Modul Description

Module name	Course Module of Bioinformatics
Module level, if applicable	Magister of Biology Education
Code, if applicable	34181024
Subtitle, if applicable	-
Course, if applicable	Bioinformatics
Semester(s) in which the module istaught	2nd
Person responsible for the module	Lecturer of Courses
Lecturer	Dr. Hanum Isfaeni, M.Si
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	This course is a mandatory course for Magister of Biology Education and offered in the 1st semester.
Type of teaching, contact hours	Teaching methods used in this course are: - Lecture (i.e., group investigation, small group discussion, case study, and video-based learning) - Structured assignments (i.e., essays and case study The class size for lecture is 30 students. Contact hours for lecture is 64 hours, assignments are 64 hours
Workload	For this course, students required to meet a minimum of 155.6 hours in one semester, which consist of: 19.6 hours for lecture : tutorial and discuss the subject 12.00 hours for structured assignments : doing exercices and problem solving or project, 75.00 hours for independent study : reading references, group discuss, finish the exercises. 34 hours for Project 15 hours for Paper 1 ECTS = 30 hours 155.6 hours = 5.2 ECTS -
Credit points	2 credit points (equivalent with 5,2 ECTS)

Requirements according to the examination regulations	Students must have attended all classes and submitted all class assignments that are scheduled before the final tests.
Recommended prerequisites	Students must have attended all classes and submitted all class assignments that are scheduled before the final tests.
Module objectives/intended learning outcomes	After completing the course and given with this case: **Learning Outcomes** **Social Competences:** 1. Have integrity and professional ethics, self-development, and make innovations to improve the quality of education and lifelong learning for the community (PLO1) 2. Able to apply analytical, critical, innovative, and abstraction thinking skills in the field of biology education (PLO2) **Specific Competences:** 1. Able to improve mastery of biological material in the fields of plant and animal structure, environment, conservation, biomolecular, Bioinformatics, and biotechnology (PLO9). 2. Able to analyze and synthesize problem solutions in biology learning through interdisciplinary, transdisciplinary and multidisciplinary approaches (PLO10)

Content	**Students will learn about:** The ontological, epistemological and axiological foundations in Biology Education, basic concepts of philosophy of science, philosophy of science and human beings, and their differences from other branches of science..
Forms of Assessment	Assessment is carried out based on written examinations, assessment/evaluation of the learning process and performance with the following components: Structured tasks: 20%; Project: 20%, Mid Test: 30%; Final Test: 30%
Study and examination requirements and forms of examination	**Study and examination requirements:** - Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the class due to sickness, etc. - Students must submit all class assignments before the deadline. - Students must attend the exam to get final grade. **Form of examination:** Written exam: Essay

Media employed	Direct Whiteboard, Power Point Presentation, online conference platform
Reading List	1. Botturi, L. (2003). Instructional Design & Learning Technology Standard. ICeF - Quaderni dell'Istituto, 9. 2. Buttigieg, Pier Luigi. (2010). Perspectives on presentation and pedagogy in aid of bioinformatics education. Briefings in bioinformatics. 11. 587-97. 10.1093/bib/bbq062. 3. Jiang, R, Zhang, X., Zhang, M. Q. (2013) *Basic of bioinformatics*, Tsinghua University Press, Beijing and Springer-Verlag Berlin Heidelberg, xii+295 doi 10.1007/978-3-642-38951-1 4. Kharisma, V. D. (2019). *The Introduction of Bioinformatics for Biology Education*. bahan presentasi, 10.13140/RG.2.2.32774.42566 5. Leonelli, S (2019). Philosophy of biology; The challenges of big data biology. *eLife*;8:e47381; 1-5 doi: https://doi.org/10.7554/eLife.47381 6. Noble W.S., Leslie C. (2016) Learning Models of Biological Sequences. In: Sammut C., Webb G. (eds) Encyclopedia of Machine Learning and Data Mining. Springer, Boston, MA. https://doi.org/10.1007/978-1-4899-7502-7_468-1 7. Tisdall, J. (2001) *Beginning Perl for Bioinformatics, 1st*, O'Reilly: 384 8. Yang, X., Hartman, M. R., Harrington, K. T., Etson, C. M., Fierman, M. B., Slonim, D. K., & Walt, D. R. (2017). Using Next-Generation Sequencing to Explore Genetics and Race in the High School Classroom. *CBE life sciences education*, *16*(2), ar22. https://doi.org/10.1187/cbe.16-09-0281 9. Zhan YA, Wray CG, Namburi S, Glantz ST, Laubenbacher R, et al. (2019) Fostering bioinformatics education through skill development of professors: *Big Genomic Data Skills Training for Professors*. PLOS Computational Biology 15(6): e1007026. https://doi.org/10.1371/journal.pcbi.1007026 10.