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|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Module designation                                            | <i>Digital Image Processing</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Semester(s) in which the module is taught                     | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Person responsible for the module                             | <i>Bambang SHM, M.Kom.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Language                                                      | <i>Bahasa Indonesia</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Relation to curriculum                                        | <i>Elective course</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Teaching methods                                              | <i>150 minutes lectures and 180 minutes structured activities per week.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Workload (incl. contact hours, self-study hours)              | <i>Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes self-study per week for 16 weeks.</i>                                                                                                                                                                                                                                                                                                                                                                          |
| Credit points                                                 | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Required and recommended prerequisites for joining the module | <i>MAT6307</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Module objectives/intended learning outcomes                  | <p><i>After taking this course the students have ability to:</i></p> <p><i>CO1. Demonstrate collaborative attitude and independence in carrying out individual tasks and group assignments</i></p> <p><i>CO2. Mastering the concepts and basics programming of image processing</i></p> <p><i>CO3. Use Matlab software for image processing</i></p> <p><i>CO4. Develop applications on image processing by applying syntax and appropriate programming rules to solve mathematical problems.</i></p> <p><i>CO5. Make a simple program project</i></p> |
| Content                                                       | <p><i>This course studies how an image is formed, processed, and analyzed to produce information that can be understood by humans. The images referred to here are still images (photos) and moving images. This course is taught using the Project Based Learning and implemented through blended learning. The learning process of this course is carried out in a contextual, collaborative, and interactive manner, with a student-centered approach.</i></p>                                                                                     |
| Examination forms                                             | <p><i>CO1: Attitude assessment is carried out at each meeting by observation and / or self-assessment techniques using the assumption that basically every student has a good attitude.</i></p>                                                                                                                                                                                                                                                                                                                                                       |

| Study and examination requirements | <p>The student is given a value of very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not a component of the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude.</p> <p>The final mark will be weight as follow:</p> <table><tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr><tr><td>1</td><td>CO 1</td><td>a. Presentation<br/>b. Discussion</td><td>Observation</td><td>5%<br/>10%</td></tr><tr><td>2</td><td>CO 2, CO 3, CO 4</td><td>a. Individual assignment<br/>b. Group assignment<br/>c. Quiz<br/>d. Midterm<br/>e. Final test</td><td>Written</td><td>10%<br/>10%<br/>20%<br/>25%</td></tr><tr><td colspan="4">Total</td><td>100%</td></tr></table> | No                                                                                        | CO                   | Assessment Object        | Assessment Technique | Weight | 1 | CO 1 | a. Presentation<br>b. Discussion | Observation | 5%<br>10% | 2 | CO 2, CO 3, CO 4 | a. Individual assignment<br>b. Group assignment<br>c. Quiz<br>d. Midterm<br>e. Final test | Written | 10%<br>10%<br>20%<br>25% | Total |  |  |  | 100% |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------|--------------------------|----------------------|--------|---|------|----------------------------------|-------------|-----------|---|------------------|-------------------------------------------------------------------------------------------|---------|--------------------------|-------|--|--|--|------|
| No                                 | CO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Assessment Object                                                                         | Assessment Technique | Weight                   |                      |        |   |      |                                  |             |           |   |                  |                                                                                           |         |                          |       |  |  |  |      |
| 1                                  | CO 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | a. Presentation<br>b. Discussion                                                          | Observation          | 5%<br>10%                |                      |        |   |      |                                  |             |           |   |                  |                                                                                           |         |                          |       |  |  |  |      |
| 2                                  | CO 2, CO 3, CO 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | a. Individual assignment<br>b. Group assignment<br>c. Quiz<br>d. Midterm<br>e. Final test | Written              | 10%<br>10%<br>20%<br>25% |                      |        |   |      |                                  |             |           |   |                  |                                                                                           |         |                          |       |  |  |  |      |
| Total                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                           |                      | 100%                     |                      |        |   |      |                                  |             |           |   |                  |                                                                                           |         |                          |       |  |  |  |      |
| Reading list                       | <p>1. Rafael C. Gonzalez, Richard E. Woods, 2011, Digital Image Processing, Third Edition, Pearson</p> <p>2. Pulung NA, T Sutojo, Muljono, 2017, Pengolahan Citra Digital, Penerbit Andi</p> <p>3. Jubile Enterprise, 2020, Ptyhon untuk Membuat Game hingga Face Detector, Elex Media Komputindo</p> <p>4. Hanna AP, 2019, Pemrograman Python untuk Penanganan Big Data, Penerbit Andi</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                           |                      |                          |                      |        |   |      |                                  |             |           |   |                  |                                                                                           |         |                          |       |  |  |  |      |