## Module Description of Introduction to Digital Image Processing

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| Module Name | : | Introduction to Digital Image Processing |
| Module Level | : | Bachelor |
| Code, if applicable | : | 23H01130903 |
| Subtitle, if applicable | : | - |
| Courses, if applicable | : | Introduction to Digital Image Processing |
| Semester(s) in which the module is taught | : | 5 (Fifth Semester) |
| Module coordinator(s) | : | Prof. Dr. Eng. Mawardi, S.Si., M.Si. |
| Lecturer(s) | : | Prof. Dr. Eng. Mawardi, S.Si., M.Si. |
| Language | : | Bahasa (Indonesian language) |
| Relation to curriculum | : | Elective course in third year for Bachelor degree in Mathematics and Set Theory |
| Type of teaching/teaching method | : | Lecturing, Small Group Discussion, Cooperative Learning, Self-Directed Learning |
| Contact hours | : | 150 minutes lectures per week, 180 minutes structured activities per week, and 180 minutes independent study per week |
| Workload | : | Total workload is 135 hours per semester which consists of 40 hours per semester for Learning and Teaching, 47.5 hours per semester for Self-Study, and 47.5 hours per semester for Structured Works |
| Credit points | : | 3 (4.8 ECTS) |
| Requirements according to the examination regulations | : | Students are required to attend at least 80% of the total meetings which is recorded via the attendance menu at https://sikola-v2.unhas.ac.id/, complete all mandatory assignments, and obtain permission from the lecturer to participate in the written examination. |
| Recommended prerequisites | : | Students have completed and taken the exams for Basic Mathematics II |
| Module objectives/intended learning outcomes | : | After the completion of this module, the student will be able to:<br>CLO 1. Understand the definition of metric spaces and determine their completeness;<br>CLO 2. Understand the definition of convolution and correlation and apply them in image processing;<br>CLO 3. Process or transform images using Fourier and discrete Wavelet transforms;<br>CLO 4. Demonstrate image restoration and provide simple examples;<br><br>The following is the mapping of the ILO and the CLO of this course: |

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| | | <table><tr><th></th><th>ILO 1</th><th>ILO 6</th><th>ILO 7</th></tr><tr><td>CLO 1</td><td>X</td><td></td><td></td></tr><tr><td>CLO 2</td><td>X</td><td>X</td><td></td></tr><tr><td>CLO 3</td><td></td><td>X</td><td></td></tr><tr><td>CLO 4</td><td></td><td></td><td>X</td></tr></table> |
| Content | : | This elective course is designed to provide students with additional skills in digital image processing, which are widely required in various applications such as healthcare, broadcasting, and other fields. The course covers the fundamentals of digital image processing, image transformation, spatial filtering, frequency domain processing, Fourier and Wavelet transforms, image restoration, color image processing, and image segmentation. |
| Study and examination requirements | : | Study and examination requirements:<br>● Students must attend 15 minutes before the class starts.<br>● Students must switch off all electronic devices.<br>● Students must inform the lecturer if they will not attend the class due to sickness, etc.<br>● Students must submit all class assignments before the deadline.<br>● Students must attend the exam to get final grade. |
| Exams and assessment formats | : | Participants are marked based on their performance in theory: Report (60%), Assignments (20%), Presentation (20%).<br><br>Assignments assess student's ability to apply concepts independently, while Reports measure analytical and writing skills. Presentations evaluate oral communication, organization of ideas, and confidence in delivering academic material. Altogether, these components account for 100% of the final grade.<br><br>Students are marked based on their percentage of points obtained and based on the following grade scale:<br><table><tr><th>Percentage of Achievement</th><th>Grade</th><th>Conversion Value</th></tr><tr><td>85 – 100</td><td>A</td><td>4.00</td></tr><tr><td>80 - <85</td><td>A-</td><td>3.75</td></tr><tr><td>75 - < 80</td><td>B+</td><td>3.5</td></tr><tr><td>70 - < 75</td><td>B</td><td>3.0</td></tr><tr><td>65 - < 70</td><td>B-</td><td>2.75</td></tr><tr><td>60 - < 65</td><td>C+</td><td>2.5</td></tr><tr><td>50 - < 60</td><td>C</td><td>2.00</td></tr><tr><td>40 - < 50</td><td>D</td><td>1.00</td></tr><tr><td>< 40</td><td>E</td><td>0.00</td></tr></table> |
| Reading list | : | 1. Gonzalez, R.C., and Woods, R.E., 1992, *Digital Image Processing*, Addison-Wesley. |

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| | | 2. Gerhard X. Ritter & Joseph N. Wilson, 1996, *Handbook of Computer Vision Algorithms in Image Algebra*, CRC Press.<br>3. Wijaya, M. Ch., & Prijono, Agus, 1997, *Digital Image Processing Using Matlab*, Informatika, Bandung. |
| Last revision date | : | July 28th, 2025 |