WORKLOAD ASSESSMENT LAND SURVEYING



GEOGRAPHY EDUCATION DEPARTMENT FACULTY OF SOCIAL SCIENCES AND LAW UNIVERSITAS NEGERI SURABAYA

WORKLOAD ASSESSMENT LAND SURVEYING Academic year 2017/2018

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GEOGRAPHY EDUCATION DEPARTMENT FACULTY OF SOCIAL SCIENCES AND LAW UNVERSITY COUNTRY SURABAYA

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HANDBOOK MODUL

| LAND | LAND SURVEYING | | | | | | | | | |
|---------|--|---|---|--|---------------------|-------------------|--|--|--|--|
| Modu | le / Title | Student Workload | Credits | Semester | Frequency | Duration | | | | |
| Course | The | vv orkioad | | | | | | | | |
| 8720202 | 2076 | 2 CU x 16 x 170' | 2 CU 3.18 ECTS | 5 TH | ONCE YEAR | 1 SEMESTER | | | | |
| 1 | Types | of courses | Contact hours | Independent Study | Structured Study | Class size | | | | |
| | LECTURES PRACTICUM | | (2CU x 1,59 ECTS) x {(100:170') x 28,51 Workhours= 53,27 | (2CU x 1,59 ECTS) x {(70:170') x 28,51 Workhours= 37,29 | - | MAX 40 STUDENT | | | | |
| 2 | Prerequisites for participation (if applicable) | | | | | | | | | |
| 3 | Progr | am Learning ou | tcomes | | | | | | | |
| | PLO-3 | 3 | | | | | | | | |
| | Able to process, analyze, present geosphere data and information using geospatial technology for geography learning and research | | | | | | | | | |
| | PLO-5 | 5 | | | | | | | | |
| | Able t and m | o demonstrate ind easurable results | dependent and c | collaborative perfor | mance that pro- | duces quality | | | | |
| | PLO-9 |) | | | | | | | | |
| | Able t | o apply regional | theory for susta | inable regional pla | nning and devel | lopment | | | | |
| | PLO-1 | 1 | | | | | | | | |
| | demor indepe | nstrate a responsil endently | ble attitude tow | ards work in their f | ïeld of expertis | e | | | | |
| | Cours | e Learning Out | come (CLO) | | | | | | | |
| | CLO- | 3 | | | | | | | | |
| | Able t theodo | o process, analyz plites for geograp | e, present data a hy learning and | and information on research. | areas mapped | using | | | | |
| | CLO-: | 5 | | | | | | | | |
| | Able t | o show independ | ent and collabor | rative performance | that produces of | uality maps | | | | |
| | CLO-9 |) | | | | | | | | |
| | Able t | o apply mapping | theory in sustai | nable regional plar | ning and devel | opment | | | | |

| | CLO-11 |
|---|--|
| | Demonstrate a responsible attitude for planning, measuring, calculating and plotting measurement results |
| 4 | Learning materials |
| | 1. Introduction: introduction to geometry, types of surveys, and maps |
| | 2. Measuring and measuring instruments: theodolite, distance measuring device, unit system |
| | 3. Knowledge of distances and angles, point positions, understanding of north and azimuth directions, calculation of distance/slope/azimuth/angle with a coordinate system |
| | 4. Polygons: intent, closed polygons, open polygons, requirements, measurement methods, calculations |
| | 5. Tachimetric method: principles, formulas, approaches, and measurement of height difference with tachimetry |
| | 6. Topographic maps: mapping datums, map scales, contour lines, situation mapping |
| | 7. Area Calculation |
| 5 | Teaching methods |
| | Project Base Learning |
| 6 | Assessment methods |
| | paper test |
| 7 | This module/course is used in the following study programme/s as well |
| | |
| 8 | Responsibility for module/course |
| | Compulsory/Elective*/ |
| 9 | 1. Abidin Hasanuddin Z., 2008. Penentuan posisi dengan GPS dan aplikasinya. |
| | Jakarta : Pradnya Paramita |
| | 2. Basuki, Slamet. 2006. <i>Ilmu Ukur</i> Tanah. Yogyakarta: Universitas Gadjah Mada |
| | Press |
| | 5. Heniz, Flick, 1989, <i>limu aan alal ukur lanan</i> , 10gyakarta : Kanisius. 20. 2000 4. Suyono Sastrodarsono, Masayosi Takasahi, 1997, Pengukuran topografi dan |
| | teknik pemetaan. Jakarta: Pradnya Paramita. |
| | 5. Abidin Hasanuddin Z., 2002. Survey dengan GPS. Jakarta : Pradnya Paramita |
| | 6. Petunjuk praktikum Ukur Tanah Pendidikan Geografi 2018 |

A. Lesson Plan and Course Assessment

| UNESA | Surabaya State University Faculty of Social Sciences And Law Geography Education Department | | | | | | | | Document Codee |
|------------------|---|-------------------------------|---------------------------------------|-------------------|-------------------------------------|---|-------------|-----------------------|---------------------|
| | | | Ι | esson | Plan | | | | |
| COURSE | | | Code | Cluster | ſ | Credits | | Semester | Compilation Date |
| SURVEYING | | | 8720202076 | Enginee | ering Geography | T = 0.68 | P = 1.41 | 2 | August 5, 2020 |
| AUTHORIZATION | | | Lesson Plan Develop | er | Coordinator | | | Head of Study | Program |
| | | | Dr. Muzayanah, MT. | | Dr. Muzayanah, MT. | | | Dra. Ita Mardia | ni Zain, M.Kes |
| Learning Program | Learning (| Outcomes Pr | ogram (PLO) | | | | | | |
| Outcome (PLO) | PLO-3 | Able to pro | cess, analyze, present geo | osphere d | ata and information u | sing geosp | atial techi | nology for geograp | ohy learning and |
| | | research | | | | | | | |
| | PLO-5 | Able to dem | onstrate independent and | collabora | ative performance that | produces q | uality and | measurable result | S |
| | PLO-9 | Able to appl | y regional theory for susta | <u>iinable re</u> | gional planning and de | velopment | | | |
| | PLO-11 | demonstrat | e a responsible attitude to | wards wo | ork in their field of expe | rtise indep | endently | | |
| | Course Lea | arning Outco | omes (CLO) | | | | | | |
| | CLO-3 | Able to proc | ess, analyze, present data | and infor | mation on mapped area | as using the | eodolites f | or geography learr | ing and research |
| | CLO-5 | Able to dem | onstrate independent and | collabora | ative performance that | produces o | uality ma | ps | |
| | CLO-9 | Able to appl | y mapping theory in susta | inable reg | gional planning and dev | velopment | | | |
| | CLO-11 | Demonstrat | e a responsible attitude fo | r plannin | g, measuring, calculatin | ig and plot | ing measu | rement results | |
| | Lesson Lea | arning Outco | omes (LLO) | | | | | | |
| | LLO-1 | Able to impl 3. CLO- 5. CI | ement the concept of Soil S 20 -9) | Survey in | preparing mapping pla | ns (coordin | ate systen | ıs, types of surveys | and maps (CLO- |
| | LLO-2 | Able to anal | yze the horizontal positior | n of meas | urement data (C LO-3, | CLO -5, CLO |)-11) | | |
| | LLO-3 | Able to oper | rate theodolite, read meas | uring tub | s, calculate distances a | nd analyze | the coord | inates of the aimin | ng point (CLO-3, |
| | 110-4 | Able to crea | ta manning area nolygons | (CIO_{-3}) | (10,5) | | | | |
| | LLO-5 | Able to anal | vze the difference in the h | eight of th | , cho-5j ne manning area (CLO . | -3 (10-5 | C LO -1 1 |) | |
| | LLO-6 | Able to crea | <i>te</i> a man of measurement | results us | ing geosnatial technolo | <u>σν (CLO-3</u> | CLO-5 (|) (LO -9 (LO -1 1) | |
| | LLO-7 | Able to anal | yze the mapping area (CL | 0-3 , CLO | -5 , CLO -9, CLO -1 1) | <u>, , , , , , , , , , , , , , , , , , , </u> | ,,, . | | |

| | Correlation between | PLO/CLO to I | LLO | | | | | | |
|--------------------------------|-------------------------|-----------------|---------------------------|-------------------------------|---|---------------------------------|------------------|------------------------------|---------------------------|
| | | LLO-1 | LLO-2 | LLO-3 | LLO-4 | LLO-5 | LLO-6 | LLO-7 | |
| | | | | | | | | | |
| | PLO - 3/CLO-3 | | | | | | | | |
| | PLO - 5/CLO - 5 | | V | | | | | | |
| | PLO -9 /CLO -9 | | | | | | | \checkmark | |
| | PLO - 11/CLO - 11 | | | | | \checkmark | | \checkmark | |
| | | | | | | | | | |
| | | | | | | | | | |
| Course | The Soil Surveying co | urse is a cou | rse that imp | plements ma | apping theor | y (basic und | erstanding of | Soil Surveyir | ng, coordinate systems, |
| Description | positioning, measuring | the polygon | method, mea | asuring the t | ach -symme | tric method , | drawing topo | graphic maps | and determining area). |
| Looming | Assessment is done by | performance, | written test | and portfoli | 0. th the help | of goognatic | l technology | This study | matorial contains basis |
| Learning Materials / Topics | understanding of soil | surveying | coordinate | systems no | ui uie lieip sitioning m | of geospatia | lvgon method | . This study Is measuring | tachometers drawing |
| Materials/ Topics | topographic maps and | determining a | area. | <i>ystems</i> , pt | , 11, 11, 11, 11, 11, 11, 11, 11, 11, 1 | leasaring por | iygon methoe | is, measuring | achometers, arawing |
| | The material of this st | udy is expect | ed to be abl | e to lead stu | dents to ma | ster and appl | ly the science | of Soil Surve | ying as a practitioner or |
| | teacher. For practition | ers, this study | can be used | l as a basis fo | or work in S | ustainable re | egional planr | ning and deve | elopment . For teachers, |
| | this study can introduc | e students to | the procedu | re for makin | g maps with | geospatial teo | chnology usin | g data from m | easurements in the field. |
| Learning | Learning materials | | | | | | | | |
| Materials/ Topics | 1. Introduction: in | ntroduction to | geometry, t | ypes of surv | eys, and map | DS | | | |
| | 2. Measuring and | measuring in | struments: t | h eodolite, c | listance mea | suring instru | ment, unit sys | tem | a sute colculation of |
| | 3. Knowledge of | anstances and | a angles, p | onii positio rdinate syste | ns, understa | anding of the | e direction o | i north and a | a z cute, calculation of |
| | 4. Polygons: inter | t. closed poly | gons, open n | olvgons, red | uirements, r | neasurement | methods, calo | culations | |
| | 5. ta c hymetry m | ethod: princip | oles, formula | s, approache | es, and meas | urement of he | eight difference | ces with ta c hy | vmetry |
| | 6. Topographic m | aps: mapping | datums, ma | p scales, con | tour lines, si | tuation mapp | ing | 5 | 5 |
| | 7. Area Calculatio | n | | | | | | | |
| | | | | | | | | | |
| References | Primary | | | | | | | | |
| | 1. Abidin Hasanu | ldin Z., 2008. | Positioning | with GPS and | d its applicat | ions. Jakarta: | Pradnya Para | mita | |
| | 2. Basuki, Slamet. | 2006.5011 Me | asurement. d maasuring | Yogyakarta: | Gadjah Mada | a University P | 7ress | | |
| | 4. Suvono Sastroc | larsono. Masa | vosi Takasal | hi. 1997. Tor | ogranhic me | a. Ramsius . 2 Pasurements a | and manning t | techniques Ial | arta: Pradnya Paramita |
| | | | , cor randour | , | of aprilo inc | | mapping (| ie ennique en jui | |
| | | | | | | | | | |

| | | Supplem | entarv | | | | | | |
|-------|---|--|---|---------------------------------|--|---|--|---------|--|
| | | 5. Abid | in Hasanuddin Z., 2002. Sur | vey with GPS. Jakarta | a: Pradnya Paramita | | | | |
| | 6. Practical Instructions for Surveying Land for Geography Education 2018 | | | | | | | | |
| Lectu | rer(s) | - Dr. Muz | ayana, MT. | | | | | | |
| | | - DrEk | o Budiyanto, M.Sc. | | | | | | |
| Prere | quisite | - | | | | | | | |
| | | | Assessme | ent | Learning Activities a | nd Time Allocation | | | |
| Week | Learning Ob | ojectives | Indicators | Criteria/Form/ Type | Offline | On line | Learning Sources | Scoring | |
| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | |
| 1 | LLO-1: Able to impleme concept of Surve preparing mapp (coordinate syst of surveys and m | nt the eying in ing plans ems, types naps) | 1.1. Explain the concept of measuring land | Criteria: Description rubric | Cooperative Learning Studying Menits face to face : 1 (2x50')] [menits face to face + FGD : (1+1) x (2X60')] | Vlearning http://vlearning.un esa.ac.id | Theory: Definition of survey Geometric stages of mapping Coordinates used in Indonesia References: Book 2 Book 3 | 5 | |
| 2-3_ | LLO-2 : Able to analyze t horizontal positi measurement da | he on of ita | 2.1. Understanding azimuth 2.2. Able to analyze flat distance 2.3. Able to analyze the coordinates of the point of view | Criteria: Performance rubric | Project Base Learning Studying Small Group Discussion Menits face to face: 2 (2x50')] Task 1 The results of the analysis of the coordinates of the point of view Minutes Independent Tasks + discussion (2+2) x (2X60')] | Vlearning http://vlearning.un esa.ac.id | Material : - Azimuth - Flat distance - Position coordinates of the point of view References: - Book 2 - Book 3 | 15 | |

| - | | | 1 | | 1 | | |
|-------|------------------------------------|--------------------------------|--------------------|------------------------|---------------------|----------------------|----|
| 4 - 5 | LLO-3: | 3.1. Setting theodolite | Criteria: | Project Base | Vlearning | Material : | 15 |
| | Able to operate theodolite, | 3.2. Set initial coordinates | Performance rubric | Learning | http://vlearning.un | - theodolite | |
| | read measuring tubs, | 3.3. Reading the measuring | | | <u>esa.ac.id</u> | - Starting point | |
| | calculate distances and | tub | | Direct Instruction | | (starting peg/BM) | |
| | analyze the coordinates of | 3.4. Analyze distance from | | Small Group | | - Flat distance | |
| | the aiming point | measurement data | | Discussion | | - 2D Cartesian | |
| | | 3.4. Analyzing the | | Menits face to face: 2 | | Coordinates | |
| | | coordinates of the | | (2x50') | | | |
| | | aiming point from the | | | | References: | |
| | | measurement data | | Task 2 | | - Book 1 | |
| | | | | - Practicum report | | - Book 5 | |
| | | | | flat distance and | | - Book 6 | |
| | | | | point position | | | |
| | | | | | | | |
| | | | | Minutes | | | |
| | | | | Independent Tasks + | | | |
| | | | | discussion: | | | |
| | | | | | | | |
| | | | | (2+2) x (2X60') | | | |
| 6-7 | LLO-4: | 4.1. Explaining polygons | Criteria: | Project Base | Vlearning | Material : | 10 |
| | Able to <i>create</i> mapping area | 4.2. Preparing surveying | Description rubric | Learning | http://vlearning.un | - Polygon | |
| | polygons | preparations (plans, | | | esa.ac.id | - Polygon count | |
| | | aiming points, | | Direct Instruction | | - measurement result | |
| | | surveying tables) | | Small Group | | correction | |
| | | | | Discussion | | | |
| | | | | Menits face to face: 2 | | References: | |
| | | | | $(2x50^{\circ})$ | | - Book 2 | |
| | | | | | | - Book 3 | |
| | | | | Task 3 | | - Book 4 | |
| | | | | - Correcting | | | |
| | | | | measurement | | | |
| | | | | results | | | |
| | | | | Minutes | | | |
| | | | | Independent Tasks + | | | |
| | | | | alscussion: | | | |
| | | | | (2+2) x (2X60') | | | |
| 8 | Sub Summative Exam (USS) |): | · | , . , , , | • • | • | |
| 9-12 | LLO-5: | 5.1. Explain the difference in | Criteria: | Project Base | Vlearning | Material : | 30 |
| | Able to analyze the | height | Performance rubric | Learning | http://vlearning.un | - tachimetric method | |
| | difference in the height of | 5.2. Obtaining high | | | esa.ac.id | | |
| | | | | | | | |

| | | 5.3 Analyzing the difference | | Discussion | | - Book 2 | |
|-------|---|----------------------------------|---------------------------------|--|---|---|----|
| | | in the height of the | | Manita face to face | | - DOOK 2 Deals 2 | |
| | | In the neight of the | | Mentils face to face: | | - DOOK S | |
| | | measurement results | | $4(2x50^{\circ})$ | | - Book 4 | |
| | | | | | | - Book 6 | |
| | | | | Task 4 | | | |
| | | | | - Polygon and height | | | |
| | | | | difference | | | |
| | | | | practicum report | | | |
| | | | | practicum report | | | |
| | | | | Minutos | | | |
| | | | | Independent Teelre | | | |
| | | | | independent Tasks + | | | |
| | | | | discussion: | | | |
| | | | | (4+4) x (2X60') | | | |
| 13-14 | LLO -6: | 6.1. Creating topographic | Criteria: | Project Base | Vlearning | Material : | 20 |
| | Able to <i>create</i> maps of | maps | Performance rubric | Learning | http://vlearning.un | - Cartography | |
| | measurement results using | 6.2. Creating a <i>situation</i> | | _ | esa.ac.id | - Contour map | |
| | geospatial technology | man | | Direct Instruction | | - Transverse profile | |
| | geosputial technology | map | | Menits face to face: | | i ranoverse prome | |
| | | | | $(2 \times 5)^{2}$ | | Deferences | |
| | | | | : 2 (2x50) | | References: | |
| | | | | | | - BOOK 2 | |
| | | | | Task 5 | | - Book 3 | |
| | | | | - Situation map and | | - Book 4 | |
| | | | | cross-profile from | | - Book 6 | |
| | | | | field measurements | | | |
| | | | | | | | |
| | | | | Minutes | | | |
| | | | | Independent Tasks + | | | |
| | | | | discussion: | | | |
| | | | | | | | |
| 4 5 | 110.7 | | | [2+2] x [2X60']] | 171 . | | |
| 15 | LLU -/: | 7. Analyze area | Criteria: | Project Base | viearning | Material : | 5 |
| | Able to analyze the area of | | Performance rubric | Learning | http://vlearning.un | - Area calculation | |
| | the mapping | | | | esa.ac.id | _ | |
| | | | | Small Group | | References: | |
| | | | | Discussion | | - Book 2 | |
| | | | | Menits face to face 1 | | - Book 3 | |
| | | | | (2x50') | | - Book 4 | |
| | | | | | | - Book 6 | |
| | | | | Task 6 | | | |
| | | 1 | 1 | | | | |
| | | | | - Report on the | | | |
| 15 | LLO -7: Able to analyze the area of the mapping | 7. Analyze area | Criteria: Performance rubric | (2+2) x (2X60')] Project Base Learning Small Group Discussion Menits face to face 1 (2x50') Task 6 | Vlearning http://vlearning.un esa.ac.id | Material : - Area calculation References: - Book 2 - Book 3 - Book 4 - Book 6 | 5 |

| | analysis of the area of the mapping | | | | |
|----|---|--|--|--|--|
| | Minutes Independent Tasks + discussion: | | | | |
| | (1+1) x (2X60') | | | | |
| 16 | Semester Exam (US) | | | | |

B. Calculation of Student Workload

| Module/Course | | Student Workload | Credits | Semester | Frequency | Duration |
|---------------|------------|---------------------|-------------------|--------------|------------|---------------|
| 8720202076 | | 2 CU X 16 X 170' | 2 CU 3.18 ECTS | 5тн | ONCE YEAR | 1 SEMESTER |
| 1 | Types of o | courses | Contact hours | Independent | Structured | Class size |
| | LECTURE | S | | Study | Study | |
| | PRACTICU | JM | (2CU X 1,59 | | | |
| | | | ECTS) | (2CU X 1,59 | - | MAX 40 |
| | | | X{(100:170')X | ECTS) | | STUDENT |
| | | | 28,51 | X{(70:170')X | | |
| | | | Workhours= | 28,51 | | |
| | | | 53,27 | Workhours= | | |
| | | | | 37,29 | | |
| | | | | | | |

APPENDICES

APPENDIX 1 ASSESSMENT RUBRIC

Course Assessment

A. Assessment Rubric

1) Attitudes/Affective Domain

In this domain, the evaluation of student participation in class includes communication skills, discipline and responsibilities. The rubrics used are US follows:

| Criteria | Score |
|---|------------|
| Communicate effectively, appreciate others' | 85 SA 100 |
| opinions; always attend the class on time; always | |
| submit | |
| the assignment on time; and always participate in | |
| thecompletion of group assignment | |
| Communicate effectively, appreciate others' | 70 SA < 85 |
| opinions; | |
| 80% of attendance; submit 90% of the assignments; | |
| andoften participate in the completion of group | |
| assignments. | |
| Communicate ineffectively, appreciate others' | 55 SA < 70 |
| opinions; 75% of attendance; submit the 70% of | |
| assignment on time; and participate in the | |
| completion of group | |
| assignments. | |
| Communicate ineffectively, do note appreciate | SA < 55 |
| others' opinions; rarely attend the classes; rarely | |
| submit the assignments; and rarely participate in | |
| the completion of group assignment | |

2) Knowledge/Cognitive Domain

The students' knowledge is assessed through assignments (individual and groups) and tests (mid- term and End-term tests).

a. Assignment Rubric

The criteria of assignment according to Assignment Rubrics:

| No | Aspects | Max. |
|----|---|-------|
| | | Score |
| 1 | Able to implement the concept of Surveying in preparing mapping plans 1. Performance Results: Results of Analysis and description (weight 100%) a. Accuracy in analyzing flat distances (50%) b. Accuracy in analyzing the coordinates of the aiming point (50%) | 5 |

| | 2. Values between 0 to 100 | |
|---|--|----|
| | | |
| 2 | Able to analyze the herizental position of measurement data | 15 |
| 2 | 1 Performance Results: Results of Analysis and description (weight | 15 |
| | 80%) | |
| | a. Accuracy in theodolite setting (20%) | |
| | b. Accuracy in reading measuring tubs (20%) | |
| | c. Accuracy in analyzing flat distances (20%) | |
| | d. Accuracy in analyzing the coordinates of the aiming point (20%) | |
| | 2. Punctuality in submitting assignments (20% weight) | |
| | a. On time (30 menits) 20% | |
| | b. Late less than 15 menits 5% | |
| | c. More than 15 menits late 0% | |
| | 3. Values between 0 to 100 | |
| 3 | Able to operate theodolite, read measuring tubs, calculate distances and | 15 |
| | analyze the coordinates of the aiming point | |
| | 1. Performance Results: Results of Analysis and description (weight | |
| | 70%) | |
| | a. Accuracy in theodolite setting (20%) | |
| | b. Accuracy in reading measuring tubs (20%) | |
| | c. Accuracy in analyzing flat distances (10%) | |
| | d. Accuracy in analyzing the coordinates of the aiming point (20%) | |
| | 2. Active in group work (weight 10%) | |
| | a. Active 10% | |
| | b. Less active 5% | |
| | c. Inactive 0% | |
| | 3. Punctuality in setting theodolite (20% weight) | |
| | a. On time (30 menits) 20% | |
| | b. Late less than 15 menits 5% | |
| | c. More than 15 menits late 0% | |
| | 4. Values between 0 to 100 | |
| 4 | Able to <i>create</i> mapping area polygons | 10 |
| | 1. Punctuality in submitting assignments (100% weight) | |
| | a. On time (30 menits) 100% | |
| | b. Late less than 15 menits 50% | |
| | c. More than 15 menits late 25% | |
| | 2. Values between 0 to 100 | |
| 5 | Able to analyze the difference in the height of the mapping area | 30 |
| | 1. Performance Results: Results of Analysis and description (weight | |
| | 2 Accuracy in determining the aiming point (20%) | |
| | h Accuracy in analyzing the difference in height (50%) | |
| | 2. Active in group work (weight 10%) | |
| | a. Active 10% | |
| | b. Less active 5% | |
| | c. Inactive 0% | |
| | 3. Punctuality in submitting assignments (20% weight) | |
| | a. On time (30 menits) 20% | |
| | b. Late less than 15 menits 5% | |
| | c. More than 15 menits late 0% | |
| | 4. Values between 0 to 100 | |

| 6 | Able to <i>create</i> maps of measurement results using geospatial technology 1. Performance Results: Results of Analysis and description (weight 70%) a. Accuracy in creating contour maps (35%) b. Accuracy in creating situation maps (35%) 2. Active in group work (weight 10%) a. Active 10% b. Less active 5% c. Inactive 0% 3. Punctuality in submitting assignments (20% weight) a. On time (60 menits) 20% b. Late less than 15 menits 5% c. More than 15 menits late 0% | 20 |
|---|--|----|
| | 4. Values between 0 to 100 | |
| 7 | Able to analyze the area of the mapping Performance Results: Results of Analysis and description (weight 60%) a. Accuracy in analyzing area (60%) Active in group work (weight 10%) a. Active 10% b. Less active 5% c. Inactive 0% Punctuality in submitting assignments (20% weight) a. On time (60 menits) 20% b. Late less than 15 menits 5% c. More than 15 menits late 0% 4. Values between 0 to 100 (Excellent = 3, good = 2, Fair = 1) | 5 |

b) Test (mid-term and End-term tests)

The criteria of mid-term and End-term tests in this course are:

- 1. The ability to give answers correctly according to the key and rubrics;
- 2. The abilities to provide robust argumentation according to theory;
- 3. The abilities to provide systematic explanations; and
- 4. The ability to apply the essential concepts in a particular situation comprehensively.

B. University Country Surabaya's Grading System

University students are considered to be competent and pass if at least get 40% of the maximum End-term grades. The End-term grade (NA) is calculated based on the following weights:

| Assessment Components | Percentage |
|--------------------------|------------|
| Participation (including | 20% |
| attitudes/affective) | |
| Assignment | 30% |
| Mid-term test | 20% |
| End-term test | 30% |

Scoring Conversion

| Scoring interval (out of 100) | Point | Grade |
|-----------------------------------|-------|-------|
| 85 NA 100 | 4.00 | А |
| 80 NA < 85 | 3.75 | A- |
| 75 NA <80 | 3.50 | B+ |
| 70 NA < 75 | 3.00 | В |
| 65 NA < 70 | 2.75 | B- |
| 60 NA < 65 | 2.50 | C+ |
| 55 NA < 60 | 2.00 | С |
| 40 NA <55 | 1.00 | D |
| 0 NA < 40 | 0 | Е |

APPENDIX 2 COURSE ACTIVITIES RECORDS

a. Sample of Student Attendance

9/28/22, 10:01 AM

SIAKAD : Absen



KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI UNIVERSITAS NEGERI SURABAYA JI. Lidah Wetan, Surabaya - 60213 Telepon :+6231-99424932 Faksimile :+6231-99424932 e-mail :bakpk@unesa.ac.id

PRESENSI KULIAH Periode 2020/2021 Gasal

| Mata Kuliah | : Ilmu Ukur Tanah |
|-------------|--------------------------|
| Kelas | : 2017A |
| Prodi | : S1 Pendidikan Geografi |

Dosen : Dr. Muzayanah, S.T., M.T. Dr. Eko Budiyanto, S.Pd., M.Si.

| | | | | | | | | | Per | temu | an Ke | i | | | | | | |
|-----|-------------|-----------------------------|-----|-----|-----|-----|-----|-----|-----|------|-------|-----|-----|-----|-----|-----|-----|--------|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
| No | NIM | Nama Mahasiswa | 18 | 25 | 02 | 09 | 16 | 23 | 30 | 06 | 13 | 20 | 27 | 04 | 11 | 18 | 25 | % |
| | | | Sep | Sep | Oct | Oct | Oct | Oct | Oct | Nov | Nov | Nov | Nov | Dec | Dec | Dec | Dec | |
| | | | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | |
| 1. | 17040274001 | BIRU DAMAR CAHYANTI | Н | н | Н | н | н | н | Н | Н | н | Н | Н | Н | н | н | Н | 100 % |
| 2. | 17040274002 | SHINTA MARINDA OKTAVIANI | Н | Н | н | н | н | Н | Н | Н | н | Н | Н | н | Н | н | Н | 100 % |
| 3. | 17040274003 | ZIDNI ILMA LAILATIN SAFAROH | Н | н | н | Н | Н | н | Н | Н | Н | Н | Н | н | н | н | Н | 100 % |
| 4. | 17040274004 | M KHOIRUL ANAM | Н | н | н | н | н | н | Н | Н | н | Н | Н | н | н | н | Н | 100 % |
| 5. | 17040274005 | ANABILLAH YULIA RAMADHANI | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | н | н | н | н | 100 % |
| 6. | 17040274006 | DINDA PRATIWI | Н | Н | Н | Н | н | Н | Н | Н | Н | Н | Н | н | Н | A | н | 93.3 % |
| 7. | 17040274007 | JAUHARATUL KHILMIYAH | Н | Н | Н | Н | Н | Н | Н | Н | н | Н | Н | н | н | Α | Н | 93.3 % |
| 8. | 17040274008 | TIARA VIKA ANGGRAINI | н | н | н | н | н | н | н | Н | н | Н | Н | н | н | A | н | 93.3 % |
| 9. | 17040274009 | HELIA SEPTIANA | н | н | н | н | н | н | н | Н | н | Н | н | н | н | н | н | 100 % |
| 10. | 17040274010 | LELY BADRIYAH | Н | н | н | н | н | н | Н | Н | Н | Н | Н | н | H | н | н | 100 % |
| 11. | 17040274011 | NADIAH SALSABILA | Н | Н | Н | Н | н | Н | Н | Н | Н | Н | Н | н | н | A | Α | 86.7 % |
| 12. | 17040274012 | NURUL IZZAH FARQHANA | н | н | н | н | н | н | Н | Н | н | Н | н | н | н | н | н | 100 % |
| 13. | 17040274013 | MUCHAMMAD ARDIANSYAH | н | Н | н | н | н | н | н | Н | н | н | н | н | н | н | н | 100 % |
| 14. | 17040274014 | DEFRI ABIYAN AYU FADHILAH | н | Н | Н | Н | Н | Н | Н | н | н | н | Н | н | н | н | н | 100 % |
| 15. | 17040274016 | KHARISMA DWI CAHYANING | Н | Н | Н | Н | Н | Н | Н | Н | н | Н | Н | н | н | н | н | 100 % |
| 16. | 17040274017 | BAGUS SETIAWAN | н | н | Н | н | н | н | н | Н | н | Н | Н | н | н | A | н | 93.3 % |
| 17. | 17040274018 | BADRIYATUN NUR HASANAH | н | Н | н | Н | н | н | н | н | н | Н | н | н | н | н | н | 100 % |
| 18. | 17040274019 | ASNIA VERONIKA | н | Н | Н | Н | Н | Н | Н | Н | н | Н | н | Н | н | н | н | 100 % |
| 19. | 17040274020 | ASIYATUL KARIMAH | н | н | н | н | н | н | н | Н | н | Н | н | н | н | н | н | 100 % |
| 20. | 17040274022 | TRESNASIA RAHMALIYAH | н | н | н | н | н | н | н | н | н | н | н | н | н | A | н | 93.3 % |
| 21. | 17040274023 | OCTYVIA NOERMALITASARI | н | н | н | н | н | н | н | н | н | н | н | н | н | н | н | 100 % |
| 22. | 17040274024 | DAFFA' DARY OKTAVIANO | н | н | н | н | н | н | н | н | н | н | н | н | н | н | н | 100 % |
| 23. | 17040274025 | HENUK DWI FIANA | н | н | н | н | н | н | н | н | н | н | н | н | н | н | A | 93.3 % |
| 24. | 17040274026 | LAILATUL MUZDALIFAH | н | Н | н | Н | н | Н | н | н | н | н | н | н | н | н | н | 100 % |
| 25. | 17040274027 | NUR FITRIYANI | н | н | н | н | н | н | н | н | н | н | н | н | н | н | н | 100 % |
| 26. | 17040274028 | BAHRUL RESQI MUBARROQ | н | н | н | н | н | н | н | Н | н | н | н | н | н | н | н | 100 % |
| | | HERMAWAN | | | | | | | | | | | | | | | | |
| 27. | 17040274029 | WILDAN NUR BASTIAN | Н | н | н | н | н | н | Н | Н | н | Н | Н | н | н | A | A | 86.7 % |
| 28. | 17040274030 | USWATUN CHASANAH | Н | н | н | н | н | н | Н | Н | н | Н | Н | н | н | н | Н | 100 % |
| 29. | 17040274031 | INDAH LESTARI | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | н | н | Н | 100 % |
| 30. | 17040274032 | AYU NURHANIA | Н | Н | Н | Н | Н | Н | Н | Н | н | Н | Н | н | н | н | н | 100 % |
| 31. | 17040274033 | DEVIL SYAWALI | Н | Н | н | н | н | Н | Н | Н | н | Н | Н | н | н | A | Α | 86.7 % |
| 32. | 17040274034 | ZAYIN AZIS SYAIFULLAH | Н | Н | Н | н | Н | Н | Н | Н | Н | Н | Н | Н | н | Α | Н | 93.3 % |
| 33. | 17040274035 | IIN VINA NOVIANA | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | 100 % |
| 34. | 17040274036 | FACHREZA DANY ERLANGGA | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | 100 % |
| 35. | 17040274038 | YUSLINO FARIDAH NUR AINY | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | Н | A | Н | 93.3 % |
| | Tanda | Tangan Dosen / Asisten | | | | | | | | | | | | | | | | |

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1/1

b. Sample of Course Log Book

9/28/22, 10:11 AM

SIAKADU: Cetak Jurnal Perkuliahan



Kelas

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI

UNIVERSITAS NEGERI SURABAYA

Kampus Ketintang Jalan Ketintang, Surabaya 60231 T: +6231-8293484 F: +6231-8293484 laman: unesa.ac.id email : bakpk@unesa.ac.id

Aktivitas Perkuliahan

| Nama | Matakuliah | :Ilmu | Ukur | Tanah |
|------|------------|-------|------|-------|
| | | | | |

Dosen :

EKO BUDIYANTO (197404252006041001) MUZAYANAH (197012162005012001)

:2017A Jadwal & Ruang : G08.01.01 (07.00 - 08.40) R.

| No. | Tanggal | Pertemuan | Topik | Peserta | Status | Dosen |
|-----|------------|--------------------|---|---------|-----------|---------------|
| 1 | 18-09-2020 | Pertemuan ke 1 | - Definisi ilmu ukur tanah - Persamaan dan perbedaan IUT, fotogrametri dan penginderaan jauh - Macam pekerjaan pengukuran | 35 | Terjadwal | Muzayanah |
| 2 | 25-09-2020 | Pertemuan ke 2 | - Definisi dan cara perhitungan beda tinggi - Definisi dan cara perhitungan azimuth | 35 | Terjadwal | Muzayanah |
| 3 | 02-10-2020 | Pertemuan ke 3 | - Bagian-bagian teodolit - Tahapan centring - Azimuth - Sudut vertikal | 35 | Terjadwal | Muzayanah |
| 4 | 09-10-2020 | Pertemuan ke 4 | - Azimuth - Sudut vertikal | 35 | Terjadwal | Muzayanah |
| 5 | 16-10-2020 | Pertemuan ke 5 | - Membaca BA, BT, BB - Menghitung jarak 2 titik sama tinggi | 35 | Terjadwal | Muzayanah |
| 6 | 23-10-2020 | Pertemuan ke 6 | - Tahap pengukuran beda tinggi - Penghitungan beda tinggi | 35 | Terjadwal | Muzayanah |
| 7 | 30-10-2020 | Pertemuan ke 7 | Pemetaan penampang melintang | 35 | Terjadwal | Muzayanah |
| 8 | 06-11-2020 | Pertemuan ke 8 | UTS | 35 | Terjadwal | Muzayanah |
| 9 | 13-11-2020 | Pertemuan ke 9 | - Titik awal pengukuran dan koordinatnya Menghitung jarak horizontal - Menghitung ketinggian (z) berdasarkan beda tinggi | 35 | Terjadwal | Eko Budiyanto |
| 10 | 20-11-2020 | Pertemuan ke 10 | - Titik awal pengukuran dan koordinatnya Menghitung jarak horizontal - Menghitung ketinggian (z) berdasarkan beda tinggi | 35 | Terjadwal | Eko Budiyanto |
| 11 | 27-11-2020 | Pertemuan ke 11 | - Titik awal pengukuran dan koordinatnya | 35 | Terjadwal | Eko Budiyanto |

1/2

| 9/28/22, 10 |):11 AM | | SIAKADU: Cetak Juri | nal Perkuliahan | | |
|-------------|------------|--------------------|--|-----------------|-----------|---------------|
| | | | Menghitung jarak horizontal - Menghitung ketinggian (z) berdasarkan beda tinggi | | | |
| 12 | 04-12-2020 | Pertemuan ke 12 | Menghitung koordinat (x,y) berdasarkan jarak horisontal dan azimut | 35 | Terjadwal | Eko Budiyanto |
| 13 | 11-12-2020 | Pertemuan ke 13 | Menghitung koordinat (x,y) berdasarkan jarak horisontal dan azimut | 35 | Terjadwal | Eko Budiyanto |
| 14 | 18-12-2020 | Pertemuan ke 14 | Pemetaan kontur | 25 | Terjadwal | Eko Budiyanto |
| 15 | 25-12-2020 | Pertemuan ke 15 | 1. | 31 | Terjadwal | Eko Budiyanto |

https://siakadu.unesa.ac.id/c10b0f3c-26f1-3492-b918-a2e135d74858.aspx?id=1ff22369-ac37-3d43-add0-b903c32d16fc&cetak_jurnal=1

2/2

c. Sample of Assignment:



Buatlah kelompok dengan anggota kurang lebih 6 sampai 8 mahasiswa. Silahkan mengerjakan project Ilmu Ukur Tanah dengan tahapan sebagai berikut:

- 1. Menentukan lokasi pengukuran di Kampus Ketintang Unesa dengan luas di bawah 50 km²
- 2. Menggambar denah poligon yang akan diukur dan memberi nama titik-titik pengukuran
- 3. Menyiapkan form pengukuran
- 4. Melakukan pengukuran dengan theodolit dengan tahapan:
 - a. Setting theodolit
 - b. Membidik bak ukur yang telah diletakkan pada titik poligon
 - c. Mengecek bacaan BA, BT dan BB
 - d. Menghitung koordinat titik poligon
 - e. Menghitung beda tinggi
 - f. Meng-create peta hasil pengukuran dengan QGIS atau Arc Gis
 - g. Menganalisis luas area yang diukur dengan QGIS atau Arc Gis
 - h. Menyusun laporan hasil pengukuran dengan urutan sebagai berikut:
 - **BAB 1 PENDAHULUAN**
 - 1. Latar belakang
 - 2. Tujuan praktikum
 - Tujuan praktikum adalah:
 - a. Agar mahasiswa mengetahui dan memahami tahapan surveying
 - b. Mahasiswa mampu mengoperasikan theodolit digital
 - c. Mahasiswa mampu menganalisis hasil pengukuran
 - d. Mahasiswa mampu plotting hasil pengukuran dalam bentuk peta.
 - 3. Waktu dan tempat
 - 4. Peralatan

BAB 2 KAJIAN TEORI

- 1. Ilmu Ukur Tanah (definisi, manfaat, kesalahan dalam pengukuran)
- 2. Poligon
- 2. Levelling
- 3. Setting theodolit
- (sertakan dokumentasinya)
- 4. Rektifikasi citra

5. Plotting titik BAB 3 DATA DAN HASIL ANALISIS

- 1. Denah dan penamaan titik poligon
- 2. Hasil pengukuran
- 3. Hasil analisis

4. Hasil plotting hasil dengan base map citra google earth yang sudah direktifikasi BAB 4. KESIMPULAN

- DAFTAR PUSTAKA
- 5. Deadline pengumpulan laporan 20 Desember 2020

d. Sample of Mid-term Test



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN UNIVERSITAS NEGERI SURABAYA FAKULTAS ILMU SOSIAL DAN HUKUM JURUSAN PENDIDIKAN GEOGRAFI

Kampus Ketintang, Jalan Ketintang, Surabaya 60231 Telepon: +6231– 8280009 pswt. 400 – 410, Faksimil: : +6231- 8281466 Laman: fish.unesa.ac.id, Email : <u>fish@unesa.ac.id</u>

UJIAN TENGAH SEMESTER GASAL TAHUN 2020/2021

| Matakuliah | : Ilmu Ukur Tanah | | | |
|---------------|----------------------------------|---------|----------------------------------|---|
| Sks | : 2 | | | ~ |
| Program Studi | : S-1 Pendidikan Geografi angkat | an 2017 | kelas A B dan Gui sosiai & HUKUM | |
| Dosen | : Dr. Eko Budiyanto, Msi. | | | |
| | Dr. Muzayanah, MT. | sie. | UNIVERSITAS NEGERI SURABATA | |
| Hari/Tanggal | : Selasa, 3 Nopember 2020 | UNESA | SOAL LITS/LIAS TERVALIDASI | |
| Jam | : sesuai jadwal mengajar 🛛 🗸 | | SOAL 013/0AS TERVALIDASI |) |

Petunjuk:

1. Tulis nama dan nomor induk mahasiswa pada lembar jawaban yang telah disediakan !

Pertanyaan:

1. Saudara lihat cara setting theodolit pada link <u>https://youtu.be/pwE1JRcNUyE</u>. Saudara jelaskan secara ringkas **urutan langkah setting theodolit. (Nilai maks 15)**

| Pengukuran | Tinggi pesawat | Sudut h | Sudut ver | ВА | BT | BB | | | | |
|------------|----------------|----------------------|-----------|-----|-----|-----|-----|-------|-------|-------|
| dari - ke | (cm) | 0 | 1 | " | 0 | • | " | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| 0 - 1 | 140 | 51+3NIM terakhir | 3 | 10 | 90 | 0 | 0 | 8,50 | 6,00 | 3,50 |
| 0 - 2 | 140 | 97+3NIM terakhir | 23 | 46 | 90 | 0 | 0 | 23,70 | 21,00 | 18,30 |
| 0- 3 | 140 | 295+3NIM terakhir | 12 | 56 | 90 | 0 | 0 | 11,70 | 11,00 | 10,30 |

2. Berikut adalah data pengukuran lapangan.

Koordinat theodolit = (698740, 9194455) Saudara:

- a. cek apakah bacaan bak ukur nya sudah benar? (nilai maks 6)
- b. Hitung jarak garis 0-1, 0-2 dan 0-3 (nilai maks 15)
- b. hitung korrdinat titik 1,2 dan 3 (nilai maks 30)
- c. Gambarkan koordinat titik 0, 1, 2 dan 3 (nilai maks 20)

www.unesa.ac.id "Growing with character"



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN UNIVERSITAS NEGERI SURABAYA FAKULTAS ILMU SOSIAL DAN HUKUM JURUSAN PENDIDIKAN GEOGRAFI Kampus Ketintang, Jalan Ketintang, Surabaya 60231 Telepon: +6231 – 8280009 pswt. 400 – 410, Faksimil: : +6231 - 8281466 Laman: fish.unesa.ac.id, Email : fish@unesa.ac.id

- 3. Bila diketahui titik A = (686127+3NIM terakhir, 9366782+3NIM terakhir) dan titik B=(686104, 9366748).
 - a. Cari azimuth dari titik A ke titik B (Nilai maks 10)
 - b. Gambarkan azimuthnya (nilai maks 4)

SELAMAT MENGERJAKAN

www.unesa.ac.id "Growing with character"

Sample of End-term Test



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN UNIVERSITAS NEGERI SURABAYA FAKULTAS ILMU SOSIAL DAN HUKUM JURUSAN PENDIDIKAN GEOGRAFI

Kampus Ketintang, Jalan Ketintang, Surabaya 60231 Telepon: +6231– 8280009 pswt. 400 – 410, Faksimil: : +6231- 8281466 Laman: fish.unesa.ac.id, Email : <u>fish@unesa.ac.id</u>

UJIAN AKHIR SEMESTER GASAL TAHUN 2020/2021

| Mata kuliah | : | llmu Ukur Tanah | | | | | | | |
|----------------|---|---|---|--|--|--|--|--|--|
| Sks | : | 2 | | | | | | | |
| Program Studi | : | S-1 Pendidikan Geografi angkatan 2017 | 1 Pendidikan Geografi angkatan 2017 kelas A, B dan C | | | | | | |
| Dosen | : | Dr. Muzayanah, MT. | . Muzayanah, MT. | | | | | | |
| | | Dr. Eko Budiyanto, M.Si. | | | | | | | |
| Hari/Tanggal | : | Jumat, 8 Januari 2021 | | | | | | | |
| Jam | : | 8.50 – 10.30 WIB | | | | | | | |
| link | : | https://zoom.us/j/91305772702?pwd= | SlhDejhCMlc4U1QzNW14enAvc3 | | | | | | |
| | | g1dz09 Meeting ID: 913 0577 2702 Passcode: UASIUT | FAKULTAS ILMU SOSIAL & HUKUM UNIVERSITAS NEGERI SURABAYA | | | | | | |
| Upload jawaban | | Google classroom <i>class code</i> 6yghwkw | SOAL UTS/UAS TERVALIDASI | | | | | | |

Petunjuk:

Tulis nama dan nomor induk mahasiswa pada lembar jawaban yang telah disediakan

Pertanyaan:

Berikut adalah data pengukuran lapangan.

| Pengukuran dari - ke | Tinggi nesawat | Sudut horizontal ($lpha$) (°) | | | Sudut ve | V) (°) | RΔ | BT | BB | |
|-------------------------|-------------------|---------------------------------|----|----|----------|--------|----|-------|-------|-------|
| | (cm) | 0 | 1 | " | 0 | 1 | " | | 51 | 20 |
| P8-P7 | 130 | 0 | 0 | 0 | 90 | 25 | 10 | 11,50 | 7,00 | 2,50 |
| P8-P9 | 130 | 217 | 46 | 40 | 88 | 5 | 0 | 34,40 | 32,00 | 29,60 |

Koordinat titik 8 adalah (686014, 9366620) dan elevasi theodolit 4,2 m Hitunglah:

- a. Cek bacaan BA, BT dan BB hasil pengukuran di atas (nilai maks 10)
- b. beda tinggi (Δ H) antar titik P8-P7 dan P8-P9 (nilai maks 25)
- c. Elevasi pada bak ukur P7, P8 (nilai maks 20)
- d. Koordinat titik P7dan P8 (nilai maks 20)
- e. Gambarlah posisi 3 titik tersebut (nilai maks 25)

SELAMAT MENGERJAKAN SEMOGA SEHAT SELALU

www.unesa.ac.id Growing with character"

e. Sample of Student's Answer to Assignment, Mid-term, and End-term Test (1) <u>Sample</u> of Student's Answer to Assignment



LAPORAN PRAKTIKUM ILMU UKUR TANAH

Disusun Oleh :

| 1. BAGUS PRASETYO | (17040274098) |
|-----------------------------|---------------|
| 2. CAHYANI INDAH WIJAYANTI | (17040274100) |
| 3. CHINTYA INDRASWARI PUTRI | (17040274101) |
| 4. IKVINA RIZQOTUL AVIDA | (17040274102) |
| 5. MARDHA DWITA SETYORINI | (17040274104) |
| 6. TITAH REKSOARTI | (17040274106) |
| 7 RESZA MAS AZIZ RIVAL | (17040274108) |

S1 PENDIDKAN GEOGRAFI FAKULTAS ILMU SOSIAL DAN HUKUM UNIVERSITAS NEGERI SURABAYA 2020 3.1 Plotting Hasil



Komentar: Good job

(2) Sample of Student's Answer to Mid-term

| | Jun | FAKULTAS ILMU SOSIAL DAN HUKUM UNESA Junusan/Prodi- pendidikan geogeofi | | | | |
|---|--|--|--|---------------------------------|---|--|
| 100 | Nama NIM Mata Ku Hari / tar Tanda Ta | iah : <u>11</u> 1993 : <u>50</u> 1993 : | tyu Murha 704027403, imu usur To otu 07 Novo Chy | nta 2 Indh Infoer 2020 | NILAI | |
| Unitan Langrah setting th | eodolit - | | | | | |
| a persame, Menyiapkan ala | It | | 15 | 1.000 | | |
| b Kedua - Menenturan titis a | is (awar) | dengo | in memberi | tanda | a a a a a a | |
| c Ketiga monyiapkan kaki tap | septiolit u | HUF SI | ap arguna | tion, talu n | dan | nean |
| theodolik dan tas dan meletai | con pas | dicensor | atus Fun | H they all it | Liun | |
| A montradie Lette awal dan w | conji China | thoodo | lit anar ika | didge | | |
| e menciel menuetina anat ac | iembuna | pada 4 | heodout c | erual /tep | at diten | aah |
| e monuel /cetting Mpo tabung pi | ada theo | dola de | ngan men | epatkan g | elembung | |
| | | | | | | |
| tabung pas ditengah tengah | | | | | | |
| takung pas ditengah tengah f. Theodolit shap lintuk digun | afan | | | | | |
| tabung pas ditengan tengan f. Theodolit shap lintuk digum | afan | | | | | |
| taeung pas ditengian tengan f. Theodolit shap untuk digun 2. Daka pengururan Lapangan | afan | Condust one | et 10 1 1 2 1 10 | | | |
| takung pas ditengan tengan f Theodolit shap untuk diguni 2. Data pengururan Lapangan managengangan susu horizonta (s) | (°) | Sudut ve | rtisul (B) (* |) | 60 3 | F 68 |
| taioung pas ditengin tongan f. Thoodolit Qiap inituk digun 2. Data Pengururan Lapangan meneriman meneriman sudu honsonta (a) n-te (am) 0 (a) | (°) (°) | Sudut ye | (T)54 (B)(* |) | 68 9 | F 68 |
| taking pos ditension tension f. Theodolit gap (initia diam 2. Data Pengururan Lapangon manufitasi Sudu horizonta (s) ar-fe cm ' (1) (1) (3) (4) | (0) (0) (5) 10 | Sudut ye | (7) 0 |) " (8) o | 68 9 (5) (1) 8.50 6.0 | F 68 |
| texing pos dttengin tengin 1 Throadelik Glap (intuk digum) 2 Otach Pengureuron Lapangan awartinesk Sudu horsontul (a) | (0) (0) (5) (5) (0) 46 | Sudut ve * (6-) go go | ettişta (B)(* 1 1 1 277 0 0 |) " (3) 0 | 66 31 (5) (1) 8,50 6,0 28,70 2,10 | F 68 |
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| teening pas ditengan Hongan f. Theodolik Giap Unituk diauni 2. Daka pengukuran Lapangan manuanginan teamin (1) (1) (3) (4) (1) (3) (4) (2) (3) (4) (3) (4) (3) (4) (4) (3) (4) (5) | (0) (0) (5) (0) 45 56 (1)(34455) | 500000 90 90 90 90 90 90 90 | ettikul (B) (C 1 (77) 0 0 0 |) " (8) 0 0 | 68 31 (5) (1) 8,50 6,0 28,70 21, 1,70 11,0 | F 68 01 (H) 00 3,50 100 72 3 |
| takung pas ditengan tengan f. Theodolik gap untuk diaun 2. Data pengukuran Lapangan manuanginan takan 9 | (°) (°) (°) (°) (°) (°) (°) (°) (°) (°) | Sudut ye (4) 90 90 90 1 ~ Xa.X | ((1)+(4)(B)((1) (7)? 0 0 0 0 |) " (8) 0 0 | 8.8 3 (9.1) (1) 8.50 6.0 28,70 2.1, 1.70 11.0 | F 68 a1 (II) 00 3,50 10 10 30 |
| typewing pos ditanzin typewing 1 Theodolit Gup (intruk digum 2 Otda Pengureura Lapangan Sawa Sadai hor nonta (a) Sama Sadai hor nonta (a) L17 (3) (4) G-1 Ha0 Sitas: \$5 3 O-2 Ha0 Sitas: \$5 3 O-3 Ha0 Bis-Ha2: 337 12 Footdinai Liteodolit (a) 87:40, o 3 (a) Cet batcan Date unitrus as adda bat 3 | (°) (°) (°) (°) (°) (°) (°) (°) | Sadut ye 9 (4) 90 90 90 90 90 | ((1)+(4)(3)(() (7)? 0 0 0 0 |) " (8) 0 0 | 88 9 (9.1) (U 8.50 6.0 24, 70 21, 1.70 11 (| F 66 e1 (III) DO 3,50 i00 12-30 12-30 |

| + title 0-2 | |
|---|--|
| Kb = XA + D SIP (d) | |
| = 698740 + 540 (511 (129 + 23 + 46)) | |
| 6.0 3,600 | |
| = 698740 + 540 (cin 129, 3958) | |
| = 698740 + 417,301 | |
| - 693157,3011 | |
| Kb = 699157 " | |
| | |
| Y6 , YA + 9 605 (d) | |
| = 9194455 + 540 (LOS (129 + == + =)) | |
| 00 J200 | |
| = g194455 + 540 L(05 129,3958) | |
| -919995 + (-342,724) | |
| = 9194112,28, 1 | |
| = 9194112 | |
| Tadi Koordinat titi 0-2 = 600157, 9194112 | |
| 3.9957 8 | |
| * ++++ 0-3 | |
| X6 = XA+ Osin (8) | |
| · 608740 + 140 (un (327 + 12 + 56) | |
| 60 3,600 | |
| = 6098740 + 140 (un 327, 21557 15 | |
| 108700 + (-75,8073) | |
| 698669,1931 | |
| XL . (0960) . IX | |
| ND - DG0DJA | |
| Nh Y + + 0 cos (+) | |
| 40 - 14 MA (CON (327 + 12 + 56)) | |
| 5 9197455 1 140 CONTACT DE 3600 | |
| - 0194455 + 140 (105 327,2155) | |
| 0100055 + 117,70 | |
| DIDALTZ Z deutotean 0194573 | |
| 1 0104-72 | |

| 0 0 0 0 0 0 | | | | |
|---|---|--------------------------|--|--|
| $0^{-3} = BA + BB = 2.BF$ | | | | |
| = 11,70+10,30 = 2 × 1 | | | | |
| 22 = 2.2 => Bonar (Korena nila: (BR+BB) densan (287) | | | | |
| | | | | |
| Hitung jaraf garis 04 | .0-2 dan 0-3 . | | | |
| RUMUS Q = 100 x LBA-BB |) | | | |
| | | | | |
| * Jarot garis 0-1 | * atak gans 0-2 | t Jarah gan 0-3 | | |
| $D = 100 \times (-16, 50 - 3, 50)$ | D: 100 x (23,70 - 18,30) | 0 = 100 × (11.70 - 10.30 | | |
| = 100 × 5 | = 100 × 5 /4 | : 100 × 1/9 | | |
| VOA · SOU PIECEI | Un sho winter | pos = 140 mieres | | |
| | | | | |
| C DIEPtohui XA + 698740 | YA = 9104455 | | | |
| 1 11 contract for the lite | Litt I a day a | | | |
| 6 finungiah koorainat n | n k 1,2 aan 3 | | | |
| a firtungian recordinat th | Hik 1,2 ugn 3 | | | |
| * title 0-1 | n 4 1,2 aan 3 | | | |
| * title C-1 $X_b = X_A + 0$ Sin (d) | nw 1,2 uun 3 | | | |
| * title 0-1 * title 0-1 Xb = XA + 0.510 (d) = 698740 + 500. (see | $1 (83 + \frac{3}{5} + \frac{10}{3000})$ | | | |
| Hirtungkih Koordinat m Hirtungkih Koordinat m titik 0-1 Xb = Xa + 9 .5m (d) £93740 + 500 · (Sin £03740 + 500 · (Sin | $(83 + \frac{3}{10} + \frac{10}{200}))$ 85.0528) | | | |
| Hittingigh Koordinat th their of Xb = Xa + 0 Sin (d) Egg740 + 500 · (Sin Egg740 + 500 · (Sin Eug740 + 446,320 | n (23 + 3 + 10 (23 + 3 + 10 85,05 28) | | | |
| Tritingiah Koordinat ti titik 0-1 Xb = Xa + 0 Sin (d) £698740 + 500 (Sin 6698740 + 500 (Sin 6698740 + 496,323 2690 286,320 - | $\frac{1}{83} + \frac{10}{10} + \frac{10}{2606}$ | | | |
| Tritungiah Koordinat m titik 01 xb = Xa + 0 . Sin (d) xb 98740 + 500 · (Sin xb 98740 + 700 · (Sin xb 98740 + 700 · (Sin xb 98740 + 740, 329 - xb 2 603286 · 329 - | n (83 + 3 + 10 6 (83 + 3 + 10 83,05 28) | | | |
| * titler of Xb = XA + 0 . Sin (d) > 698740 + 500 · (Sin = 698740 + 500 · (Sin = 698740 + 496,329 = 699286,329 1 Xb = 699286 | n (83 + 3 + 10 6 5266) 85.0528) | | | |
| Thrangian Recordinal th $\frac{1}{2}$ title 0.1 $\frac{1}{2}$ title 0.1 $\frac{1}{2}$ 698740 + 500 (Gr) $\frac{1}{2}$ 698740 + 400 (Srn $\frac{1}{2}$ 698740 + 406 (Srn $\frac{1}{2}$ 699286 (Srn $\frac{1}{2}$ Srn $\frac{1}{2}$ 699286 (Srn $\frac{1}{2}$ Srn $\frac{1}{2}$ Srn $\frac{1}{2}$ (Gr) (Gr) $\frac{1}{2}$ (G | n (83 + 3 + 10 65,05,28) | | | |
| * the function of the functio | $\frac{1}{(83 + \frac{3}{56} + \frac{10}{566})}{\frac{3}{566}}$ | | | |
| $\begin{array}{rcl} & \mbox{Thrtangyah Kcordinal th} \\ & \mbox{title O-1} \\ & \mbox{Xb} = & \mbox{Xa} + 0 & \mbox{Sin (d)} \\ & $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$ | $\frac{1}{12} \left(\frac{1}{12} + \frac{3}{10} + \frac{10}{500} \right)$ $\frac{1}{10} \left(\frac{1}{12} + \frac{3}{10} + \frac{10}{500} \right)$ $\frac{1}{10} \left(\frac{1}{10} + \frac{3}{10} + \frac{10}{500} \right)$ | | | |
| $\begin{array}{c} & \text{Thrtangyah Kcorainan th} \\ \textbf{x} & \text{titlk O1} \\ & \textbf{Xb} = \textbf{Xa} + \textbf{D} \cdot \textbf{Sin} (d) \\ & \text{segg740} + \textbf{So0} \cdot (\textbf{Sin} \\ & \text{egg740} + \textbf{So0} \cdot (\textbf{Sin} \\ & \text{egg740} + \textbf{AB}_{1}, \textbf{Sag} \\ & \text{segg740} + \textbf{AB}_{2}, $ | $\frac{(83 + \frac{3}{5} + \frac{10}{500})}{(83 + \frac{3}{500} + \frac{10}{500})}$ $\frac{(83 + \frac{3}{5} + \frac{10}{500})}{(83 + \frac{3}{5} + \frac{10}{500})}$ $\frac{(83 + \frac{3}{5} + \frac{10}{500})}{(83 + \frac{3}{500} + \frac{10}{500})}$ | | | |
| Thrangigh Keordinal th r title OT $X_b = X_a + 0.5in (d)$ $> 698740 + 500 \cdot (Sin$ $= 698740 + 500 \cdot (Sin$ $= 698740 + 406,529 - 100 \cdot (Sin)$ $= 699286, 329 - 100 \cdot (Sin)$ $= 699286, 329 - 100 \cdot (Sin)$ $= 9194455 + 500 \cdot (Cos)$ $= 9194455 + 500 \cdot (Cos)$ $= 9194455 + 500 \cdot (Cos)$ | $\frac{(83 + \frac{3}{24} + \frac{10}{3606})}{(83 + \frac{3}{24} + \frac{10}{3606})}$ $\frac{(83 + \frac{3}{24} + \frac{10}{3606})}{\frac{10}{3606}}$ $\frac{(83 + \frac{3}{24} + \frac{10}{3606})}{\frac{10}{3606}}$ | | | |
| * title of $x_b = x_a + 0$ sin (d) $z = 698740 + 500 \cdot (3r)$ $z = 698740 + 500 \cdot (3r)$ z = 698740 + 406,329 z = 699284, 329 $x_b = 268,329$ $x_b = $ | $\frac{(83 + \frac{3}{56} + \frac{10}{5600})}{(83 + \frac{3}{56} + \frac{10}{5600})}$ $\frac{(83 + \frac{3}{56} + \frac{10}{5600})}{\frac{100}{5600}}$ $\frac{(83 + \frac{3}{5} + \frac{10}{5000})}{\frac{100}{56000}}$ | | | |
| * Thrangyah Koordinan th * titlk OT $X_b = X_a + 0 \cdot Sin (d)$ $= 698740 + 500 \cdot (Srn = 698740 + 500 \cdot (Srn = 698740 + 496,323= 699286,323X_b = 692286Y_b = Y_4 + 0 \cdot cos (d)= 9194455 + 500 (Cos = 9194455 + 60.477= 9194515, 48 1Y_b = 9194515$ | $\frac{1}{12} \left(\frac{1}{12} + \frac{3}{10} + \frac{10}{500} \right)$ $\frac{1}{12} \left(\frac{1}{12} + \frac{3}{10} + \frac{10}{500} \right)$ $\frac{1}{10} \left(\frac{1}{12} + \frac{3}{10} + \frac{10}{500} \right)$ $\frac{1}{10} \left(\frac{1}{10} + \frac{3}{10} + \frac{10}{500} \right)$ $\frac{1}{10} \left(\frac{1}{10} + \frac{3}{10} + \frac{10}{500} \right)$ | | | |
| * Tirtungyah Koordinat th * titlk Ot Xb = Xa 1 0 Sin (d) = 698740 + 500 · (sin = 698740 + 406,329 = 699286,329 Xb = 699286,329 Xb = 699286 = 194455 + 500 (cos = 9194455 + 500 (cos = 9194455 + 60,477 = 919455,481 Yb = 919455 + 50 | $\frac{1}{12} \left(\frac{33}{12} + \frac{3}{26} + \frac{10}{2606} \right)$ $\frac{1}{12} \left(\frac{33}{12} + \frac{3}{26} + \frac{10}{2606} \right)$ $\frac{1}{12} \left(\frac{33}{12} + \frac{3}{12} + \frac{10}{260} \right)$ $\frac{1}{12} \left(\frac{3}{12} + \frac{3}{12} + \frac{10}{260} \right)$ $\frac{1}{12} \left(\frac{3}{12} + \frac{10}{260} + \frac{10}$ | | | |







(3) Sample of Student's Answer to End-term Test

| No. of Concession, Name | |
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| Nome : Adelia Dati | 200 |
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| | and a street in the state of the state |
| a cet mana BA BT de | on BB |
| a con bolloon pri prior | A SECTION OF THE SECT |
| • P8-P7 | - WILLING MELTINE |
| - BA+BB | * 2 BT |
| = 11,50 + 2,50 | = 2 × 7,00 |
| - 14 | 10 A-11 - 10 |
| | FILSKLARS- |
| · P8-P9 | |
| - BA + BB | . 2 BT 150 HOURS) 19 144 to the |
| = 34,40 + 29,60 | , 2 × 32,00 |
| = 69. | ×64 4 6 con 4 50 4 4 4 |
| | = 666019 4 830 (CC38 . 310 0 |
| P8 - P7 | |
| Diketahui | |
| TP = 130 cm = 1/3 m | A cal free + per = it |
| sudut vertikal - 90°2 | 5'76" I. BEOLOGE FOR ANSO |
| = 90°. | - 90°25'76" ASD ONE CLE 0 |
| • 0° 2 | 5'76" |
| (8503.02 P) | Jod's krasking's the PT (Eakers, Date |
| D= 100. (BA -BB) | |
| = 100 . (11,50 - 2,50) | |
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| D cos B = 900 . cor 0 | ,395556 |
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| | Andelin View or |
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| $\sin \beta = \sin 0.395556$ | |
| = 0,3853,213 | Econor Starte |
| A11 - D | Set Lines of Lines |
| AH = D Sin B + BT - TP | 2 |
| = 900 sin 639556 + 7,00 - 11. | • |
| = 900 . 0.3853213 + 5.7 | 18 107.01 17 000000 |
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| = 352,48917 m | 20 |
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| elevasi bak ukur = elevasi A - AH | 18, 9 to U2111 |
| = 412 - (* 39, | 48917 |
| = -348,28917 | |
| | |
| Koordinat titit p7 (686019, 936662 | 0) 13 FAR . |
| | · 34 40 + 29 61 |
| Xb = Xa + D cos & sin d | - () |
| = 686014 + 830,5038, Sin 0 | |
| - 686019 | |
| | |
| The = Ja + Dros B. Cos h | 1 - 42 C C - 41 - 25 - 1 F |
| = 9366620 + 830,5038.1 | DE 28 DE + DURAMENT |
| = 9367450, 5038 | 1 3 B - 1 18 - |
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| Jadi Koordinat filik P7 (686014, | 9367450,5038) |
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| P8- P9 | |
|---------------------|--|
| Diketahui TP = 130 | om= 13m |
| Suciut Vortikal | = 88°5'66" |
| | = 90 - 88° 5' 66" |
| | - 2° 5' 66" |
| | - 236HOL + 476 78146 . (65 217,7776 |
| D = 100 . (BA . BA | MALLEND + ATALYSEAD 0.700 -00 |
| = 100 - (34,40 | - 2960) (3341-41 005-11-0011-001 |
| - 100. 418 | 101 R 105 4-15 D . |
| = 480 m | |
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| Slidiut Vertikal B | · 2' - 5 _ 66 |
| | 60 3600 |
| | - 2 - D. 08333 D. 018333 |
| | = 1,898337 |
| | |
| 0 cos B = 480 | 0. Cos 1, 898 33 7 |
| = 480 | 0. 0,999451 |
| = 41 | 19,73648 |
| | |
| sin B - Sin 1, | ,898337 |
| = 0/03 | 3126 |
| | |
| AH = DSin B | t BT- TP |
| = 480.0 | 1033126 + 32100 - 113 |
| = 15,900 | 48 + 30.7 |
| = 96,600 | 48 m. |
| | |
| elevasi bak uku | r - elevas A - AH |
| | = 4,2 - 46,60048 m |
| | = - 42,40048 m |
| | 15 |
| Koordinat P8 = | (686019, 9366620) |
| xb = xa + D cos | Bsind |
| = 686014 + | 479,73648 Sin (217+ 46 + 40) |
| = 686019 + | 479,73648 STN (217+0,76667+0,0111) |
| = (-86014.+ | 470 72648 600 21 |



| | . D. D.G.A. CR.S. |
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| = 6860 14 + 479,736480,612600 | 1 and the all and shall be |
| = 686019 + (-293, 8868999) | 3 & SUDFOR HODER SHI |
| = 685720, 11316 | S S STREET |
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| - 9366620 + 479,73648. Cos 217 | ,7778 |
| = 9366620 + 479,73648 0,79 | 0 39 26 96 |
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| = 9366240, 8198 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
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