# Module Descriptions

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| Module designation | Interdisciplinary science<br><br>*Sains interdispliner* |
| Course Code | 8420804200 |
| Semester/Term | 3nd Semester |
| Person responsible for the module | Dr. Mohammad Budiyanto, S.Pd., M.Pd.<br>Wahyu Budi Sabtiawan, S.Si., M.Pd., M.Sc.<br>Fasih Bintang Ilhami, S.Kep., M.T., Ph.D.<br>Dr. Sapti Puspitarini, S.Si., M.Si |
| Language | Bahasa Indonesia (Indonesian language) |
| Relation to curriculum | Compulsory course |
| Teaching methods | Lecture |
| Workload | 3 x 50 minutes lectures, 3 x 60 minutes structured activity,<br>3 x 60 minutes individual activity, 14 weeks per semester,<br>90 total hours per semester ~ 4.77 ECTS** |
| Credit Point | 3 CU(4.77 ECTS) |
| Required and recommended prerequisites for joining the module | |
| Module Objectives/intended learning outcomes | After taking this course, students will be:<br>1. Analyze factors that influence photosynthesis efficiency, such as light intensity, $CO_2$ concentration, temperature, and water availability.<br>2. Design and conduct simple experiments to test the effect of environmental variations on the rate of photosynthesis and its impact on plant growth.<br>3. Evaluate the application of technology or cultivation strategies that can optimize the photosynthesis process in the context of sustainable agriculture.<br>4. Analyze the impact of chemical and radioactive compound decay on plant health, soil, water, and food safety.<br>5. Identify the types of materials that decay in agricultural environments, such as pesticide and herbicide residues.<br>6. Evaluate mitigation policies and strategies related to chemical or radioactive material decay in an effort to support safe and sustainable agriculture.<br>7. Analyze the role of fermentation in the production of various food and non-food products, such as yogurt, tempeh, fermented drinks, bioethanol, and organic fertilizer. |

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<tr><td></td><td>8. Design and conduct simple fermentation experiments to produce specific products and optimize fermentation results.<br>9. Interpret the results of poster-making and fermentation analysis assignments based on local wisdom and relate them to SDGs issues.<br>10. Explain the concept of free radicals and the mechanism of action of DPPH compounds as an indicator of antioxidant activity.<br>11. Describe the role of free radicals in the pathogenesis of various diseases and the importance of antioxidants in medical therapy.<br>12. Analyze DPPH test data to evaluate the antioxidant potential of various samples (e.g., plant extracts, bioactive compounds).</td></tr>
<tr><td>Content</td><td>The Interdisciplinary Science course is a compulsory third-semester course designed to integrate concepts from physics, chemistry, biology, mathematics, and technology to analyze real-world phenomena using a STEM approach. The course emphasizes critical, systematic, collaborative, and innovative thinking skills through a Project-Based Learning (PjBL) model to support the achievement of the Sustainable Development Goals (SDGs).<br>Thematically, this course covers four main areas of study: photosynthesis and sustainable agriculture, the decay of chemicals and radioactive materials in the environment, fermentation based on local wisdom, and free radicals and antioxidants in medical science.</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>Students are eligible for the final semester test if they have at least 75% attendance in class.<br><br>The final grade (NA) is calculated based on the following ratio:<br><br>
<table>
<tr><td>Assessment Components</td><td>Percentage of contribution</td></tr>
<tr><td>Participation</td><td>20%</td></tr>
<tr><td>Assignment</td><td>30%</td></tr>
<tr><td>Mid-semester test</td><td>20%</td></tr>
<tr><td>Final semester test</td><td>30%</td></tr>
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<br>Grade Conversion of 0-100 scale into 0-4 scale is set as below:<br><br>
<table>
<tr><td>Letter</td><td>Number</td><td>Grade interval</td></tr>
<tr><td>A</td><td>4.00</td><td>85 ≤ A ≤ 100</td></tr>
<tr><td>A-</td><td>3.75</td><td>80 ≤ A- <85</td></tr>
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|---|---|---|---|
| | B+ | 3.50 | 75 ≤ B+ < 80 |
| | B | 3.00 | 70 ≤ B < 75 |
| | B- | 2.75 | 65 ≤ B- < 70 |
| | C+ | 2.50 | 60 ≤ C+ < 65 |
| | C | 2.00 | 55 ≤ C < 60 |
| | D | 1.00 | 40 ≤ D < 55 |
| | E | 0.00 | 0 ≤ E < 40 |
| Reading List | 1. Handbook of Photosynthesis Second Edition. Taylor & Francis 2004<br>2. Human Body Decomposition 1st Edition. Elsevier 2016<br>3. Handbook of Fermented Functional Foods. Second Edition<br>4. E-Handbook on The Sustainable Development Goals Indicators<br>5. RADIOLOGICAL HEALTH E-HANDBOOK<br>6. Radiation Safety Manual E-Handbook | | |