



BUKU PEDOMAN MATA KULIAH *COURSES MODULE HANDBOOK*

SISTEM KOORDINAT DAN PROYEKSI PETA
COORDINATE SYSTEM AND MAP PROJECTIONS

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

2. Sistem Koordinat dan Proyeksi Peta / *Coordinate Systems and Map Projections*

Nama modul <i>Module name</i>	Sistem Koordinat dan Proyeksi Peta <i>Coordinate Systems and Map Projections</i>
Tingkatan <i>Module level</i>	Pasca Sarjana (S2) <i>Master Degree</i>
Kode <i>Code</i>	CM235102
Mata kuliah <i>Course</i>	Sistem Koordinat dan Proyeksi Peta <i>Coordinate Systems and Map Projections</i>
Semester <i>Semester</i>	I (satu) <i>I (one)</i>
Penanggung jawab mata kuliah <i>Person responsible for the module</i>	Prof. Mokhamad Nur Cahyadi, S.T., M.Sc., Ph.D.
Dosen <i>Lecturer</i>	Prof. Dr. Ir. Bangun Muljo Sukojo, DEA.DESS Prof. Mokhamad Nur Cahyadi, S.T., M.Sc., Ph.D.
Bahasa <i>Language</i>	Bahasa Indonesia dan Bahasa Inggris <i>Indonesian and English</i>
Relasi pada kurikulum <i>Relation to curriculum</i>	Mata kuliah wajib untuk Program Master Teknik Geomatika <i>Compulsory Courses for Master of Geomatics Engineering</i>
Tipe pertemuan, jam tatap muka <i>Type of teaching, contact hours</i>	Kuliah, 1.67 jam x 16 minggu per semester <i>Lecture, 1.67 hours x 16 weeks per semester</i>
Beban belajar <i>Workload</i>	Kuliah: 1.67 jam x 14 minggu = 23.38 jam Penugasan terstruktur: 2 jam x 14 minggu = 28 jam Kegiatan mandiri: 2 jam x 14 minggu = 28 jam Ujian: 1.67 jam x 2 kali = 3.34 jam Total = 82.72 jam <i>Lecture: 1.67 hours x 14 weeks = 23.38 hours</i> <i>Structured exercises and assignments: 4 hours x 14 weeks = 28 hours</i> <i>Independent activities: 4 hours x 14 weeks = 28 hours</i> <i>Exam: 1.67 hours x 2 time = 3.34 hours</i> <i>Total = 82.72 hours</i>
Kredit <i>Credits</i>	2 SKS <i>2 credits</i>
Persyaratan sesuai dengan peraturan ujian <i>Requirements according to the examination regulations</i>	Minimum 80% kehadiran untuk mengikuti ujian tertulis <i>Minimum 80% attendance in this course in order to take the exams</i>

	<ol style="list-style-type: none"> 2. <i>Able to apply coordinate transformations in mapping and basic concepts to solve map projection problems in geodesy.</i> 3. <i>Able to report experimental results and analysis results in writing and orally, work independently and collaborate in a team.</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 style="text-align: center;">✓</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 style="text-align: center;">✓</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 style="text-align: center;">✓</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						✓			
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<p>Mata kuliah wajib prasyarat <i>Mandatory prerequisites</i></p>	-																																								
<p>Pokok Bahasan</p> <p><i>Content</i></p>	<ol style="list-style-type: none"> 1. Konsep dasar geodesi terkait pemodelan matematis bumi berupa ellipsoida referensi dan bentuk geometris ellipsoida; 2. Sistem koordinat, dan pemecahan persoalan Geodesi menggunakan metode langsung/ direct problem dan metode tidak langsung /inverse problem dengan cara Legendre dan Gausz; 3. Macam-macam sistem proyeksi, pengertian faktor skala, transformasi sudut pada proyeksi konform, dan konvergensi meridian; 4. Perhitungan pada sistem proyeksi dengan cara Polieder, Mercator, Transverse Mercator dan Universal Transverse Mercator; 5. Transformasi Koordinat Geodesi ke Proyeksi Mercator dan sebaliknya; b. Transformasi Koordinat Geodesi ke Proyeksi UTM dan sebaliknya; <ol style="list-style-type: none"> 1. <i>Basic geodetic concepts related to earth mathematical modeling of reference ellipsoids and geometric shapes of ellipsoids;</i> 2. <i>Coordinate system, and Geodetic problem solving using direct method and inverse problem by Legendre and Gausz;</i> 3. <i>Various projection systems, the definition of scale factor, angular transformation of conformational projection, and meridian convergence;</i> 4. <i>Calculation of the projection system by means of Polieder, Mercator, Transverse Mercator and Universal Transverse Mercator;</i> 																																								

	<p>5. <i>Transforming Geodesy Coordinates to Mercator Projection and vice versa;</i></p> <p>6. <i>Geodetic Coordinate Transformation to UTM Projection and vice versa;</i></p>										
<p>Pembelajaran dan Persyaratan Ujian <i>Study and examination requirements and forms of examination</i></p>	<table border="1"> <thead> <tr> <th>Rencana Evaluasi</th> <th>Bobot Weight</th> </tr> </thead> <tbody> <tr> <td>Tugas 1 <i>Excercise 1</i></td> <td>25%</td> </tr> <tr> <td>Tugas 2 <i>Excercise 2</i></td> <td>25%</td> </tr> <tr> <td>Evaluasi Tengah Semester <i>Mid Semester Exam</i></td> <td>23%</td> </tr> <tr> <td>Evaluasi Akhir Semester <i>Final Semester Exam</i></td> <td>27%</td> </tr> </tbody> </table>	Rencana Evaluasi	Bobot Weight	Tugas 1 <i>Excercise 1</i>	25%	Tugas 2 <i>Excercise 2</i>	25%	Evaluasi Tengah Semester <i>Mid Semester Exam</i>	23%	Evaluasi Akhir Semester <i>Final Semester Exam</i>	27%
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<p>Media yang digunakan <i>Media employed</i></p>	<p>Classical teaching tools with white board and power point presentation</p>										
<p>Daftar Pustaka <i>Reading list</i></p>	<ol style="list-style-type: none"> 1. Richardus, Adler. <i>Map Projections for Geodetic, Cartographers, Geographers</i>.1972. NHPC. Amsterdam. 2. Bomford. <i>Geodesy</i>. 1975. Oxford University Press. 3. MuljoSukojo, Bangun. <i>Hitung Proyeksi Geodesi</i>, 2004. Diktat ITS. Surabaya. 4. Prihandito, Aryono. <i>Proyeksi Peta</i>. 1988. Penerbit Kanisius. Yogyakarta. 5. Muryamto, Rochmad. <i>Hitungan Proyeksi Peta</i>. 1994. Diktat UGM. Yogyakarta. 										