



JOGJAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND SCIENCE

LESSON PLAN 1

FRM/FMIPA/062-01
18 February 2012

1. Faculty /Study Program : Mathematics and Science / Biology Education
2. Course / Code : BIC 223
3. Credits : 2
4. Semester and Duration : IV , 100 minutes
5. Basic competence : Describe the history of genetics
6. Achievement indicator :
 1. Students are able to explain the history / development of Genetics
 2. Students are able to analyze different effects of recent technology due to genetics research
 3. Students are able to explain the concept of gene and Chromosome
7. Topics / Sub-topics : Introduction - history and development of genetics, concept of gene and chromosome
8. Lecture activity :

Activity	Details of activity	Duration	Method	Media	References
Introduction	<ul style="list-style-type: none"> • Lecture contract • Discussion on what is studied in genetics • Explanation briefly, on the study of inheritance and its effects in the human life 	10 minutes	Discussion and lecture	PPT, boardmarker	Klug <i>et al.</i> , 2006. Concepts of Genetics and Brooker.2009.Genetics Analysis and Principles
Main Presentation	<ul style="list-style-type: none"> • Lecture : explanation on the 	30	Lecture	PPT, animation,	Klug <i>et al.</i> , 2006.

	<p>theory of inheritance before and after Mendel's experiment and its relevance with the theory of chromosome</p> <ul style="list-style-type: none"> • Students are asked to analyze the theory of inheritance with examples of different organisms • Explanation on the development of genetics and the effects in human life and the ecosystem • Students are asked to analyze the positive and negative effects of the advancement of genetic technology 	<p>minutes</p> <p>10 minutes</p> <p>30 minutes</p> <p>10 minutes</p>	<p>Discussion</p> <p>Lecture</p> <p>Discussion</p>	<p>boardmarker</p> <p>PPT, animation, boardmarker</p>	<p>Concepts of Genetics and Brooker.2009.Genetics Analysis and Principles</p>
Closing	<ul style="list-style-type: none"> • Students are asked to conclude the topic and a quiz is given to test students understanding of the topic 	<p>10 minutes</p>	<p>Discussion</p>	<p>PPT</p>	
Follow up	<ul style="list-style-type: none"> • A reading assignment is given to students for next weeks' topic (Mendelian genetics) 				

9. Evaluation

Questions :

- 1) How does a model organism increase our knowledge on genetic diseases in humans ?
- 2) What are the advantages and disadvantages of patent for genetically modified organisms (GMO) ?

Answer :

- 1) Model organisms are used for research in studying genes that are responsible for genetic diseases. Genetic systems are usually in the same phylogenetic pathway so what is known in one organism can be same as in another organism. Model organisms are those that can grow or reproduce easily, have easy understandable genetic system, and many offspring, so that it can be a good source of study
- 2) The positive effect of a patent right for the GMO is to increase competition for innovation and to return production cost. The negative effect is that something from nature must not be kept as a right for one or several companies or individuals. What is needed are individuals and companies to develop GMO but patent rights still need to be further discussed.

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Yogyakarta, February 2012
Lecturer

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