



UIN SUNAN KALIJAGA YOGYAKARTA

FACULTY OF SCIENCE AND TECHNOLOGY

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Undergraduate Programme in Physics

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MODULE HANDBOOK

| | |
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| Module Name | Seismology |
| Module level, if applicable | Bachelor |
| Code, if applicable | FIS424029 |
| Subtitle, if applicable | - |
| Courses, if applicable | Seismology |
| Semester(s) in which the module is taught | 6 th (sixth) |
| Person responsible for the module | Andi, M.Sc. |
| Lecturer(s) | Andi, M.Sc |
| Language | Indonesia |
| Relation to curriculum | Elective course in the third year (6 th semester) Bachelor Degree |
| Type of teaching, contact hours | 150 minutes lectures and 180 minutes structured activities per week. |
| Workload | Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam |
| Credit points | 3 |
| Requirements according to the examination regulation | Minimum attendance 75% All assignments submitted Attendance on time |
| Recommended prerequisites | No prerequisites stated on |
| Module objectives/intended learning outcomes | After completing this course, the students: CO 1. Formulate physical quantities in seismology to interpret earthquake phenomena and earthquake mitigation measures. CO 2. Analyze the physical parameters in seismology used to explain earthquake phenomena. CO 3. Formulate the most appropriate branch of seismology to explain the earthquake phenomenon and secondary disasters studied. |
| Content | <ol style="list-style-type: none"> 1. Overview of seismological models (rope waves, stress and strain) 2. History of seismology, earthquakes and types of earthquakes 3. Seismic waves (body wave and surface wave) 4. Earthquake parameters 5. Earthquake intensity and energy 6. Earthquake localization 7. Focal mechanism and moment tensor 8. Maximum ground acceleration (PGA) and Shake map 9. Seismicity and seismicity mapping 10. Liquefaction 11. Tsunami and tsunami modelling |

| Study and examination requirements and forms of examination | The final mark will be weighted as follows: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---------------------|---|---------------------|--------------|-------------------|--------------|---|----------------------|-----|---|---|-----|---|----------|----|---|----------|----|---|----------|-----|---|----------|---|---|----------|----|----|----------|----|---|----------|---|----|----------|---|---|----------|----|----|-----|---|--|
| | <table border="1"> <thead> <tr> <th>NO</th> <th>Assessment methods (components, activities)</th> <th>Weight (percentage)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Final Examination</td> <td>40%</td> </tr> <tr> <td>2</td> <td>Mid-Term Examination</td> <td>30%</td> </tr> <tr> <td>3</td> <td>Class Activities : Quiz, Homework, etc.</td> <td>30%</td> </tr> </tbody> </table> | NO | Assessment methods (components, activities) | Weight (percentage) | 1 | Final Examination | 40% | 2 | Mid-Term Examination | 30% | 3 | Class Activities : Quiz, Homework, etc. | 30% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NO | Assessment methods (components, activities) | Weight (percentage) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Final Examination | 40% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Mid-Term Examination | 30% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Class Activities : Quiz, Homework, etc. | 30% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | The final assessment is expressed in the form of a letter value converted from a number value with the following categories: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>NO</th> <th>Number Value</th> <th>Letter Value</th> <th>NO</th> <th>Number Value</th> <th>Letter Value</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>≥ 95</td> <td>A</td> <td>7</td> <td>65-69.99</td> <td>B/C</td> </tr> <tr> <td>2</td> <td>90-94.99</td> <td>A-</td> <td>8</td> <td>60-64.99</td> <td>C+</td> </tr> <tr> <td>3</td> <td>85-89.99</td> <td>A/B</td> <td>9</td> <td>55-59.99</td> <td>C</td> </tr> <tr> <td>4</td> <td>80-84.99</td> <td>B+</td> <td>10</td> <td>50-54.99</td> <td>C-</td> </tr> <tr> <td>5</td> <td>75-79.99</td> <td>B</td> <td>11</td> <td>55-34.99</td> <td>D</td> </tr> <tr> <td>6</td> <td>70-74.99</td> <td>B-</td> <td>12</td> <td><35</td> <td>E</td> </tr> </tbody> </table> | NO | Number Value | Letter Value | NO | Number Value | Letter Value | 1 | ≥ 95 | A | 7 | 65-69.99 | B/C | 2 | 90-94.99 | A- | 8 | 60-64.99 | C+ | 3 | 85-89.99 | A/B | 9 | 55-59.99 | C | 4 | 80-84.99 | B+ | 10 | 50-54.99 | C- | 5 | 75-79.99 | B | 11 | 55-34.99 | D | 6 | 70-74.99 | B- | 12 | <35 | E | |
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| Media employed | White-board, Lcd Projector, e-learning (https://daring.uin-suka.ac.id/) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reading list | <ol style="list-style-type: none"> Bormann Peter. IASPEI New Manual of Seismological Observatory Practice (NMSOP) Volume I. GeoForschungsZentrum Postdam (GFZ). Germany. 2002 Ibrahim Gunawan, Subardjo. Pengetahuan Seismologi. Badan Meteorologi dan Geofisika. Jakarta. 2005 Peter M Shearer, 2009, Introduction to Seismology Second Edition, University of California, San Diego Sunarjo, Gunawan, Taufik M, Pribadi S. Gempabumi Edisi Populer. Pusat Penelitian dan Pengembangan BMKG. Jakarta. 2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PLO and CO Mapping

| | PLO 1 | PLO 2 | PLO 3 | PLO 4 | PLO 5 | PLO 6 | PLO 7 | PLO 8 | PLO 9 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| CO 1 | | | √ | | | | | √ | √ |
| CO 2 | | | √ | | | | | √ | √ |
| CO 3 | | | √ | | | | | √ | √ |