



**UNIVERSITAS NEGERI YOGYAKARTA**  
**POSTGRADUATE DEPARTMENT OF ELECTRONICS AND**  
**INFORMATICS ENGINEERING EDUCATION**

Jalan Colombo Nomor 1 Yogyakarta 55281  
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**Master of Education in Electronics and Informatics Engineering**

**MODULE HANDBOOK**

Module name:	Multidimensional Signal Processing Techniques
Module level, if applicable:	Postgraduate
Code:	PTI8221
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	2 <sup>th</sup>
Module coordinator:	Dr. Aris Nasuha, S.Si.,M.T.
Lecturer(s):	Dr. Aris Nasuha, S.Si.,M.T.
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective courses
Teaching format / class hours per week during the semester:	100 minutes lectures and 120 minutes structured activities per week.
Workload:	Total workload is 90 hours per semester which consists of 100 minutes lectures, 120 minutes structured activities, and 120 minutes self-study per week for 16 weeks.
Credit points:	2
Prerequisites course(s):	-
Course outcomes:	After taking this course students have the ability to: CO1. Realization of multidimensional discrete signals and systems. CO2. Understand The multidimensional discrete Fourier analysis (DFT, FFT) and discrete cosine transformation (DCT). CO3. Make 2D Finite Impulse Response (FIR) filters, 2D Infinite Impulse Response (IIR) filters and 2D filter banks. CO4. Understand theory and discrete wavelet transform.



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Content:	<p>The Multidimensional Signal Processing Engineering course discusses multidimensional signal theory and algorithms, multidimensional discrete systems and transformations and the concept of discrete-time LTI systems, multidimensional system applications in the image and video field.</p>																							
Study/exam achievements:	<p>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. 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 border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #cccccc;"> <th style="width: 5%;">No</th> <th style="width: 15%;">CO</th> <th style="width: 35%;">Assessment Object</th> <th style="width: 25%;">Assessment Technique</th> <th style="width: 20%;">Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="5">1</td> <td rowspan="5">CO 1- CO 4</td> <td>a. Individual assignment</td> <td rowspan="5">Assesement Test</td> <td>15%</td> </tr> <tr> <td>b. Group assignment</td> <td>15%</td> </tr> <tr> <td>c. Quiz</td> <td>10%</td> </tr> <tr> <td>d. Mid Exam</td> <td>30%</td> </tr> <tr> <td>e. Final Exam</td> <td>30%</td> </tr> <tr> <td colspan="4">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO 1- CO 4	a. Individual assignment	Assesement Test	15%	b. Group assignment	15%	c. Quiz	10%	d. Mid Exam	30%	e. Final Exam	30%	Total				100%
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		c. Quiz		10%																				
		d. Mid Exam		30%																				
		e. Final Exam		30%																				
Total				100%																				
Forms of media:	Board, LCD Projector, Laptop/Computer																							
Literature:	<ol style="list-style-type: none"> <li>1. John W. Woods, "Multidimensional Signal, Image, and Video Processing and Coding, Rensselaer Polytechnic Institute, Troy, New York, 2012;</li> <li>2. Saeed V. Vaseghi, Multimedia Signal Processing, Joh Wiley &amp; sons Ltd., England, 2007;</li> <li>3. A. Smirnov, Processing of Multidimnsional Signal, Springer; 1999th edition (March 9, 2013)</li> <li>4. Dan E. Dudgeon and Russel M. Mersereau, Multidimensional Digital Signal Processing (Prentice-hall Signal Processing Series), Prentice Hall (September 1, 1983).</li> <li>5. John Wiley and Sons Ltd, One-and-Multidimensional Signal Processing: Algorithms and Applications in</li> </ol>																							



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	Image Processing, Wiley; 1st edition (December 19, 2000) 6. Risanuri Hidayat, Teknik Pengolahan Isyarat Digital, Sarifuddin Madenda, Pengolahan Citra & Video Digital, Erlangga
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**PLO and CLO mapping**

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1					✓					
CO2									✓	
CO3										✓
CO4						✓				