**Module Handbook**

| | |
|---|---|
| Courses | Nuclear Physics |
| Programme | Undergraduate Program (S-1)/Bachelor |
| Code | 8420304068 |
| Semester | 7 |
| Group of Course Coordinator | Prof. Dr. Wasis, M.Si. |
| Lecturers | 1. Prof. Dr. Wasis, M.Si.<br>2. Tjipto Prastowo, Ph.D.<br>3. Mita Anggaryani, M.Pd.<br>4. Lydia Rohmawati, M.Si |
| The language used | Indonesian |
| Classification in the curriculum | Compulsory Courses |
| Learning format / number of class hours per week | Per-week consists of:<br>3 hours face to face<br>(1 hour face to face = 50 minutes) |
| Load | 3 hours face to face, 3 hours structured assignments, 3 learn to be independent per-week, for 15 weeks = a total of 135 hours face-to-face / semester |
| Credit Unit | 3 CU = 4.77 ECTS |
| Precondition | Modern Physics, Quantum Physics, Statistical physics |
| Course Learning Outcome | 1. Creating an independent and honest character in carrying out Core Physics lecture tasks.<br>2. Mastering a structured study of the concept of the atomic nucleus in various aspects from the history of the discovery of the atomic nucleus to the opportunity to apply knowledge of nuclear technology and nuclear waste management.<br>3. Understand the different views on nuclear technology and the search for alternative energy sources based on core reactions.<br>Mastering the technique of making radioisotope application posters in various fields of life. |
| Courses content | Nuclear Physics studies about the history of the discovery and the concept of atomic physics, the nature, and behavior of the atomic nucleus, the stability of the nucleus and the binding energy of the nucleus, the deuteron as the simplest nucleus, the energy levels of the nucleus, various models of the nucleus, the radioactivity of the nucleus, the mechanism of radioactive nucleus decay, calculations. Q-value for various types and conditions of core reactions, building blocks of matter, elementary particle 'families', fundamental conservation principles in the world of elementary particles, the birth of mesons, fission and fusion reactions, alternative energy sources based on fusion reactions , nuclear technology, and management of nuclear waste, and radioisotope applications in many areas of life. |
| Attributed soft skill | scientific report<br>public speaking<br>team work |

<table>
<tr><td>Learning achievement (assesment)</td><td>Students are considered competent and pass if they get at least a minimum test score of 68 for mid test (SS) and final exam (S), assignments (A), and participation (P), where the final grade (FG) is calculated following the formula:<br>Final Grade of the course (FG) = 20% P + 30% A + 20% SS + 30%S<br><br>Convert the 0-100 scale value to a 0-4 scale and the letters are arranged as follows:<table><tr><th>Letter</th><th>Number</th><th>Interval</th></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><tr><td>B+</td><td>3,50</td><td>75 ≤ B+ < 80</td></tr><tr><td>B</td><td>3,00</td><td>70 ≤ B < 75</td></tr><tr><td>B-</td><td>2,75</td><td>65 ≤ B- < 70</td></tr><tr><td>C+</td><td>2,50</td><td>60 ≤ C+ < 65</td></tr><tr><td>C</td><td>2,00</td><td>55 ≤ C < 60</td></tr><tr><td>D</td><td>1,00</td><td>40 ≤ D < 55</td></tr><tr><td>E</td><td>0,00</td><td>0 ≤ E < 40</td></tr></table></td></tr>
<tr><td>Media form</td><td>1. Power point file<br>2. E-book file</td></tr>
<tr><td>References</td><td>1. Prastowo, T. 2015. Lecture Notes on Nuclear Physics. Unpublished work.<br>2. Abdullah, K. M. S. 2014. Fundamentals of Nuclear Physics. Kurdistan Region, Iraq: University of Duhok Publication.<br>3. Bortz, A. B. 2007. Physics: decade by decade. New York, US: Facts on File Inc.<br>4. Serway, R. A., Moses, C. J., and Moyer, C. A. 2005. Modern Physics. Belmont, US: Thomson Brooks/Cole.<br>5. Beiser, A. 2003. Concepts of Modern Physics. New York, US: McGraw-Hill Companies</td></tr>
<tr><td>Note</td><td></td></tr>
</table>