

Module Description: Basic Biomedical Science

Module designation	Course Module
Semester(s) in which the module is taught	I
Person responsible for the module	<p>Andi Baso Tombong, S.Kep., Ns., M.ANP Dr. Yuliana Syam, S.Kep.,Ns.,M.Si Dr. Takdir Tahir, S.Kep.,Ns.,M.Kes Syahrul Said, S.Kep.,Ns.,M.Kes.,PhD Dr. Kadek Ayu Erika, S.Kep., Ns., M.Kes Dr. Andina Setyawati, S.Kep.,Ns., M.Kep.,Sp.Kep.MB Dr. dr. Sitti Rafiah, S.Ked., M.Si dr. M. Aryadi Arsyad, M.BM.Sc., PhD dr. Andi Ariyandy dr. Qushay Umar Malinta, M.Sc dr. Nikmatia Latief, M.Kes., Sp.Rad dr. Muh.Iqbal Basri, M.Kes dr. Asty Amalia, M.Med.Ed dr. Nirwana Fitriani Walenna, S.Ked dr. Rizki Darmawan dr. Ilhamuddin, M.Si</p>
Language	Bilingual, Bahasa Indonesia and English
Relation to Curriculum	This course is a compulsory course and offered in the 1 st semester.
Teaching Methods	<p>Teaching methods used in this course are:</p> <ul style="list-style-type: none"> - Lecture (i.e., Small Group Discussion, Role-Play & Simulation Problem Based Learning, Discovery Learning, Collaborative Learning, Contextual Learning, Project Based Learning, Case Study, and Video-Based Learning) - Structured assignments (i.e., Case-Study report) - Practice in anatomy and physiology laboratory <p>The class size for lecture is approximately 50 students, while for practicum is about 15 -20 students per session per lecturer.</p> <p>Contact hours for lecture is 53,33 hours, assignments are 64 hours, and practice are 45,33 hours.</p>
Workload (incl. contact hours, self-study hours)	<p>For this course, students are required to meet a minimum of 181,33 hours in one semester, which consist of:</p> <ul style="list-style-type: none"> - 53,33 hours for lecture, - 64 hours for structured assignments, - 64 hours for independent study, - 45,33 hours for practice.
Credit points	5 credit points (equivalent with 7.56 ECTS)
Required and recommended prerequisites for joining the module	This course has no prerequisite

<p>Module objectives/intended learning outcomes</p>	<p>After completing the course and being given cases related to biomedical science, students will be:</p> <p>Knowledge:</p> <p>CLO1: capable of applying the principles of science as an approach to solving nursing problems (K)</p> <p>CLO2: capable of applying anatomical and physiological concepts as an approach to solving nursing problems (K).</p> <p>Skill:</p> <p>CLO3: capable of demonstrating body anatomy and practicing physiological measurements on various human body systems. (S2).</p>
<p>Content</p>	<p>Students will learn about:</p> <ul style="list-style-type: none"> - Structure, Types of Cells and Viruses, Microorganisms, Chromosomes, Genes, Nucleic Acids, Principles of Genetic Inheritance, DNA and RNA Replication - Atoms, Ions, Electric Charge, Potential, Current, Electric Resistance, Potential in Various Cellular Conditions (Signal Transduction, Resting Membrane Potential, Depolarization, Hyperpolarization, Action Potential), Impulse Conduction within the Body, Synaptic Transmission: End Plate Potential, Formation of Excitatory Post-Synaptic Potential (EPSP) and Inhibitory Post-Synaptic Potential (IPSP), Electrical Applications in Humans, Fluids, Liquids, Gases, Temperature, Heat, Electromagnetic Radiation Concepts, and Forces and Mechanics. - Homeostasis Processes, Measurement, Units, Dilution, Compartments, Body Fluid Composition, Acid and Base Concepts, Solution Acidity (pH), Water, Electrolyte and Non-Electrolyte Balance, Body Buffer System, Genetic Solutions, Hypotonic and Hypertonic Solutions - Atoms, Chemical Elements in the Human Body, Genetic Chemistry, Nutrition, Energy, Principles of Metabolism, Carbohydrate, Protein, Lipid, Nitrogen, Mineral, Vitamin Metabolism, Enzymes, Genetic Chemistry, Digestion, Biomolecule Absorption, Macro and Micronutrients. - Anatomical Terms and Body Region Divisions, Various Body Tissues - Anatomy Concept of Cardiovascular System, Respiratory System, Nervous System, Endocrine System, Reproductive System, Urinary System, Integumentary System, Musculoskeletal System, Immune and Hematological Systems, Digestive and Metabolic System, Special Senses System - Physiology Concept of Cardiovascular System, Respiratory System, Nervous System, Endocrine System, Reproductive System, Urinary System, Integumentary System, Musculoskeletal System, Immune

	System and Immunology, Hematological System, Digestive and Metabolic System, Special Senses System
Examination forms	<ul style="list-style-type: none"> - Written exam : Multiple Choice Questions - Practicum Exam or report
Study and examination requirements	<p>Study and examination requirements:</p> <ul style="list-style-type: none"> - Students must attend 15 minutes before the class starts. - Students must inform the lecturer if they will not attend the class due to sickness, or other circumstances. - Students are required to turn in all of their class assignments prior to the deadline outlined at the beginning of the course <p>Form of examination: Written exam: Multiple Choice Questions</p>
Reading list	<ol style="list-style-type: none"> 1. Andono, R., Latief, N., & Idris, N. (2021). Korelasi antara derajat deviasi septum nasi dengan aerasi telinga tengah dan rongga mastoid menggunakan modalitas ct scan. <i>Jurnal Biomedik</i>, 13(1), 24-33, doi.org/10.35790/jbm.13.1.2021.32183 2. Andriany, A., Tahir, T., Sjattar, E.L., Ake., J., & Nuru, H. (2019). Wound healing angiogenesis: A perspective of nurse. <i>Global Health Management Journal</i>, 3(1), 1-3 3. Ariyandy, A., Sakai, C., Ishida, M., Mizuta, Ryuzei., Miyagawa, Kiyoshi., Tashiro, S., Kinomura, A., Hiraaki, K., Ueda, K., Yoshizumi, M., Ishida, T. (2018). XRCC3 polymorphism is associated with hypertension-induced left ventricular hypertrophy. <i>Hypertension Research</i>, 41(6), 426-434. 4. Basri, M. I., Rafiah, S., Amalia, A., Akbar, M., & Goysal, Y. (2021). Evoked potential (EP) O-EV001. The effect of watching movies on BAEP. <i>Clinical Neurophysiology</i>, 132(8), e-74-e75, doi.org/10.1016/j.clinph.2021.02.151 5. Cameron, JR, Skofronick, J.G., & Grant, R.M. (2006). Fisika Tubuh Manusia, edisi kedua (Lamyarni, I.S., Trans.). PT. Sagung Seto (Edisi pertama dipublikasi pada tahun 1999) 6. Dobson, G. P., Arsyad, A., & Letson, H. L. (2017). The Adenosine Hypothesis Revisited: Modulation of Coupling between Myocardial Perfusion and Arterial Compliance. <i>Frontiers in Physiology</i>, 20 Oktober 2017, DOI: https://doi.org/10.3389/fphys.2017.00824 7. Drake, R.L, Vogl A.W., & Mitchell, A.W.M. (2020). Gray's Anatomy for students 4th Edition. Philadelphia, PA : Churchill Livingstone Elsevier 8. Grodner M., Escott-Stump S., Dorner S. (2016). Nutritional Foundations and Clinical Applications: A Nursing Approach. 6th edition. Mosby:Elsevier Inc 9. Gropper S.S, Smith J.L., Groff J.L. (2004). Advanced nutrition and human metabolism. 4th ed. Wadsworth, Inc. 10. Hall, J. (2018). Guyton dan Hall Buku Ajar Fisiologi Kedokteran Edisi Ke-13 (Widjajakusumah, M., Tanzil, A., & Ilyas, E., Trans.). Singapore: Elsevier (Cetakan pertama dipublikasi pada tahun 1994 11. Hansen, J.T., & Netter, F.H., & Machado, C.A.G. (2019). Netters' Clinical Anatomy, 4th Edition. Philadelphia: Elsevier 12. Harun, A. L. A., Attamimi, L., Latief, N., Asriyani, S. (2021). Fistula Aorta-Atrium Kanan. <i>Jurnal Biomedik</i>, 13(3), 352-357, doi.org/10.35790/jbm.v13i3.33805

13. Huldani, H., Patellongi, I., Massi, M.N., Idris., Bukhari, A., Sinrang, A.W., **Arsyad, A.**, Widodo, A.D.W., Achmad, H., & Bahar, B. (2021). The difference of VO₂max and immune profile (Hmbgl, cortisol, Il-6, Tnf alpha, number of leukocytes, neutrophils and monocytes) in adolescents who were trained and untrained in basketball. *Spring Conferencences of Sports Science. Costa Blanca Sports Science Events*, 6(proc4),S1772. DOI: doi.org/10.14198/jhse.2021.16.Proc4.23
14. Kalanjati, V. P. (2019). *Gray Dasar-Dasar Anatomi Edisi 2 Bahasa Indonesia*. Surabaya: Elsevier, (Online), diakses dari <http://repository.unair.ac.id/id/eprint/100826>
15. Kumar, V., Abbas, A.K., & Astar, J. C. (2018). *Robbins basic pathology*, 10th edition. Philadelphia: Elsevier
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19. Pasolang, H. M., **Tahir, T.**, & Nurjannah, S. (2021). The comparison of the effectiveness of respiratory muscle exercises (RME) and incentive spirometry exercises (ISE) on improvement of lung function post mechanical ventilation: A literature review. *Enfermeria Clínica*, 31(Suppl.5), S783-S787, doi.org/10.1016/j.enfcli.2021.10.002
20. Paulsen, F., & Waschke, J. (2018). *Atlas Anatomi Manusia Sobotta (3 Volume) Edisi ke-24 (Santoso, G., Liem, I., & Kusumaningtyas, S., Trans.)*. Singapura: Elsevier (Cetakan pertama dipublikasi pada tahun 1904).
21. Potter, P.A., Perry, A.G., Stockert P., & Hall A. (2019). *Essentials for Nursing Practice*, 9th Ed. Mosby: Elsevier Inc.
22. **Rafiah, S.**, Rieuwpassa, I., Bahrin, U., & Basri, M. I. (2018). Low density lipoprotein sebagai eneti enetic terhadap penurunan densitas mineral tulang pada osteoporosis. *Makassar Dental Journal*, 3(2), 1-6, doi.org/10.35856/mdj.v3i2.173
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24. Samad, R., Akbar, F.H., Willianto, O. A., **Malinta, Q. U.**, & Namirah, H. A. (2019). Effect of Scaling and Root Planing Treatment on Levels Hs-CRP in Indonesian Patients with Risk of Cardiovascular Disease. *Pesquisa Brasileira em Odontopediatria e Clínica Integrada*, 2019(19), e4180, doi.org/10.4034/PBOCI.2019.191.02
25. **Syahrul, S.**, Kimura, R., Tsuda, A., Susanto, T., Saito, R., & Ahmad, F. (2016). Prevalence of underweight and overweight among school-aged children and it's association with children's sociodemographic and lifestyle in Indonesia. *International Journal of Nursing Science*, 3(2), 169-177, doi.org/10.1016/j.ijnss.2016.04.004
26. **Syam, Y.**, Usman, A.N., Natzir, R., Rahardjo, S.P., Hatta, M., Sjattar, E. L., Saleh, A., & Sa'na, M. (2016). Nutrition and pH of Trigona Honey from Masamba, South Sulawesi, Indonesia.

	<p>International Journal of Sciences: Basic and Applied Research, 27(1), 32-36</p> <p>27. Syamsiah, S., Tombong, A.B., Amin, A.N. (2021). Long-Standing Type-2 Diabetes Mellitus Is Related to Neuropathy Incidence: A Cross Sectional Study. <i>Comprehensive Health Care</i>, 5(1), 38-43, doi.org/10.37362/jch.v5i1.575</p> <p>28. Watson, R. (2018). <i>Anatomy and Physiology for Nurses 14th Edition</i>. Edinburgh: Elsevier.</p> <p>Additional reference:</p> <p>1. American Psychological Association. (2020). <i>Publication Manual of the American Psychological Association, Seventh Edition</i>. Washington, DC: The American Psychological Association</p>
Cluster of Competence	Basic biomedical and nursing sciences
Form of Assessments	<ul style="list-style-type: none"> - Class participation (Case Method) : 50% (CLO1 10%,; CLO2 5%; CLO3 40%) - 360 Degree Multisource Feedback (Case Method) : 10% (CLO1 7%,; CLO2 3%) - Written exam : 15% (CLO1 10%; CLO2 5%) - Practicum report or OSCE: 20% (CLO3)
Date of last amendment made	July 2021

Course Learning Outcome Assessment of Learning Outcomes for Course Modules

Course Module Name : Basic Biomedical Science
Code : 21R01110105
Semester : I
Person responsible for the module : Andi Baso Tombong, S.Kep., Ns., M.ANP
Lecturers :

1. Andi Baso Tombong, S.Kep., Ns., M.ANP
2. Dr. Yuliana Syam, S.Kep.,Ns.,M.Si
3. Dr. Takdir Tahir, S.Kep.,Ns.,M.Kes
4. Syahrul Said, S.Kep.,Ns.,M.Kes.,PhD
5. Dr. Kadek Ayu Erika, S.Kep., Ns., M.Kes
6. Dr. Andina Setyawati, S.Kep.,Ns., M.Kep.,Sp.Kep.MB
7. Dr. dr. Sitti Rafiah, S.Ked., M.Si
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9. dr. Andi Ariyandy
10. dr. Qushay Umar Malinta, M.Sc
11. dr. Nikmatia Latief, M.Kes., Sp.Rad
12. dr. Muh.Iqbal Basri, M.Kes
13. dr. Asty Amalia, M.Med.Ed
14. dr. Nirwana Fitriani Walenna, S.Ked
15. dr. Rizki Darmawan
16. dr. Ilhamuddin, M.Si

Intended Learning Outcomes	Course Module Objectives	List of Assessments	List of Rubrics
<p>Knowledge (K):</p> <p>Faithful to God Almighty, embody a maritime spirit, demonstrate professionalism, ethical principles, legal perspectives, and cultural aspects in nursing.</p>	<p>CLO1: Students are capable of applying the principles of science as an approach to solving nursing problems. (K).</p>	<p>Active participation during group presentation based on the cases provided.</p> <p>Written exam: Multiple Choice Questions.</p> <ul style="list-style-type: none"> - Mode of delivery: Online through Learning Management System (LMS) & other platform available (ex. GForm exam). - Total number of questions: 100. - Each question must be completed within 1 minute. - Duration of exam: 100 minutes. 	<p>Rubric for Case-Method Study</p> <ul style="list-style-type: none"> - Scored 1, if the answer is correct. - Scored 0, if the answer is wrong. - Final grade = Total corrected items divided by total items multiply by 100.
<p>Knowledge (K):</p> <p>Faithful to God Almighty, embody a maritime spirit, demonstrate professionalism, ethical principles, legal perspectives, and cultural aspects in nursing.</p>	<p>CLO2: Students are capable of applying anatomical and physiological concepts as an approach to solving nursing problems. (K).</p>	<p>Active participation during group presentation based on the cases provided.</p> <p>Written exam: Multiple Choice Questions.</p> <ul style="list-style-type: none"> - Mode of delivery: Online through Learning Management System (LMS) & other platform available (ex. GForm exam). - Total number of questions: 100. - Each question must be completed within 1 minute. 	<p>Rubric for Case-Method Study</p> <ul style="list-style-type: none"> - Scored 1, if the answer is correct. - Scored 0, if the answer is wrong. <p>Final grade = Total corrected items divided by total items multiply by 100.</p>

Intended Learning Outcomes	Course Module Objectives	List of Assessments	List of Rubrics
Competence (C2): Having the competency to perform nursing care and services that can compete nationally and globally.	CLO3: Students are capable of demonstrating body anatomy and practicing physiological measurements on various human body systems. (C2).	Assignment: Practicum report	Rubric for Practicum Report

Proportion of assessment aspects according to the course learning outcomes.

ILO Code	CLO	Sub-CLO	Learning Method	Evaluation Method			Weighting	Score (1-100)
				Participatory Analysis (Case Method)	Project Presentation (Project-Based Learning)	Others		
K	CLO1	Sub-CLO1	<ul style="list-style-type: none"> - Pre-class reading & summary, lectures, discussions - Case-Method, group investigation, Group Presentation 	10% Active Presentation during Group presentation <i>Case- Method</i>		10% MCQ (Multiple Choice Questions)	20%	
		Sub-CLO2	<ul style="list-style-type: none"> - Pre-class reading & summary, lectures, discussions - Case-Method, group investigation, Group Presentation 					
		Sub-CLO3	<ul style="list-style-type: none"> - Pre-class reading & summary, lectures, discussions - Case-Method, group investigation, Group Presentation 					
K	CLO2	Sub-CLO4	<ul style="list-style-type: none"> - Pre-class reading & summary, lectures, discussions - Case-Method, group investigation, Group Presentation 	20% Active Presentation during Group presentation <i>Case- Method</i>		12% MCQ (Multiple Choice Questions)	32%	

		Sub-CLO5	<ul style="list-style-type: none"> - Pre-class reading & summary, lectures, discussions - Case-Method, group investigation, Group Presentation 	20% Active Presentation during Group presentation <i>Case- Method</i>		8% MCQ (Multiple Choice Questions)	28%	
C2	CLO3	Sub-CLO6	<ul style="list-style-type: none"> - Practicum/ Anatomy Laboratory - Independent Study of making report 			10% Practicum Exam or Report	10%	
		Sub-CLO7	<ul style="list-style-type: none"> - Practicum/ Physiology Laboratory - Independent Study of making report 			10% PracticumExam or Report	10%	

Example of Written Test Exam

1. The most abundant basic material of cells in the human body is (CLO1, Sub-CLO1)
 - A. Ion
 - B. Water**
 - C. Protein
 - D. Fatty Acid
 - E. Carbohydrate

2. When you push a patient in a wheelchair uphill, you will find it more difficult compared to a flat road. This happens because (CLO1, Sub-CLO2)
 - A. Gravity force is in the same direction as the pushing force you apply
 - B. The pushing force you apply is balanced
 - C. The angle of incline increases your pushing force.
 - D. The angle of incline increases the weight force of the patient.**
 - E. The patient has a weight that is easy to push.

3. The correct DNA structure in living organisms is ... (CLO1, Sub-CLO3)
 - A. A-T C-G**
 - B. A-U C-G
 - C. U-C A-C
 - D. A-G A-C
 - E. C-U C-A

4. In which part of the bone below is the epiphyseal plate located? (CLO2, Sub-CLO4)
 - A. Diaphysis.
 - B. Epiphysis.
 - C. Metaphysis.**
 - D. Articular cartilage
 - E. Periosteum.

5. The Broca's area and Wernicke's area are areas that control the function (CLO2, Sub-CLO5)
 - A. Skeletal muscle movement
 - B. Language ability**
 - C. Memory and learning
 - D. Auditory and balance
 - E. Vision and consciousness