



BUKU PEDOMAN MATA KULIAH *COURSES MODULE HANDBOOK*

ANALISIS DATA SISTEM PENENTUAN POSISI GLOBAL
GLOBAL NAVIGATION SATELLITE SYSTEM DATA ANALYSIS

DEPARTEMEN TEKNIK GEOMATIKA
Fakultas Teknik Sipil, Perencanaan, dan Kebumihan

DEPARTMENT OF GEOMATICS ENGINEERING
Faculty of Civil Engineering, Planning, and Geo Engineering

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

<p>Persyaratan sesuai dengan peraturan ujian <i>Requirements according to the examination regulations</i></p>	<p>Minimum 80% kehadiran untuk mengikuti ujian tertulis <i>Minimum 80% attendance in this course in order to take the exams</i></p>
<p>Deskripsi Mata Kuliah <i>Description of Course</i></p>	<p>Pada mata kuliah ini, mahasiswa akan mempelajari analisa data GNSS. Serta, analisa data GNSS tersebut dihubungkan dengan kejadian bencana alam seperti gempa dan gunung meletus. Hubungan tersebut dilihat sebelum, saat, dan setelah kejadian bencana. Selain itu, data GNSS tersebut juga diturunkan untuk mendapatkan dan menganalisa data ionosfer dan troposfer dengan pemograman secara manual</p> <p><i>In this course, students will learn how to conduct analysis from GNSS data. Further, the analysis is linked with several natural disaster events including earthquake and volcanic eruption. The links are considered before, during, and after the event. Besides that, the GNSS data is derivated to obtain and analyze ionosphere and troposphere data using manual programming.</i></p>
<p>Capaian Pembelajaran / Course Learning Outcomes</p> <p><i>Module objectives/ Course learning outcomes</i></p>	<ol style="list-style-type: none"> 1. Mahasiswa memiliki pengetahuan tentang konsep GNSS 2. Mahasiswa memiliki pengetahuan tentang propagasi sinyal 3. Mampu memiliki pengetahuan dan pengalaman mengukur beserta menghitung pengukuran jarak baik dengan menggunakan pseudorange maupun menggunakan fase 4. Mampu menjelaskan kesalahan dan bias pada 3 segmen GNSS beserta bagaimanakah cara menghilangkan kesalahan tersebut. 5. Mampu melakukan pengukuran dengan menggunakan beberapa metode pada pengukuran GNSS. 6. Mampu melakukan pengolahan data dengan menggunakan perangkat lunak ilmiah dan komersial 7. Mampu mengungkapkan ide atau gagasan mereka secara lisan dan tertulis <p><i>1. Students have knowledge of the concept of GNSS 2. Students have knowledge of signal propagation</i></p>

	<ol style="list-style-type: none"> 3. <i>Able to have knowledge and experience in measuring and calculating distance measurements both using pseudorange and using phase</i> 4. <i>Able to explain errors and biases in the 3 GNSS segments and how to eliminate these errors.</i> 5. <i>Able to perform measurements using several methods of measuring GNSS.</i> 6. <i>Able to perform data processing using scientific and commercial software</i> 7. <i>Able to express their ideas or concepts verbally and in writing.</i> 																																																																																
<p>CPMK dan hubungan dengan CPL Prodi <i>Learning outcomes and their corresponding to PLOs</i></p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>PLO.1</th> <th>PLO.2</th> <th>PLO.3</th> <th>PLO.4</th> <th>PLO.5</th> <th>PLO.6</th> <th>PLO.7</th> <th>PLO.8</th> <th>PLO.9</th> </tr> </thead> <tbody> <tr> <td>CLO.1</td> <td></td> <td></td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLO.2</td> <td></td> <td></td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLO.3</td> <td></td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLO.4</td> <td></td> <td></td> <td></td> <td>✓</td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLO.5</td> <td></td> <td></td> <td></td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLO.6</td> <td></td> <td></td> <td></td> <td>✓</td> <td></td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CLO.7</td> <td></td> <td></td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PLO.1	PLO.2	PLO.3	PLO.4	PLO.5	PLO.6	PLO.7	PLO.8	PLO.9	CLO.1				✓						CLO.2				✓						CLO.3				✓	✓					CLO.4				✓		✓				CLO.5					✓					CLO.6				✓		✓				CLO.7					✓	✓			
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<p>Pokok Bahasan</p> <p><i>Content</i></p>	<ol style="list-style-type: none"> 1. Definisi dan konsep GNSS 2. Definisi dan konsep teknologi kebumihan 3. Perkembangan teknologi sinyal 4. Sinyal elektromagnet dalam sinyal GNSS 5. Pengukuran jarak dengan menggunakan fase dan kode dalam pengukuran GNSS 6. Differential data 7. Sistem orbit, kesalahan, bias dan metode pengukuran Sistem Navigasi Satelit Global 8. Pengolahannya data menggunakan perangkat lunak komersial maupun ilmiah. 																																																																																
<p>Pembelajaran dan Persyaratan Ujian <i>Study and examination requirements and forms of examination</i></p>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Rencana Evaluasi</th> <th style="text-align: center;">Bobot Weight</th> </tr> </thead> <tbody> <tr> <td>Tugas 1 <i>Assesment 1</i></td> <td style="text-align: center;">23%</td> </tr> <tr> <td>Tugas 2 <i>Assesment 2</i></td> <td style="text-align: center;">23%</td> </tr> <tr> <td>Evaluasi Tengah Semester <i>Middle Term Examination</i></td> <td style="text-align: center;">26%</td> </tr> </tbody> </table>	Rencana Evaluasi	Bobot Weight	Tugas 1 <i>Assesment 1</i>	23%	Tugas 2 <i>Assesment 2</i>	23%	Evaluasi Tengah Semester <i>Middle Term Examination</i>	26%																																																																								
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	Evaluasi Akhir Semester <i>Final Term Examination</i>	28%
Media yang digunakan <i>Media employed</i>	Classical teaching tools with white board and powerpoint presentation	
Daftar Pustaka <i>Reading list</i>	<ol style="list-style-type: none"> 1. Wolf, 2010. Elementary Surveying 2. Abidin, H.Z., 2005. Geodesi Satelit 3. Abdiin, H.Z., 2005. Survei Satelit 	