Module designation	*Coding Theory*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Lusi Harini S.Si., M.Sc.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Elective course*
Teaching methods	*150 minutes lectures and 180 minutes structured activities per week.*
Workload (incl. contact hours, self-study hours)	*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.*
Credit points	*3*
Required and recommended prerequisites for joining the module	*MAT6320 - Introduction to Ring Theory*
Module objectives/intended learning outcomes	*CO 1: Appreciating the work and opinions of other groups in conveying ideas in writing and orally* *CO 2: Demonstrating a collaborative attitude and independence in carrying out independent and group tasks* *CO 3: Communicating ideas for solving mathematical problems in writing and orally* *CO 4: Explaining the basic concepts of error correction code theory and being able to apply them to solve related problems.* *CO 5: Proving properties, lemmas, and theorems related to basic concepts about finite fields, vector spaces over finite fields, ideals of a ring, linear codes including generator matrices, dual codes, Hamming codes, perfect codes, parity-check matrices, single error correction code decoding, standard array decoding, cyclic codes to be applied in logical reasoning* *CO 6: Using algorithms to solve problems related to linear codes including generator matrices, dual codes, Hamming codes, perfect codes, parity-check matrices, single error correction code decoding, standard array decoding, and cyclic codes.*

<table>
<tr><td>Content</td><td>This course covers the basic concepts of error correction coding, including basic concepts of finite fields, vector spaces over finite fields,
ideals of a ring, linear codes including generator matrices, dual codes, Hamming codes, perfect codes, parity-check matrices, single-error correction code decoding, standard array decoding, and cyclic codes.</td></tr>
<tr><td>Examination forms</td><td>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.</td></tr>
<tr><td>Study and examination requirements</td><td>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.

The final mark will be weight as follow:
<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
b. Discussion</td><td>Observation</td><td>5%
10%</td></tr>
<tr><td>2</td><td>CO 2, CO 3, CO 4</td><td>a. Individual assignment
b. Group assignment
c. Quiz
d. Midterm
e. Final test</td><td>Written</td><td>10%
10%
20%
20%
25%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Reading list</td><td>1. Vanstone, S.A, and Oorschot, P.C.V. 1989. An Introduction to Error Correcting Codes with Applications. Kluwer Academic Publisher
2. Ling, S. and Xing, C. 2004. Coding Theory: A First Course. Cambridge: Cambridge University Press.
3. Hill, R. 1986. A First Course In Coding Theory. Oxford: Clarendon Press.</td></tr>
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