MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

DETAILED SUBJECT OUTLINE

1. **Subject title:** **BIODIVERSITY**
   - **Code:** **ZO892C**
   - **Credits:** 2
   - **Work-load:** 30 class hours + 60 self-study hours
2. **Responsible unit:** Department of Molecular Biotechnology
   Institute of Biotechnology Research and Development
3. **Prerequisites:** None
4. **Subject objectives:** This subject aims at providing students fundamental information about biodiversity as well as the importance of and measures for conservation and sustainable use of biodiversity. After completion of the subject, the students should meet the following criteria:

   4.1. Knowledge: The students will obtain/gain knowledge about

   4.1.1. The definition and development through time of biodiversity;

   4.1.2. Different species concepts, the elements and measurement of biodiversity;

   4.1.3. The importance of, threats to and measures for conservation and sustainable use of biodiversity; and

   4.1.4. The Convention on Biological Diversity, the UK Action Plan and the Biodiversity Law of Vietnam.

   4.2. Skills: The students could be able to

   4.2.1. Perceive, analyze and discuss different topics on biodiversity;

   4.2.2. Further develop/enhance their knowledge and technical English in biodiversity;

   4.2.3. Disseminate knowledge about the importance of, threats to and measures for conservation and sustainable use of biodiversity to their communities; and

   4.2.4. Work in teams to solve biodiversity problems.

   4.3. Attitude: The students are expected to

   4.3.1. Be self-discipline and responsible;

   4.3.2. Love nature and the diversity of biosphere; and

   4.3.3. Be active in knowledge dissemination and participation in works on conservation and sustainable use of biodiversity.

5. **Subject description:** This subject provides students fundamental information about biodiversity, from the definition and development through time of biodiversity to its elements and measurement. In addition, the importance of and threats to biodiversity are discussed thus measures for conservation and sustainable use of biodiversity would be recommended based on the contemporary international and national policies on biodiversity. Furthermore, different biodiversity topics would be presented and discussed by the students, *e.g.*, the species problem, humanity's direct and indirect effects on the Earth system, introduced species, climate change, mangrove forests, conservation and sustainable use of biodiversity in Vietnam, suggestions for improving people's awareness on biodiversity conservation, etc.

6. **Subject content:**

	Class hours	**Objectives**
Lectures	**20**	4.1; 4.2.1; 4.2.2; 4.3.1; 4.3.2
Orientation meeting	1	4.3.1; 4.3.2
Lecture 1. Introduction to biodiversity	1	4.1.1
Lecture 2. Biodiversity through time 2.1. Sources of information 2.2. A brief history of biodiversity 2.3. Extant species	2	4.1.1
Lecture 3. Elements of biodiversity 3.1. Genetic diversity 3.2. Organismal diversity 3.3. Ecological diversity	2	4.1.2
Lecture 4. Species concepts 4.1. Biological species 4.2. Cohesion species 4.3. Ecological species 4.4. Evolutionary species 4.5. Morphological species 4.6. Phylogenetic species 4.7. Recognition species	2	4.1.2
Lecture 5. Measurement of biodiversity 5.1. Number and difference 5.2. Value 5.3. Genetic diversity - a critical component	2	4.1.2

5.4. Species richness		
Lecture 6. The importance of biodiversity 6.1. Direct-use value 6.2. Indirect-use value 6.3. Non-use value	2	4.1.3
Lecture 7. Threats to biodiversity 7.1. Direct exploitation 7.2. Habitat loss, fragmentation and degradation 7.3. Introduced species 7.4. Extinction cascades	4	4.1.3
Lecture 8. Measures for conservation and sustainable use of biodiversity 8.1. The Convention on Biological Diversity 8.2. The UK Action Plan 8.3. The Biodiversity Law of Vietnam	4	4.1.3; 4.1.4
Students' presentations *The following topics are subject to change based on students' background and expectations.*	**8**	4.1; 4.2; 4.3
Topic 1. The species problem	1	4.1.2
Topic 2. Humanity's direct and indirect effects on the Earth system	1	4.1.3
Topic 3. Introduced species: pros and cons	1	4.1.3
Topic 4. Climate change: causes, consequences, and solutions	1	4.1.3
Topic 5. Mangrove forests	1	4.1.3
Topic 6. Biodiversity of Vietnam - Current status	1	4.1.3
Topic 7. Biodiversity of Vietnam - Laws and policies for conservation and sustainable use	1	4.1.4
Topic 8. Suggestions for improving people's awareness on biodiversity conservation	1	4.1.3; 4.1.4; 4.2.3; 4.3.3
Final examination	**2**	4

7. **Teaching methodology:** Student-centered approach
   - Synchronize subject requirements with the general background and expectations of students;

- Provide key information, raise questions, lead discussion of the students, summarize and provide take-home messages; and
- Give the students group assignments where they should prepare, present and discuss different selective topics on biodiversity.

8. Students' responsibilities:

- Attend ≥ 24/30 scheduled class hours;
- Raise questions and provide feedbacks/comments (if any);
- Be self-discipline and responsible;
- Fulfill group assignments (presentation); and
- Take the final examination.

9. Assessment:

9.1. Grade components:

No.	Grade components	Requirements	Weight	Objectives
1	Presentation	Each group of 4-5 students has to deliver a well-prepared, informative, comprehensive and interesting oral presentation on a selective biodiversity topic. Fruitful discussion is expected during the presentation.	50%	4.1; 4.2; 4.3
2	Final examination	Each student has to complete a written examination with correct and concise answers. Creative solutions/ideas are encouraged.	50%	4

9.2. Grading system: Final grade is calculated as a sum of the 2 grade components (presentation 50% and final examination 50%). This is given from 0 to 10 rounded to one decimal place. The final grade will then be transformed into the "A-B-C-D" grading system, which corresponds to the grades of 4 to 0 provided by the grading policies of Can Tho University.

10. References:

	Location
[1] Gaston K. J. and Spicer J. I. 2004. Biodiversity: An Introduction (2nd edition). Blackwell Science, UK. 191 pages.	http://birdi.ctu.edu.vn/birdi_cttt/noidung/giaotrinh/BT313%20Biodiversity/Biodiversity%20-%20An%20Introduction.pdf Molecular Biology Laboratory, Institute of

	Biotechnology R&D, Can Tho University
[2] Magurran A. E. and McGill B. J. 2011. Biological Diversity - Frontiers in Measurement and Assessment. Oxford University Press, USA. 345 pages.	Molecular Biology Laboratory, Institute of Biotechnology R&D, Can Tho University
[3] Groom M. J., Meffe G. K., and Carroll C. R. 2005. Principles of Conservation Biology (3rd edition). Sinauer Associates, Inc. Publishers, USA. 699 pages.	http://sites.sinauer.com/groom/index.php

11. Self-study guide:

Week	Content	Hours	Students' activities
1	Orientation meeting Lecture 1: Introduction to biodiversity	4	Look for the recommended references and read 1.1 and 1.2 in chapter 1 of book [1].
2	Lecture 2: Biodiversity through time	4	Read chapter 2 of book [1].
3	Lecture 3: Elements of biodiversity	4	Read 1.3 in chapter 1 of book [1].
4	Lecture 4: Species concepts	4	Read 1.3 in chapter 1 of book [1].
5	Lecture 5: Measurement of biodiversity	4	Read 1.4 in chapter 1 of book [1] and search for more detailed information in book [2].
6	Lecture 6: The importance of biodiversity	4	Read chapter 4 of book [1].
7	Lecture 7: Threats to biodiversity	4	Read 5.4 in chapter 5 of book [1] and chapters 3, 6, 7, 8 and 9 of book [3].
8	Lecture 7: Threats to biodiversity *(continued)*	4	Read 5.4 in chapter 5 of book [1] and chapters 3, 6, 7, 8 and 9 of book [3].
9	Lecture 8: Measures for conservation and sustainable use of biodiversity	4	Read chapter 6 of book [1], the Convention on Biological Diversity, the UK Action Plan and the Biodiversity Law of Vietnam and search for more detailed information in book [3].
10	Lecture 8: Measures for conservation and sustainable	4	Read chapter 6 of book [1], the Convention on Biological Diversity, the UK Action Plan

	use of biodiversity *(continued)*		and the Biodiversity Law of Vietnam and search for more detailed information in book [3].
11	Topic 1: The species problem Topic 2: Humanity's direct and indirect effects on the Earth system	4	Collect references and compose the presentation.
12	Topic 3: Introduced species: pros and cons Topic 4: Climate change: causes, consequences, and solutions	4	Collect references and compose the presentation.
13	Topic 5: Mangrove forests Topic 6: Biodiversity of Vietnam - Current status	4	Collect references and compose the presentation.
14	Topic 7: Biodiversity of Vietnam - Laws and policies for conservation and sustainable use Topic 8: Suggestions for improving people's awareness on biodiversity conservation	4	Collect references and compose the presentation.
15	Final examination	4	Review all the lectures, presented topics and class discussion.

FOR THE RECTOR
DIRECTOR

Can Tho, …… / …… / 20……
HEAD OF DEPARTMENT