Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	06

1.	Course Title	Advanced Vertebrate Biology
2.	Course Number	0304964
3.	Credit Hours (Theory, Practical)	3, 0
	Contact Hours (Theory, Practical)	3, 0
4.	Prerequisites/ Corequisites	
5.	Program Title	Ph.D. in Biological Sciences
6.	Program Code	04
7.	School/ Center	Science
8.	Department	Biology
9.	Course Level	First or Second
10.	Year of Study and Semester (s)	2023/2024, second
11.	Other Department(s) Involved in Teaching the Course	
12.	Main Learning Language	English
13.	Learning Types	☐✓Face to face learning ☐Blended ☐Fully online
14.	Online Platforms(s)	☐✓Moodle ☐Microsoft Teams
15.	Issuing Date	25-2-2024
16.	Revision Date	25-2-2024

17. Course Coordinator:

Name: Dr. Mohammad Abu Baker Contact hours:

Office number: Biology 213 Phone number: 22225

Email: ma.abubaker@ju.edu.jo

18. Other Instructors:

Name: Office number: Phone number: Email:

19. Course Description:

This course aims to survey the different groups of vertebrates. It will expose the students to the evolutionary, morphological, functional, ecological, and behavioral aspects of vertebrate life. The course will explore the diversity of vertebrates within a geographical and ecological context, how vertebrates deal with environmental stresses over different scales of space and time, and the use of adaptive physiology, morphology, feeding, breeding, … on their overall existence using examples of vertebrates from Jordan and elsewhere. The course will also address the need to protect the remaining vertebrate diversity, the major threats to vertebrates, practical aspects of conservation and conservation-oriented research and management aimed at protecting species with more emphasis on the vertebrates of Jordan.

20. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

1. An ability to identify, formulate, and solve broadly-defined technical or Scientific problems by applying knowledge of mathematics and science and /or technical topics to areas relevant to discipline.

2. An ability to formulate or design a system, process, procedure or program to meet desired needs.

3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions.

4. An ability to communicate effectively with a range of audiences.

5. An ability to understand ethical and professional responsibilities and the impact of technical and /or scientific solutions in global, economic, environmental, and societal contexts.

6. An ability to function effectively on teams that establish goals plan tasks, meet deadlines and analyze risk and uncertainty**.**

21. Course Intended Learning Outcomes: (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1) To gain a sense of the magnificent diversity of vertebrate animals, as well as patterns of similarity within them.

2) To understand the adaptations that allow the survival and reproduction of members of the different vertebrate taxa, and the forces that have driven the evolution of these adaptations.

3) To learn about the ecology, behavior and conservation of vertebrate animals.

4) To be able to identify representative vertebrates from Jordan and to know something about how they go about making a living.

5) To appreciate the process of science through searching the literature, asking scientific questions, and conducting research on vertebrate animals.

6) Critically evaluate and discuss published scientific research

7) To gain some experience in working with vertebrates.

Course ILOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	evaluating	Creating
1.	✓	✓				
2.	✓	✓		✓		
3.	✓	✓	✓			
4.	✓	✓			✓	
5.		✓		✓	✓	
6.		✓			✓	
7.			✓			

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Program ILOs / Course ILOs	ILO (1)	ILO (2)	ILO (3)	ILO (4)	ILO (5)	ILO (6)
1	×					
2	×					
3	×					
4	×		×		×	×
5	×		×	×		
6	×		×	×		
7	×		×			×

23. Topic Outline and Schedule:

Week	Lecture	Topic	ILO/s Linked to the Topic	Learning Types (Face to Face/ Blended/ Fully Online)	Platform Used	Synchronous /	Evaluation Methods	Learning Resources
1	1.1	Introduction		F-to-F				
2	2.1	Vertebrate Animals: Diversity & Evolution		F-to-F			Exam	Ch1 & 2
3	3.1	Vertebrate Animals: Diversity & Evolution		F-to-F			Exam	Ch1 & 2, evolution reading
4	4.1	Jawless vertebrates		F-to-F			Exam	Ch 3.2 – 3.6
5	5.1	Jawless vertebrates		F-to-F			Exam	Ch 3.2 – 3.6
6	6.1	Jawed fishes – Chondrichthyes & Actinopterygii		F-to-F			Exam	Ch 5.1, 5.5 – 5.7, 6.1 – 6.8
7	7.1	Living in Water		F-to-F			Exam	Ch 4
8	8.1	Living on Land		F-to-F			Exam	Ch 8, 11.1 – 11.2

9	9.1	Ectothermy		F-to-F			Exam	Ch 8.8, Ch 13.5 – 6, Ch 14
10	10.1	Amphibians		F-to-F			Exam	Ch 10
11	11.1	Reptiles		F-to-F			Exam	p 204-5, Ch 12, Ch 13, Ch 16.4
12	12.1	Endothermy, Energetics & High metabolism		F-to-F			Exam	4.5, 4.6, 8.7, 11.4, 22.1-6, 11.5
13	13.1	Aves (Birds)		F-to-F			Exam	Ch 16.9, Ch 17
14	14.1	Mammalian Diversity and Specialization		F-to-F			Exam	Ch 18.3, Ch 20, Ch 21, Ch 23Ch 21
15	15.1	Vertebrate Ecology & Behavior Zoogeography& Conservation		F-to-F			Exam	Davies et al 2012 Behavioural Ecology Linzey Ch3, Ch 20.5, 6.7, 10.7, 12.7, 25

24. Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	ILO/s Linked to the Evaluation activity	Period (Week)	Platform
Reading Questions and in-class assignments	5				
Species account write up and presentation	10				
Field/lab project and presentation	10				
Participation	5				
Midterm exam	30				
Final exam	40				

25. Course Requirements:

(e.g.: students should have a computer, internet connection, webcam, account on a specific software/platform…etc.):

26. Course Policies:

All students are expected to adhere to the rules of conduct outlined in the University of Jordan Student Handbook.

http://studentaffairs.ju.edu.jo/Pages/PDFGuidestudent.aspx

A- Attendance policies: Enrolled students are expected to attend the lectures in line with the university of Jordan policy as outlined in the UJ student handbook. Failure to do so will make the student subject to the penalties outlined in the said document. Furthermore, missing classes will have negative repercussions on the student's participation grade.

B- Absences from exams and handing in assignments on time: You should talk to your instructor as soon as possible if you miss an exam. All such cases will be dealt with according to the UJ student handbook rules.

C- Health and safety procedures: NA

D- Honesty policy regarding cheating, plagiarism, misbehavior: All violations pertaining to cheating, plagiarism and misbehavior will be dealt with in accordance to the rules outlined in the UJ student handbook. In order to avoid plagiarism, the sources for the information contained in your homework must be properly cited and verbatim quotations must be limited and explicitly presented as such. To learn more about the procedures for ethical referencing of information and how to assess the credibility of information critically you can consult with the relevant documents in the course UJ e-learning page (see below). You can use any standard citation style (*e.g.,* Chicago or MLA), but in biological sciences we prefer AMA.

E- Grading policy:

F- Available university services that support achievement in the course:

27. References:

A- Required book(s), assigned reading and audio-visuals:

Pough, F.H. et al. 2013. Vertebrate Life. 8th 9th or 10th. Pearson Publishing.

Linzey, D.W. 2012. Vertebrate Biology. Johns Hopkins University Press.

Willson, M.F. 1984. Vertebrate Natural History. Saunders College Publishing.

Liem, K.F. et al. 2001. Functional Anatomy of the Vertebrates. 3rd Edition. Brooks Cole Thomson Learning.

Amr, Z.S. 2012. Mammals of Jordan. 2nd edition. Amman, Jordan.

Disi, A. M., Modry, D., Nečas, P. & Rifai, L. 2001. Amphibians and Reptiles of the Hashemite Kingdom of Jordan: An Atlas and Field Guide. Chimaira, Frankfurt.

Benda, P., Lučan, R. K., Obuch, J., Reiter, A., Andreas, M., Bačkor, P., Bohnenstengel, T., Eid, E. K., Ševčík, M., Vallo, P. & Amr, Z.S. 2010. Bats (Mammalia: Chiroptera) of the Eastern Mediterranean and Middle East. Part 8. Bats of Jordan: fauna, ecology, echolocation, ectoparasites. Acta Societas Zoologicae Bohemicae, 74:185–353.

Amr, Z. S. & Disi, A. 2011. Systematics, distribution and ecology of the snakes of Jordan. Vertebrate Zoology, 61:179-266.

B- Recommended books, materials, and media:

Evolutionary Analysis (2014) Herron JC and Freeman S. Pearson.

Evolution (2017) Futuyma, D.J. and Kirkpatrick, M. 4th ed. Sinauer Associates.

Biology: A Global Approach (2017) Campbell, N.A., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V. and Reece, J.B. 11th Ed. Publisher: Pearson.

The Beak of the Finch (2014) Weiner J. Vintage Books.

Your inner fish (2008) Shubin, N. Pantheon Books, New York.

28. Additional information:

E-sources and audiovisuals

inaturalist: https://www.inaturalist.org

Animal Diversity Web: https://animaldiversity.org/accounts/Reptilia/

ASM Mammal Diversity Database: https://www.mammaldiversity.org

American Society of Mammalogists: https://mammalsociety.org

Mammalian Species: https://mammalsociety.org/publications/mammalian-species

Smithsonian Museum: https://naturalhistory.si.edu/research/vertebrate-zoology

Reptile Database Reptárium: https://reptile-database.reptarium.cz

Reptiles Database: http://www.reptile-database.org

Amphibians: https://amphibiaweb.org

Cornell Lab: https://www.allaboutbirds.org/news/

Smart phone app: birds of the middle east

nature serve: http://www.natureserve.org/

IUCN red list: http://www.iucnredlist.org/

Rediscovering Biology: Molecular to global perspectives:
http://www.learner.org/courses/biology/index.html

UC Berkeley's Understanding Evolution webpage: http://evolution.berkeley.edu/

PBS's evolution library: http://www.pbs.org/wgbh/evolution/library/index.html

Name of the Instructor or the Course Coordinator:	Signature:	Date:
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Name of the Head of Quality Assurance Committee/ Department	Signature:	Date:
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Name of the Head of Department	Signature:	Date:
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Name of the Head of Quality Assurance Committee/ School or Center	Signature:	Date:
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Name of the Dean or the Director	Signature:	Date:
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