You Do Not Need to write down the following infos because all

the following slides and all lecture notes will be uploaded at the

link: **http://itbe.hanyang.ac.kr**

Online access to lecture notes via:

----> **http://itbe.hanyang.ac.kr**

-----> go to Teaching -----> Autumn / Fall Term – Klaus Heese
-----> Undergraduate -----> Cell Mol Biol BIO3035

This/today's file will be uploaded next week after closing of course registration.

Molecular and Cellular Biology

Course No: BIO3035

Credits: 3.00

Wednesday: 13:00pm – 14:30pm; Ro-# H305–208 (ITBT)
Thursday: 14:30pm – 16:00pm; Ro-# H305–208 (ITBT)

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Name: Prof. Dr. HEESE, Klaus (Germany)

Office: Graduate School of Biomedical Science & Engineering, FTC, 12th floor, Room-No: 1209-15

Teaching: General Biology, Cellular and Molecular Biology, Biochemistry,

Research: Neuroimmunology

Office hours: Consultation: upon request via e-mail-appointment and/or after class

E-mail: klaus@hanyang.ac.kr

Web: http://itbe.hanyang.ac.kr

BIO3035 Molecular and Cellular Biology

Structure of Course:

Lectures: about 9 subtopics over 16 weeks

Homework Assignment: Individual Homework plus Oral Presentation

Oral Presentation: about your homework, instead of Mid-Term exam

Quiz: at then end of the semester - for exam preparation & active attendance!!

Q & As: at then end of the semester - for exam preparation

Exam: (written)

BIO3035 Molecular and Cellular Biology

Evaluation methods:

Scoring system: absolute grading

A+ : 95 – 100 %
A : 90 – 94 %
B+ : 85 – 89 %
B : 80 – 84 %
C+ : 75 – 79 %
C : 70 – 74 %
D+ : 65 – 69 %
D : 60 – 64 %
F : < 60

1) 10 % regular attendance
2) 15 % pro-active attendance during class (debate) (including Quiz and Q & As for extra points)
3) 45 % Individual home work + English Oral Presentation (submission of presentation as print and ppt-file; topic to be decided later)
4) 30 % exam (written)

BIO3035 Molecular and Cellular Biology

Recommended textbook:

Text book: Molecular Biology of The Cell, 4th edition, 2002 (also online at 'NCBI')
Authors: Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter.
Paperback: 1616 pages
Publisher: New York: Garland Science;
Language: English
ISBN: ISBN-10: 0815340729; ISBN-13: 978-0815340720

Below are some basic text books which you may check later if any book is of interest for you e.g. during/after year 3.

Cell Biology text books

Text book: Molecular Biology of The Cell, (also online at 'NCBI')
Authors: Bruce Alberts, et al.

Text Book: Molecular Cell Biology, (also online at 'NCBI')
Authors: Lodish et al.

Text book: Campbell Biology
Authors: Jane B. Reece, et al.

Biochemistry text books

Text Book: Biochemistry
Authors: L. Stryer

Text Book: Biochemistry
Authors: D. Voet and J. Voet

Neuroscience text books

Text Book: Principles of neural science
Authors: Eric R. Kandel, James H. Schwartz, Thomas M. Jessell,

Text Book: Fundamental Neuroscience
Authors: Larry R. Squire, Fundamental Neuroscience,

Text Book: Neuroscience
Authors: Dale Purves,

Prof. Dr. Klaus Heese

BIO3035 Molecular and Cellular Biology
Syllabus: ~ 7 subtopics, key words

1. General Introduction to the cell
2. Biomolecules, amino acids and proteins, 1 & 2
3. RNA, DNA, Chromosomes, Genomes (including basic control of gene expression etc; including applied molecular and cellular technologies), 1 & 2
4. Proteins and Enzymes (including structure, function, purification etc; including applied technologies), 1 & 2
5. Cell Biomembrane
6. Cell Signalling, (basic signalling pathways I-IV, cell cycle, apoptosis, cancer, pain, neuroimmunology, brain cells & signalling, vision, pain) 1-8
7. Practical biomedical molecular and cellular engineering applications (including methods such as manipulating mammalian cell functions), 1 & 2

Prof. Dr. Klaus Heese

BIO3035 Molecular and Cellular Biology

Syllabus: ~ 7 subtopics – Lecture Notes Details:

1. General Introduction to the cell
2. Bio-Chemical Foundations & Key Molecules of a Cell : Biomolecules, amino acids, proteins, RNA, DNA
3. The Cell – From Genes to Proteins: key processes
4. Proteins: Structure and Function
5. Basic Molecular Genetic Techniques; Visualizing, Fractionating, and Isolation of Cells, Gene Sequencing
6. Cell Bio-Cell-membrane: Structure and Function
7. Brain Cells
8. Cell Signalling, - G-protein signalling, Receptor Kinases, Neurotransmitters & Receptors,
9. Optional: Molecular and Cellular Signalling in Vision and/or Pain
10. Practical biomedical engineering applications: homework

Prof. Dr. Klaus Heese

BIO3035 Molecular and Cellular Biology

Goals:

1. Getting an excellent Grade ☺
2. Getting to know the fundamental knowledge about the cellular bio-molecules, their basic structure and functions in a cell
3. Getting insight into the basic cellular signal transduction pathways, metabolic processes of proteins and genes in a cell
4. Understanding the basic molecular and cellular technologies and the potential biomedical applications of molecular and cell biology.
5. Practical biomed. engineering applications – Homework: Getting an opportunity to familiarize yourself with cellular and molecular biology, a key component of Biomedical Engineering, and getting first experience to convey such acquired expertise to other scientists (classmates) outside such fields.

Prof. Dr. Klaus Heese

Understanding and following the instructions

on the next slides is the key in order to be

able to secure a B or A.

Individual Homework /

English Oral Presentation

Please prepare 2 students per 1 group !

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45 % **Individual Homework / English Oral Presentation**
(submission of presentation as ppt-file and printed version!)
(instead of midterm exam); please prepare 2 students per 1 group !
(each student submits a ppt file plus printed file !!!)

Topic: Biology, Life, Cell, Molecule, Engineering, BioMedical-Engineering
Prepare 1 slide with 1 figure/illustration that tells about a **link between your presentation and bio (medical) engineering application** such as:
BioMaterial, Bio Tissue Engineering, Biomedical technology devices, Bio-Energy, …, Bio-Food, Bio-Cosmetics, …,
Write at home for yourself 1page (figure plus text) what is described in this 1 slide.
You do not need to submit this 1 page to me – but it is important for you to do it.

Final ppt File-name: e.g.: No-8-ID-20170123456-Jxxx Yzzz KYY.pptx

 # slides: ~ 10; on top of first slide: **on top of the slide/page-1: e.g.**
No 8: Jxxx Yzzz KYY, **ID:** 20170123456; **email:** kyy1234@gmail.com
Project Title: ….

Time: ~ 10-15min (incl. discussion / Q & A)
Date: end of semester, before exam
Language: English – but not evaluated !
Important: to do it (experience) !!

Individual Homework / English Oral Presentation

Slide-1

BIO3035 Molecular and Cellular Biology

No 8: Jxxx Yzzz KYY, **ID:** 20170123456; **email:** kyy1234@gmail.com
(please write here below also your group partner:
e.g.: No 11: Aaaa Bbbb CCC, ID: 20170123456; email: abc1234@gmail.com

Project Title: …

Summary Abstract: ~ 100 words, +/- 1 figure

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Lecture notes are ready for download about 12 – 24 hours before the next lecture.

----> **http://itbe.hanyang.ac.kr**

BIO3035 Molecular and Cellular Biology

Tentative schedule: ----> **http://itbe.hanyang.ac.kr**

(may slightly change, depending on lecture progress**)**

Oct 21 – 25: mid term exam week;

Oct 21 – 25: time for home-work to prepare oral presentation;

Oct 26: ppt-file of oral presentation submission to **Su Min EOM esm6564@hanyang.ac.kr**;

Oct 28: **Su Min EOM** submits all files in 1 email to Prof Klaus Heese;

Nov 06: Su Min EOM submits all **printed** documents in order (No of excel file) to Prof;

Final ppt-file submission:
26. Oct to Su Min EOM and
28. Oct Su Min EOM submits the ppt-files **to Prof Heese**;

Nov 13, 20 (Wed): 13:00 – 14:30 ;
oral presentations (~ 6 persons/groups per day/ session, depending on progress);
Nov 27 (Wed): 13:00 – 14:30 : Quiz, Q & A (pro-active attendance!!);
Dec 04 (Wed): 13:00 – 14:30 : Exam (1 ½ h; Ro-# H305–208 (ITBT));

oral presentation: e.g.:
Slide-1 page: on top of the page
No 8: Xxxx Yzzz KYY, **ID:** 20170123456; **email:** kyy1234@gmail.com
Project Title:
Summary Abstract: ~ 100 words, +/- 1 figure