UNIVERSITAS NEGERI JAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY STUDY PROGRAM

Jl. Rawamangun Muka, RT 11/RW 14, Rawamangun, Pulo Gadung,
East Jakarta City, Special Capital Region of Jakarta 13220
Phone/Fax: (021) 4894909, E-mail: kimia@unj.ac.id, http://fmipa.unj.ac.id/kimia/

Bachelor in Chemistry **MODULE HANDBOOK**

Module name:	Bioctechnology
Module level, if applicable:	Undergraduate
Code:	33150462
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	6th
Module coordinator:	Dr. Fera Kurniadewi, M.Si.
Lecturer(s):	1. Prof. Dr. Muktiningsih Nurjayadi, M.Si. 2. Irma Ratna Kartika, M.Sc. Tech.
Language:	Indonesian
Classification within the curriculum:	Elective Courses in the third year (6th semester) Bachelor Degree
Class Size:	20
Type of Teaching	In class activity : Team Based Project and Project based Learning Structured activity : Group Discussion using WorkSheet Independent activity : Individual task
Teaching format / class hours per week	Learning activity can be carried out in the form of : 1. Lecture or students response a. Face to face : 50 minutes/SKS b. Structured activity : 60 minutes/SKS c. Independent activity : 60 minutes/SKS
Workload:	1 CU (SKS) for bachelor degree equal to 4 work hours per week or 170 minutes. 2x50 minutes face to face, 2x60 minutes structured tasks, 2x60 minutes independent learning, for 16 weeks (including midterm and final examination), a total of 90.5 hours/semester.
Credit points:	2 SKS (3 ECTS)
Prerequisite course(s):	Structure and function of biomolecules, biomolecular metabolism, and, microbiology.

<table>
<tr><td>Course Outcomes :</td><td>After taking this course the students have ability to:
CLO-1. Understand various biotechnology concepts from conventional to modern
CLO-2. Understand the concept of PCR and its role in biotechnology;
CLO-3. Understand how to use databases at the genomic, proteomics and metabolomics levels such as genebank, Sanger Center, NCBI, Protein databased (PDB) and related databases for research processes;
CLO-4. Applying the dnastar, NCBI, Net-primer programs to primary design, and nucleotide homology analysis from various database sources;</td></tr>
<tr><td>Content:</td><td>The concept, history, development, and role of biotechnology in solving various environmental problems
Basic techniques in biotechnology-based research
Application of biotechnology at the genomic, proteomic and metabolomic levels in supporting the resolution of environmental problems from various articles and journals.
Application of various genomic and proteomics software/databases in solving the problems studied.</td></tr>
<tr><td>Study/exam achievements:</td><td>Examinations are conducted as Unit Tests. There are two-unit tests, each covers 4-5 chapters. The final marks are derived from unit tests (70%) and structured tasks (30%).
<table>
<tr><th>No</th><th>CO</th><th>Assesment Object</th><th>Assessment Techniques</th><th>Weight</th></tr>
<tr><td>1.</td><td>CLO 1-4</td><td>a. Presence
b. presentation
c. Mid test
d. Final test</td><td>Written test</td><td>5%
25%
35%
35%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Media:</td><td>Power point presentation, Zoom meeting, Microsoft Teams, laptop, proyektor.</td></tr>
</table>

Literatures:	1. John Fernandes, 2008. *Comprehensive Biotechnologi*. Gene-Tech Book. New Delhi-110 002. 2. Albert Sasson, 2004. *E-Book Medical and Pharmaceutical Biotechnology* 3. Sandra Braman, 2004. *Biotechnology And Communication*. *The Meta-technologies of Information.* Lawrence Erlbaumn Associates, Inc. New Jersey 07430. 4. Rodney. J. Y and Milo Gibaldi, 2003. *Biotechnology And Biopharmaceuticals, Transforming Proteins And Genes into Drugs.* A John Wiley & Sons, Inc., Publication. 5. Wiliam Wu, Michael J. Welsh, Peter B. Kaufman, Helen. H. Zhang. 2004. *Gene Biotechnology* 2nd Edition. CRC Press. USA. 6. Uma shankar Signh, dan Kiran Kapoor, 2010. *Microbial Biotechnology*. Oxford Book Company. Jaipur India. 7. Jonathan Morris. 2006. *Biotechnology in the 21th Century. The Ethics of Biotechnology.* Chelsea House Books. USA. 8. George Acquaah, 2004. *Understanding Biotechnology. An Integrated and Cyber- Based Approach. Pearson Prentice Hall. Upper Saddle River, New Jersey 07458* 9. Manual Prosedur Preparasi Sampel PCR (Biorad), 2012. 10. Manual Prosedur Electrophoresis DNA dan Protein (Biorad), 2012. 11. Voet. D and Voet Judith. G, Charlote W. Pratt, 2006. Fundamentals of Biochemistry, Life at the Molecular Level, 2nd Edition, John Wiley & Sons. Inc. (Asia) Pte.Ltd. 12. Jonathan Morris. 2006. Biotechnology in the 21th Century. The Ethics of Biotechnology. Chelsea House Books. USA.

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CO1						v	v					
CO2						v	v					
CO3						v	v					
CO4						v	v					