

ライフサイエンスⅠ

科目ナンバリング SCE-103

【Ⅶ】 選択 2単位

アレキサンダー・ハッセル・マハディ

1. 授業の概要(ねらい)

- 1) [Life Science I and II] include a study of living organisms and their cellular vital processes. Topics to be covered in the course include cell structure, biochemistry, cellular process, genetics, classification of organisms, plant system, and human immunity, as well as other related themes.
- 2) Students will be taught mechanisms of life on the cellular level.
- 3) The course will begin with basic knowledge to enable students from different backgrounds to cope with the teaching materials.

2. 授業の到達目標

Students are expected to be able to:

- 1) understand and explain the cellular structure and vital processes.
- 2) understand and explain the cell cycle and division.
- 3) understand and explain cell communications.

3. 成績評価の方法および基準

- 1) Term-end written exam will be held (totally 70 points).
- 2) Quizzes throughout the whole course will be conducted (totally 20 points).
- 3) Activities and attitude though classes (totally 10 points).

4. 教科書・参考文献

教科書

Urry, Lisa A./Cain, Michael L./Wasserman, Steven A./Minorsky, Peter Campbell Biology 11th
Pearson College Div

参考文献

Bruce Alberts, Karen Hopkin, Alexander Johnson, David Morgan, Martin Raff Essential Cell Biology
5th W W Norton & Co Inc

5. 準備学修の内容

[Prior the class]

Students are highly encouraged to read the relevant chapters from the reference book in advance, to ensure the maximum benefits of the class. They should not hesitate to contact the instructor for any further explanation if needed.

[Post the class]

Students are required to read the taught subjects at home.

6. その他履修上の注意事項

7. 授業内容

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| 【第1回】 | An overview and course guidance |
| 【第2回】 | The chemical context of life |
| 【第3回】 | The structural function of large biological molecules: carbohydrates, lipids, proteins, nucleic acids, genomics and proteomics |
| 【第4回】 | A tour of the cell I : basics of living cells, intracellular components of cells |
| 【第5回】 | A tour of the cell II : extracellular components of cells |
| 【第6回】 | Cell membrane: structure and function |
| 【第7回】 | Introduction of metabolism: energy of life, ATP, enzymatic control of metabolism |
| 【第8回】 | Cellular respiration and fermentation: catabolic pathways, glycolysis |
| 【第9回】 | Mechanism of photosynthesis |
| 【第10回】 | Cell communication: external signals, reception, response to signals |
| 【第11回】 | Cell cycle: phases of the cell cycle, regulation |
| 【第12回】 | Meiosis and sexual life cycles |
| 【第13回】 | Mendel and the gene idea |
| 【第14回】 | The chromosomal basis of inheritance |
| 【第15回】 | Term-end exam |