

FI584 Positional Astronomy

Module name:	Positional Astronomy	
Module level, if applicable:	Undergraduate	
Code:	FI584	
Sub-heading, if applicable:	-	
Classes, if applicable:	-	
Semester:	7 th	
Module coordinator:	Judhistira Aria Utama	
Lecturer(s):	Judhistira Aria Utama	
Language:	Bahasa Indonesia	
Classification within the curriculum:	Elective course	
Type of Teaching	Contact hours per week during the semester	Class Size
<ol style="list-style-type: none"> 1. Lecture (conceptual, contextual and problem-solving approaches through expository, discussions and exercises). 2. Structured activities (assignments based on conceptual, contextual, and problem-solving approaches, Presentation) 3. Self-study (Reading Literature) 	1 hours 40 minutes	20
Workload:	The total workload is 91 hours/5440 minutes (3.2 ECTS) per semester, consisting of 25 hour 20 minutes/1400 minutes lectures (0.82 ECTS), 28 hours/1680 minutes structured activities (0.98 ECTS) and 28 hours/1680 minutes self-study (0.98 ECTS) per week for 14 weeks, 11hour 54 minutes/714 minutes for two exams (0.42 ECTS).	
Credit points:	3.2 ECTS	
Pre-requisites course(s):	FI121 Basic Physics I, FI340 Mechanics	
Course Learning Outcomes (CLO):	<p>After taking this course the students have abilities to:</p> <p>CLO1. Explain the Earth's shape through reasoning and authentic evidence and determine geographic coordinates using measuring instruments or astronomical observations.</p> <p>CLO2. Explain the definition of a celestial sphere and its components.</p>	

	<p>CLO3. Apply spherical triangle arithmetic in determining the shortest direction and route of travel.</p> <p>CLO4. Describe/determine the position of celestial bodies in the horizon and equatorial coordinate systems and transform the coordinate system.</p> <p>CLO5. Describe/determine the position of celestial bodies in the ecliptic and galactic coordinate systems and coordinate system transformation.</p> <p>CLO6. Apply the concept of solar time (in standard longitude and local longitude) and Julian Date calculations precisely according to the context.</p> <p>CLO7. Determine the sidereal time and understand its relationship with the solar time and apply it in determining the rising-culmination time of celestial bodies.</p> <p>CLO8. Calculate refraction correction calculations in astronomical observations.</p> <p>CLO9. Calculate geocentric parallax correction calculations in astronomical observations.</p> <p>CLO10. Calculate light aberration correction calculations in astronomical observations.</p> <p>CLO11. Calculate precession correction calculations and nutation in astronomical observations.</p> <p>CLO12. Design and construct sundials from simple materials as a medium for learning the daily pseudo motion of the Sun and the concept of solar time in independent work and teamwork.</p> <p>CLO13. Disseminate innovation work in written reports/models in independent work or teamwork according to scientific principles with full responsibility.</p>										
Content:	<ol style="list-style-type: none"> 1. Earth Shape and Geographical Coordinate System: Determination of geographic latitude & longitude from astronomical observations 2. Celestial Globe: Definition, components of the celestial sphere, astronomical triangle, properties of the astronomical triangle, sines-cosines-tangent rule, Napier's rule 3. Sky Coordinate Systems (horizon, equator) and Transformations between Coordinate Systems I 4. Celestial Coordinate Systems (ecliptic, galaxy) and Intermediate Transformation Coordinate Systems II 5. Solar Time: True solar time & mean solar time (standard time & local time) 6. Sidereal Time: Standard sidereal time & local sidereal time 7. Daily Phenomenon: Rise-Transit-Culmination-Set 8. Atmospheric Refraction 9. Geocentric Parallax 10. Aberration of Light 11. Precession and Nutation 12. Introduction to Sundial 13. Astronomy Project 14. Individual/Group Presentations 										
Study/exam achievements:	<p>The final mark will be weight as follow:</p> <table border="1" data-bbox="667 1877 1495 1944"> <thead> <tr> <th>No</th> <th>CLO</th> <th>Assessment Object</th> <th>Assessment Techniques</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No	CLO	Assessment Object	Assessment Techniques	Weight					
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