


 FPMIPA UPI	<b>SILABUS</b>	No. Dok. : FPMIPA-SE-SL-15
	<b>Cell and Heredity SE403, 3 Credits 3<sup>rd</sup> semester-IPSE</b>	Revisi : 00 Tanggal : 1 Oktober 2010 Halaman : 1 dari 2
Dibuat Oleh :  (Dr. Any Fitriani, M.Si.)	Diperiksa Oleh :  (Dr. Diana R.)	Disetujui Oleh :  (Dr. phil. Ari Widodo)

### Description

Cell and heredity course divide two section, first Cell biology is the science of studying cells second heredity is a problems-based introduction to molecular and classical genetics. Key sections of the course are what genes are, how they work and how they change, how gene expression is regulated, and how genes are transmitted between generations. There are made up of a composite of activities, but primarily involves learning about cells in three ways: by attending class and taking good notes, by reading the book and journals, and by participating fully in the laboratory. Attendance in the lab will be monitored and unexcused absences will be penalized


### Syllabus

#### 1. Identity of Course

- |                         |  |
|-------------------------|--|
| a. Name                 | : Cell and heredity                                      |
| b. Code                 | : SE403  |
| c. Semester Credit Unit | : 3 credits  |
| d. Semester             | : 3 <sup>rd</sup> Semester                               |
| e. Type of Course       | : Specific Competencies Courses                          |
| f. Study Program        | : Internatinal Program on Science Education (IPSE)       |
| g. Status               | : Compulsory   |
| h. Prerequisites        | : Fundamental Biology                                    |
| i. Lecturer             | : Dr. Any Fitriani, M.Si and Diah Kusumawaty, S.Si, M.Si |

#### 2. Goal

- (1) To think of science as a process
- (2) To understand the fundamental concepts of how cells are structured  
And function
- (3) To understand the fundamental concepts of how material genetic (DNA, RNA, protein) are structured and function
- (4) To introduce you to our current level of understanding of how genes are structured, how they change, what they do and don't do, how they are regulated, and how they are transmitted between generations
- (5) To help you learn to use genetics as a toolbox to dissect how cells and organisms work
- (6) To be able to use the scientific method as a method of problem solving.
- (7) To become initiated in the use of primary and secondary scientific literature.

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### 3. Content

Cell and heredity, concentrating upon cell structure, cell cycle, and cellular metabolism. Our next unit will be Genetics, where we will explore heredity, the structure of RNA and DNA, nucleic acid replication, gene regulation and signal transduction.

### 4. Learning Activities

Approach : Constructivism and Inquiry

Method : Lecture, Discussion, Question-Answer.

Media : Power Point, Book review, Journals search.

### 5. Assessment

Evaluation will consider into presence, Mid Test, Semester Final Test, Individual and group tasks, participation in discussion and also based on lecturer's policy.

### 6. Meeting's Agenda

Week 1 : course introduction, What is life?, Scientific method

Week 2 : scientific method

Week 3 : basic chemical concepts, water, carbon

Week 4 : macromolecules, enzymes & catalysis

Week 5 : macromolecules, enzymes & catalysis

Basic prokaryotic and eukaryotic cell structure

Week 6 : basic prokaryotic and eukaryotic cell structure

Week 7 : cell membrane structure and function cell cycle, mitosis,

Week 8 : Mid Test

Week 9 : Meiosis and monohybrid

Week 10 : dihybrid cross, modification of Mendelian ratios

Week 11 : linkage (sex, complete & incomplete), chromosome mapping

Week 12 : DNA (genetic material, structure)

Week 13 : DNA (genetic material, structure), eucariotic chromatine

Week 14 : transcription and gene regulation

Week 15 : Translation, Signal transduction

Week 16 : discuss final exam

Week 18 : Final Exam

### 7. References

Alberts et al. 2005. *The Cell*, 4th ed. Garland Science

Campbell N.A. and J.B. Reece . 2005. *Biology*. By 7th edition. Pearson - Benjamin Cummings.

ISBN: 0-8053-7171-0. 1231p, with 4 appendices, credits, glossary & index

Hartwell L.H et al. 2004. *Genetics: from genes to genomes 2<sup>nd</sup>*. McGraw-Hill

Pruitt N.L & L.S. Underwood. 2006. *Bioinquiry- making connections in Biology*, 3rd ed. Wiley