# PROGRAM PLAN AND SEMESTER LEARNING ACTIVITIES (RPKPS) SCHOOL YEAR 2021/2022

Geophysical

Mapping

MFG 2102/ 2 credits

Mentoring Team:

(Dr. Ir. Bilal Ma'ruf, ST., MT.)

**GADJAH MADA UNIVERSITY**
**FACULTY OF MATHEMATICS AND NATURAL SCIENCES**
**2021**

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| | **Gadjah Mada University**<br>Faculty of Mathematics and Natural Sciences<br>Department of Physics / S1 Geophysics Study Program Academic Year 2021/2022 | **Document Code:**<br>..... |

**SEMESTER LEARNING PROGRAM AND ACTIVITY PLAN (RPKPS)**

| Course Code | Course Name | Weight (credit) | | Semester | Course Status | Prerequisite Courses |
|---|---|---|---|---|---|---|
| MFG 2102 | *Mapping* | *T : 1* | *P: 1* | *Odd* | *Mandatory* | *Calculus* |

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| **Course Brief Description** | After attending lectures and practicums, students are expected to be able to carry out data collection and processing work and make topographic maps, analyze and interpret topographic maps for geophysical purposes, know the various maps and make them. | |
| **Graduate Learning Outcomes (CPL) Charged n in MK** | ***CPL-2*** | **Mastery of general knowledge:** Graduates are able to apply basic science (mathematics, physics, chemistry, biology, geology), and geophysics in general and their relationship with other sciences such as geology, geodesy, geochemistry, geography, computing and information technology. |
| | ***CPL-3*** | **Operational and comprehensive skills**: Graduates are able to apply all geophysical methods (seismic, gravitational, magnetic, electrical, electromagnetic, and thermic methods) for energy exploration (e.g. oil and gas, coal, geothermal), mining materials (eg: iron, copper, gold, silver, tin) as well as groundwater and disaster mitigation. |
| **Course Learning Outcomes (CPMK)** | **After completing the learning of this course, students are expected to be able to:** | |
| | ***CPMK-1*** | Understand and be able to apply various mathematical formulas to model measurement results on the surface of the earth flat plane (distance, angle and direction) to be presented in the form of coordinates (x, y) or vice versa. |
| | ***CPMK-2*** | Understand the basics of terrestrial mapping to model the real world (real word) and present it in the form of a map (flat plane). |
| | ***CPMK-3*** | Able to do simple distributed mapping work, starting from planning, measuring, presenting results and evaluating the quality of the results. |
| | ***CPMK-4*** | Understand the basics of using various distributed survey measuring instruments, namely: angle measuring instruments (theodolite), azimuth measuring instruments (compass), distance measuring instruments (direct and optical), and height difference measuring instruments (sipatdatar), and can evaluate the feasibility of these measuring instruments if used for data collection. |

**CPL Mapping with CPMK**

| | CPMK1 | CPMK2 | CPMK3 | CPMK4 |
|---|---|---|---|---|
| CPL-2 | √ | √ | √ | |
| CPL-3 | | √ | √ | √ |

| **CPMK link with Material** | | **Learning Materials** | **Forms of Learning** | **Time Allocat** |
|---|---|---|---|---|
| | ***CPMK 1*** | RPKPS Mapping, Space | TCL - SCL mixed | 2 Hours |

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| **and Form of Learning, as well as Time Allocation** | | scope of distributed mapping activities; Maps as models of the real | | |
| | ***CPMK 1*** | Map type, map scale, and map usability. | TCL - SCL mixed | 2 Hours |
| | ***CPMK 2*** | Quantities and units of measurement of angles, distances, and azimuths, as well as the coordinate | TCL - SCL mixed | 4 Hours |
| | ***CPMK 2*** | Equipment survey and mapping Terestris and its terms of use. | TCL - SCL mixed | 2 Hours |
| | ***CPMK 3*** | Errors in surveying and mapping terestris and methods of their | TCL - SCL mixed | 2 Hours |
| | ***CPMK 3*** | Measurement of direct distance and optical | TCL - SCL mixed | 2 Hours |
| | ***CPMK 3*** | Horizontal and vertical angle measurement method, Height difference concept | TCL - SCL mixed | 2 Hours |
| | ***CPMK 4*** | Mapping framework (KKH and KKV): polygon measurement and count, height difference measurement and count. | TCL - SCL mixed | 6 Hours |
| | ***CPMK 4*** | Tachimetric detail measurement methods | TCL - SCL mixed | 2 Hours |
| | ***CPMK 4*** | Depiction map (map outline, details, | TCL - SCL mixed | 4 Hours |
| | **UTS/Project Task Results/Case Analysis** | | | |
| | ***CPMK 1*** | Miscellaneous Top | TCL - SCL mixed | 2 Hours |
| | ***CPMK 2*** | Polygon Calculation | TCL - SCL mixed | 2 Hours |
| | ***CPMK 3*** | Height Difference | TCL - SCL mixed | 2 Hours |
| | ***CPMK 4*** | Account Plan | TCL - SCL mixed | 2 Hours |
| | ***CPMK 4*** | Case examples for geophysics | TCL - SCL mixed | 2 Hours |
| | **UAS/ Project Task Results/ Case Analysis** | | | |
| **Learning Methods** | TCL - SCL mixed | | | |
| **Student Learning Experience** | Study the material, present, discuss, and answer questions | | | |

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| **Access to Learning Media an/ LMS and Offline &; Online Percentage** | Presentations, reference books, written tests | | | | | | |
| **Assessment Methods and Alignment with CPMK** | **Assessment Techniques** | **Assessment Percentage** | **Criteria/ Indicators** | **CPMK-1** | **CPMK-2** | **CPMK-3** | **CPMK-4** |
| | **Participatory Activities** *) | | | | | | |
| | ***Project Results*/Hasil Case Study/ PBL Results*)** | | | | | | |
| | | | | | | | |
| | **Assignment** | **20** | | | | | |
| | **Quiz** | | | | | | |
| | **UTS** | **40** | | | | | |
| | **UAS** | **40** | | | | | |
| | **Total** | **100** | | | | | |
| | *) can also be obtained from UTS or UAS which is the result of participatory activities or *project* / case study results. In accordance with IKU 7, **the percentage of** participatory activities and project results/case studies/PBL results is at least 50%. | | | | | | |
| **Reference List** | 1. Basuki, S., 2011, Soil Measuring Science, Gadjah Mada Press, Yogyakarta.<br>2. Ir. Suyono Sosrodarsono and Mayayoshi Takasaki (ed.), Topographic Measurement and Mapping Techniques, PT Pradnya Paramita, Jakarta, 1983.<br>3. Sutomo Wongsotjitro, Map Projection Science, Canisius Foundation, Yogyakarta1982.<br>4. Ir Sumaryo Joyokusumo, Topographic Survey in the Petroleum Industry, Jur. Geodesy Engineering, Fak. Engineering Universitas Gadjah Mada, Yogyakarta, 1993. | | | | | | |
| **Name of Lecturer (*Team Teaching*)** | Dr. Ir. Bilal Ma'ruf, ST., MT. | | | | | | |

| **Authorization** | **Drafting Date** | **Course Coordinator** | **Coordinator of Expertise (if applicable)** | **Head of Study Program** |
|---|---|---|---|---|
| | *2020* | Dr. Ir. Bilal Ma'ruf, ST., MT. | | Dr. Sudarmaji, MSi |