



DEPARTMENT OF GEOMATICS ENGINEERING
UNDERGRADUATE PROGRAM IN GEOMATICS ENGINEERING
COURSE SYLLABUS

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| COURSE | Name | Tides and Water Level |
| | Code | RM184942 |
| | Credits | 3 (three) |
| | Semester | Elected |

COURSE DESCRIPTION

This lecture will study the definitions, concepts and theories about tides and methods for measuring tides. Tides are very useful for the fields of Geomatics and Non Geomatics. One of the tidal products used in the field of Geomatics is vertical references such as highest astronomical tides (HAT, mean sea level (MSL), lowest astronomical tides (LAT) and other references that are often used for topographic and hydrographic mapping, while tidal applications seawater outside the non-Geomatics field is for navigation, recreation, energy generation and etc. The method used to solve the tidal component is admiralty and least square. This lecture will also study tidal predictions in the future with harmonic equations.

EXPECTED LEARNING OUTCOME

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| C | Able to design survey and mapping activities using the latest technology 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

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| 1 | Students are able to understand the concepts, theories, and applications of tides |
| 2 | Students are able to take tidal measurements with various methods |
| 3 | Students are able to calculate the tidal components using the admiralty and least square methods |
| 4 | Students are able to determine the characteristics of tides in a water location |
| 5 | Students are able to calculate the vertical references used in mapping |
| 6 | Students are able to predict future tides with harmonic functions |

COURSE MATERIALS

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| 1 | Tidal definitions, concepts, theories and applications |
| 2 | Tidal measurement method |
| 3 | Doodson, Admiralty and Least Square methods |
| 4 | Tidal characteristics |
| 5 | Vertical Reference |
| 6 | Tidal predictions |

PREREQUISITE

Hydrographic Survey

REFERENCES

| | |
|----|--|
| A. | Main References |
| 1 | NOAA., 2000. Tidal Datums And Their Applications. Maryland. US. Department of Commerce |
| 2 | Hicks, S.D., 2006. Understanding Tides. NOAA: Center for Operational Oceanographic Products and Services |
| 3 | |
| 4 | |
| 5 | |
| B. | Additional References |
| 1 | NOAA, 2005. National Ocean Service Education: Tides and Water Levels. https://oceanservice.noaa.gov/education/tutorial_tides/welcome.html |
| 2 | Ray, R.D., Egbert, G.D, Erofeeva, S.Y., 2005. Brief of overview Tides in the Indonesian Seas. Oceanography Vol. 18, No. 4, Dec. 2005 |