MODULE HANDBOOK

Modul Name	**Mechanism of Organic Reaction**
Module Level	Bachelor
Abbreviation, if applicable	**3074212045**
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	5rd/ Third year
Modul coordinator(s)	Dr. Ismono, M.S.
Lecturer(s)	Dr. Ismono, M.S. Prof. Dr. Suyatno, M.Si. Prof. Dr. Tukiran, M.Si.
Language	Indonesian Language
Classification within the curriculum	Compulsory
Teaching format/class hours per week during the semester	2 hours lectures (50 min / hour)
Workload	2 hours lecture, 2 hours structured activities, 2 hours individual activities, 14 week a semester, and total 84 hours a semester~ 3.18 ECTS *
Credit point	2 SCU (2 x 1.59 = 3.18 ECTS)
Requirement	Monofunctional Organic Compound and Polyfunctional Organic Compound
Learning Outcomes	CLO 1: Mastering the concept of reaction mechanism and able to analyze the products that may occur in a reaction and can determine the dominant product (major products), CLO 2: Able to apply the concept of reaction mechanism to explain reaction phenomena in daily life and industry CLO 3: Able to make the right decisions in order to solve problems based on the results of the analysis of information and data related to the reaction mechanism CLO 4: Having a responsible attitude and able to work with the team in completing tasks related to reaction mechanisms and able to communicate both orally and in writing in explaining the role of reaction mechanisms in predicting an organic chemical reaction product..
Content	Course materials discuss the understanding of intra molecular properties: electrical effect consist of inductive effect, mesomeric effect, electromeric effect as well as steric effect consist of steric hyndrance and streric assistence. Determination of organic reaction mechanism by non kinetic: product identification, intermediate testing, trapping inermediate, catalys effect, crossover experiment, isotop labeling, stereochemsstry study, limiting reaction, and detection of intremediate physical propetries. Mechanism of nucleophylic substitution: SN-1, SN-2, and SNi. Mechanism of elimination reaction: E-1 and E-2. Mechanism of free radical reaction: free radical substitution and free radical addition. Mechanism of addition reaction: Electrophylic addition, nucleophylic addition, simultaneus addition (pericyclic reaction). Mechanism of aromatic electrophylic substitution: halogenation, alkylation, acylation, suphonation, nitration, as well as aromatic nucleophylic substitution. Mechanism of condensation reaction: aldol condensation, Claisen condensation, Knoevenagel condensation, Cannizaro reaction, and Robinson annelation.

<table>
<tr><td>Study/exam achievements</td><td>Students are considered to be competent and pass if at least get 55

Final score is calculated as follows: 20% Participation + 30% Assignment + 20% Midle Exam (UTS) + 30% Final Exam (UAS)

Table index of graduation:

<table>
<tr><th>Interval Score</th><th>Index</th></tr>
<tr><td>0 - 39,999</td><td>E</td></tr>
<tr><td>40 - 54,999</td><td>D</td></tr>
<tr><td>55 - 59,999</td><td>C</td></tr>
<tr><td>60 - 64,999</td><td>C+</td></tr>
<tr><td>65 - 69,999</td><td>B-</td></tr>
<tr><td>70 - 74,999</td><td>B</td></tr>
<tr><td>75 - 79,999</td><td>B+</td></tr>
<tr><td>80 – 84,999</td><td>A-</td></tr>
<tr><td>85 – 100</td><td>A</td></tr>
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</td></tr>
<tr><td>Forms of media</td><td>Computer, LCD, White board</td></tr>
<tr><td>Learning Methods</td><td>Lectures, discussion, assignment</td></tr>
<tr><td>Literatur</td><td>1. Ismono, Suyatno, Tukiran (2018). Kimia Organik Lanjut: Mekanisme Reaksi Organik. Surabaya: Unesa University Press
2. Smith, M.B. and March, J. (2007) March’s Advanced Organic Chemistry, Reaction, Mechanism, and Structure, 6th edition, New York: Jonh Wiley and Son, Inc.
3. Fessenden RJ and JS. Fessenden (1994) Kimia Organik Jilid 1 dan 2, Edisi ketiga, Alih bahasa Oleh A Hadyana Pudjaatmaka, Jakarta: Erlangga.
4. Carey, F.A. (2000). Organic Chemistry. 4rd Ed. New York: McGraw-Hill Companies, Inc.</td></tr>
<tr><td>Notes</td><td>1. This course can be conducted into two parallel classes with the same materials and ingredients but given the same test in the same time with same lecturers.
2. This course is a deepening of the main matter contained in the Monofunctional Organic Compound and Polyfunctional Organic Compound.
3. Total ECTS = {(total hours workload x 50 min) / 60 min } / 25 hours
Each ECTS is equals with 25 hours</td></tr>
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