

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>

Prof. Dr. Klaus Heese

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Online access to lecture notes via:

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

----> go to Teaching ----> Spring Term 2020 – Klaus Heese  
----> Undergraduate ----> General Biology BNG2003

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

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## General (Comparative) Biology

Course No: BNG2003

Credits: 3.00

Wednesday: 13:00pm – 14:30pm; Ro-# H305-208

Thursday: 13:00pm – 14:30pm; Ro-# H305-208

Prof. Dr. Klaus Heese

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

**Office:** Graduate School of Biomedical Science & Engineering, FTC, 12<sup>th</sup> floor, Room-No: 1209-15

**Teaching:** UG: General Biology, Cellular and Molecular Biology, Biochemistry,  
GS: Bio-Medical Neuro-Tissue Engineering, Neuropsychology, Cognitive Neuroscience

**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>

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## BNG2003 General (Comparative) 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 the end of the semester - for exam preparation & active attendance !!

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

Exam: (written) - \_at the end of the semester

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## BNG2003 General (Comparative) 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)

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## BNG2003 General (Comparative) Biology

### *Recommended Text Books:*

1)

**Text book:** Campbell Biology

**Authors:** Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Robert B. Jackson

**Paperback:** 1464 pages

**Publisher:** Benjamin Cummings; 9 edition (October 7, 2010)

**Language:** English

**ISBN:** ISBN-10: 0321558235; ISBN-13: 978-0321558237

2)

**Text book:** Principles of Life

**Authors:** David M. Hillis, David Sadava, H. Craig Heller, Mary V. Price

**Hardcover:** ~908 pages plus Appendix

**Publisher:** Sinauer Associates, Inc., W. H. Freeman and Company

**Language:** English

**ISBN:** ISBN: 978-1-4292-5721-3 (casebound)

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### *Recommended Text Books:*

3)

**Text book:** Life: The Science of Biology

**Authors:** David Sadava, David M. Hillis, H. Craig Heller, May Berenbaum

**Paperback:** 1267 pages

**Publisher:** W. H. Freeman; Tenth Edition edition (December 10, 2012)

**Language:** English

**ISBN:** ISBN-10: 1429298642; ISBN-13: 978-1429298643

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Below are some [other 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,

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## BNG2003 General (Comparative) Biology

### Syllabus - subtopics: Key words

1. General Introduction into Biology and Biochemistry of Life
2. The Cell
3. Genetics
4. Evolution
5. Bacteria, Archaea, Fungi
6. Plant
7. Animal
8. Ecology
9. Practical bioengineering applications

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## BNG2003 General (Comparative) Biology

### Syllabus - Subtopic – Lecture Notes Details:

1. General Introduction into Biology and Biochemistry of Life and Evolution
2. The Cell: 2a: Chemical Foundations of Biology, 2b: Water, 2c: Carbon, 2d: Molecules of a Cell
3. The Cell: a tour of a cell and its sub-units
4. Cell Membrane Structure & Function
5. An Introduction into Cell Metabolism
6. Cellular Respiration
7. Cell Communication & Signalling
8. The Cell Cycle
9. Meiosis and Life Cycles
10. Genetics: From Genes to Proteins
11. The Immune System
12. Viruses, Bacteria and Plant
13. Plants, Photosynthesis, Fungi
14. Optional: Ecology
15. Practical biomed. engineering applications – Homework

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## BNG2003 General (Comparative) Biology

### Goals:

1. Getting an excellent Grade ☺
2. Getting to know the fundamental knowledge about biology as the major part of the life sciences
3. Getting insight into the intricate systems of the basic unit of life, the cell
4. Understanding the basic principles of biology such as: life, cell (molecular and cell theory), development, evolution, genetics, homeostasis, energy, phylogenies, species, and ecology.
5. Practical biomed. engineering applications – Homework: Getting an opportunity to familiarize yourself with general biology as the study of life, the key component of Biomedical Engineering, and getting first experience to convey such acquired expertise to other scientists (classmates) outside such fields.

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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 a printed file !!)

**Topic:** Biology, Life, Cell, Bio-Med-Engineering,  
Application of your selected topic in e.g. medicine.

Prepare also at the end a final 1 summary slide with 1 figure/illustration that tells about a link between your oral presentation (containing about 10 slides) and a bio (medical) engineering application such as: BioMaterial, Bio Tissue Engineering, Biomedical technology devices, Bio-Energy, ..., Bio-Food, Bio-Cosmetics, ...; Write at home for yourself 1 page (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 File-name:** e.g.: (No-3) ID-20170123456-Jxxx Yzzz KYY.pptx

**# slides:** ~ 10; on top of first slide: **on top of the slide/page-1: e.g.**

**No 3:** 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) !!

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### Individual Homework / English Oral Presentation

Slide-1

#### BNG2003 General (Comparative) Biology

**No 3:** 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: 201707891011; email: abc1234@gmail.com

**Project Title: ...**

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

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### Individual Homework / English Oral Presentation

Slide-1 group partner

#### BNG2003 General (Comparative) Biology

**No 11:** Aaaa Bbbb CCC, ID: 201707891011; email: abc1234@gmail.com

(please write here below also your group partner:

e.g.: No 3: Jxxx Yzzz KYY, ID: 20170123456; email: kyy1234@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.

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### BNG2003 General (Comparative) Biology

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

(may slightly change, depending on lecture progress)

**May 04 – 08:** mid term week; home-work week; oral presentation preparation;

**May 08:** ppt-file of oral presentation submission to: **Aa Bbbb CCC**  
**abcde001122@gmail.com**

**May 09-11:** **Aa Bbbb CCC** submits all ppt files in 1 email to Prof Klaus Heese;

**May 13:** **Aa Bbbb CCC** submits all **printed** documents in order (No of excel file) to Prof

**May 20, 27, & 24, 28 (Wed & Thu):** 13:00 – 14:30pm: oral presentations;  
(about 6 persons / groups per day / session; depending on progress);

**June 03 (Wed):** 13:00 – 14:30pm: Quiz, Q & A (pro-active attendance!!);

**June 10 (Wed):** 13:00 – 14:30pm: Exam (1 ½ h; Ro-# H305–208 (IT/BT));

**oral presentation e.g.:**

Slide-1 page: on top of the page:

**No 3:** Axxx Bzzz CYY, **ID:** 20170123456; **email:** abc1234@gmail.com

**Project Title:**

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

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The screenshot shows a web interface for a department (likely the Department of Biology at Hanyang University). At the top, there is a header with the department name in Korean. Below that, there are several tabs or filters. The main content is a large table with multiple columns. The first column contains student IDs, and the second column contains names. A red circle highlights a specific row in the table. Below the table, there are several large blue rectangular areas, possibly representing redacted information or placeholders for images.

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Next lectures:

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Thursday 19.03.2020 at 13:00

Wednesday 25.03.2020 at 13:00

Thursday 26.03.2020 at 13:00