITE

Seabed Imaging dan Mapping

REFERENCES

A.	Main References
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- 1 Blackington, J.G. Bathymetric resolution, precision and accuracy consideration for swath bathymetry mapping sonar systems, paper presented at Oceans '91, Honolulu, HI. Piscataway, NJ: IEEE, 1991.
- 2 Blondel, P. and Murton, B.J. Handbook of seafloor sonar imagery. Chichester, UK: John Wiley and Sons/Praxis, 1997.
- 3 Lurton, Xavier. An Introduction to Underwater Acoustic: Principles and Applications. Perancis. Praxis Publ. 2002.
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- B. Additional References
- 1 IHO (International Hydrographic Organization). Standardization of Classification of Surveys. 5th Ed. Monaco: International Hydrographic Bureau, 2008.
- 2 Chan, Y.T. Underwater acoustic data processing (NATO ASI Series). Dordrecht, The Netherlands: Kluwer
- 3 Wilson, W.D. Equation for the speed of sound in seawater, Journal of the acoustic society of America. 1960.
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