UIN SUNAN KALIJAGA YOGYAKARTA
FACULTY OF SCIENCE AND TECHNOLOGY
Jl. Marsda Adisucipto Yogyakarta 55281, Telp:+62274519739, Fax:+62274540971,
E-mail: fst@uin-suka.ac.id, website: http://saintek.uin-suka.ac.id/

Undergraduate Programme in Physics

Telp : +62274 519739
Email : :fisika@uin-suka.ac.id
Website : http://fisika.uin-suka.ac.id/

MODULE HANDBOOK

Module Name	Neural System Biophysics
Module level, if applicable	Bachelor
Code, if applicable	FIS425023
Subtitle, if applicable	-
Courses, if applicable	Neural System Biophysics
Semester(s) in which the module is taught	5th (fifth)
Person responsible for the module	Anis Yuniati, M.Si., Ph.D.
Lecturer(s)	Anis Yuniati, M.Si., Ph.D.
Language	Indonesia
Relation to curriculum	elective course in the third year (5th 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	Minimum attendance 75% All assignments submitted Attendance on time
Recommended prerequisites	-
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. Able to provide an overview of the structure, connections, and subcellular components of the nervous system CO 2. Able to find applications of neuroscience in various fields CO 3. Able to analyse the results of current research in the field of neuroscience
Content	1. Introduction to Neuroscience: Electrical signals in the Brain, Neurotransmitters, Gap Junctions 2. Basic Principles of Neuroscience : Nervous system, Growth and Development of Brain Function 3. Structure and Architect of the nervous system: Basic structure of nerve cells, Supporting components of nerve cells, Types of nerve cells, Classification of nerve cells, Interactions between different types of nerve cells 4. Circuits and Connections of the nervous system : Anatomy of the nervous system, Interactions between neurons, Dynamic picture of brain synapses 5. Subcellular components of nerve cells : Neuron structure, Protein synthesis in neural tissue, Supporting tissue, Regeneration of the nervous system

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<table>
<tr><td></td><td>
6. Physiology of the nervous system : Action potentials, Nerve cell circuitry, Structural organisation of the nervous system, Complexity of brain organisation and networks
7. Development and growth of the nervous system
8. Applications of neuroscience in various fields: medicine, modern imaging techniques, clinical neuroscience, advances in modern biology, brain supercomputers, psychology, in people's lives.
9. Current research in neuroscience
</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>
The final mark will be weighted as follows:
<table>
<tr><th>NO</th><th>Assessment methods (components, activities)</th><th>Weight (percentage)</th></tr>
<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>
</table>

The final assessment is expressed in the form of a letter value converted from a number value with the following categories:

<table>
<tr><th>NO</th><th>Number Value</th><th>Letter Value</th><th>NO</th><th>Number Value</th><th>Letter Value</th></tr>
<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>
</table>
</td></tr>
<tr><td>Media employed</td><td>Whiteboard, markers, LCD projector, laser pointer, power point presentation, laptop/PC</td></tr>
<tr><td>Reading list</td><td>
1. Biophysical Neural Networks, R.R.Poznanski, Mary Ann Liebert Inc
2. Neuronal Dynamics, W.Gerstner, W.M.Kistler, R.Naud, L.Paninski, Cambridge University Press
3. Introduction to Biophysics, Bert Kappen, Radboud University Nijmegen
4. Ilmu Neurosains Modern, Taruna Ikrar, Pustaka Pelajar
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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							√		