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| **Benha University** **Faculty of Science****جامعة بنهاDepartment of Zoology**  |
| **Course Specification**412 Z: Advanced physiology (2)  |
| **A- Affiliation** |
| **Relevant program:** | Zoology & chemistry B.Sc. Program |
| **Department offering the program:** | Department of Zoology |
| **Department offering the course:** | Department of Zoology |
| **Academic year/level:**  | fourth level |
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| B - Basic information |
| **Title:** Advanced physiology (2) | **Code:** 412 Z | **Year/level:** fourth level  |
| **Teaching Hours:** | **Lectures:** 2 | **Tutorial:** 0 |
|  | **Practical:** 3 | **Total:** 3 h/week |
| C - Professional information |
| **1 – Course Learning Objectives:** |
| The objective of this course is to enable the students to understand the physiological principle of excretion, chemical strucure and function of hormones, hormones secretion defect, physiological basis of nervous system and senses. |

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| **2 - Intended Learning Outcomes (ILOS)** |
| **a - Knowledge and understanding:**On successful completion of the course, the student should demonstrate knowledge and understanding of:a1- Recognise mechanism of excretion.a2- Identity the chemical structure of hormones and their functions. a3- Describe the symptoms of hormones disfunction. a4- List types of nervous system. a5- Recognise the neurotransmitter. a6- Describe the mechanism of action of sense organs. |
| **b - Intellectual skills:**On successful completion of the course, the student should be able to. b1- Link the action of sense organs and nervous system. b2- Apply the investigations in a responsible, safe and ethical manner, paying attention to risk assessment and safety regulation. b3- Link the symptoms of hormones disfunction and the hormones function. b4- Interpret the urine analysis data. |
| **c- Practical and professional skills:**On successful completion of the course, the student should be able to: c1- Analysis the urine samples. c2- Examine the effect of electrical stimulation on muscle contration by Kymograph.  |
| **d - General skills:**On successful completion of the course, the student should be able to: d1- Use information and communication technology effectively. d2- Think independently, and solve problems on scientific basis. d3- Work in a team effectively, manage time, collaborate andothers positively. d4- Acquire self- and life-long learning. d5- Deal with property rights legally and ethically. |

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| **3 - Contents** |
| **Topic** | **Lecture hours** | **Tutorial hours** | **Practical hours** |
| 1- Excretory system. | 2 | 0 | 3 |
| 2- Mecanism of excretion.  | 2 | 0 | 3 |
| 3- Endocrine system. | 2 | 0 | 3 |
| 4- Types of hermones. | 2 | 0 | 3 |
| 5- Function of hermones. | 4 | 0 | 3 |
| 6- Hormones defect. | 2 | 0 | 3 |
| 7- Nervous system. | 2 | 0 | 6 |
| 8- Centeral nervous system. | 2 | 0 | 3 |
| 9- Peripheral nervous system. | 4 | 0 | 3 |
| 10- Neurons and synapses. | 2 | 0 | 6 |
| 11- Mechanism of light senstion. | 2 | 0 | 3 |
| 12- Mechanism of hearing. | 2 | 0 | 3 |
| **Total hours** | **28** | 0 | **42** |

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| **4 - Teaching and Learning methods:** |

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| **Intended Learning Outcomes** | **Lecture** | **Presentations & Movies** | **Discussions & Seminars** | **Practical** | **Problem solving** | **Brain storming** |
| **Knowledge & Understanding** | a1 | Recognise mechanism of excretion. | x | x | x | x | 0 | 0 |
| a2 | Identity the chemical structure of hormones and their functions. | x | x | x | 0 | 0 | 0 |
| a3 | Describe the symptoms of hormones disfunction. | x | x | x | 0 | x | x |
| a4 | List types of nervous system. | x | x | x | 0 | 0 | 0 |
| a5 | Recognise the neurotransmitter. | x | x | x | x | 0 | 0 |
| a6 | Describe the mechanism of action of sense organs. | x | x | x | 0 | x | x |
| **Intellectual Skills** | b1 | Link the action of sense organs and nervous system. | 0 | **0** | **x** | **0** | **x** | **x** |
| b2 | Apply the investigations in a responsible, safe and ethical manner, paying attention to risk assessment and safety regulation. | 0 | **0** | **x** | **0** | **0** | **0** |
| b3 | Link the symptoms of hormones disfunction and the hormones function. | x | 0 | x | 0 | x | x |
| b4 | Interpret the urine analysis data. | 0 | 0 | 0 | x | x | 0 |
| **Practical Skills** | c1 | Analysis the urine samples. | 0 | 0 | 0 | x | x | 0 |
| c2 | Examine the effect of electrical stimulation on muscle contration. | 0 | 0 | 0 | x | x | 0 |
| **General Skills** | d1 | Use information and communication technology effectively. | 0 | x | 0 | x | x | 0 |
| d2 | Think independently, and solve problems on scientific basis. | 0 | 0 | x | x | x | 0 |
| d3 | Work in a team effectively, manage time, collaborate andothers positively. | 0 | 0 | x | x | 0 | x |
| d4 | Acquire self- and life-long learning. | 0 | 0 | x | 0 | x | x |
| d5 | Deal with property rights legally and ethically | 0 | 0 | x | 0 | x | 0 |

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| **5- Students’ Assessment Methods and Grading:** |

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| **Tools:** | To Measure | **Time schedule** | **Grading** |
|  Mid-Term Exam | a1 to a6, b1 to b4 | sixth week | 10 % |
| Oral exam | a1 to a6, b1 to b4 | Bi-weekly | 10 % |
| Semester Work  | a1 to a6, b1 to b4 and d1 to d5 | Bi-weekly | 2 % |
| Practical exams | a1, a5, c1 and c2 | Fourteenth week | 30 % |
| Written exam | a1 to a6, b1 to b4 | Sixteenth week | 48 % |
| Total | 100 % |

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| **6- List of references:** |
| **6-1 Course notes**Non**6-2 Required books** [**Basic Anatomy and Physiology of Human Body**](http://www.e-booksdirectory.com/details.php?ebook=8943) **by A. O. Osunderu - National Open University of Nigeria , 2008.****6-3 Recommended books** Nervous System". *Columbia Encyclopedia*. Columbia University Press. Kandel ER, Schwartz JH, Jessel TM, ed. (2000). "Ch. 2: Nerve cells and behavior". *Principles of Neural Science*. McGraw-Hill Professional. **6-4 Periodicals, Web sites, etc.** [**The Nervous System - Web Biology**](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&cad=rja&ved=0CDYQFjAG&url=http%3A%2F%2Fwww.webbiology.com%2Fthe-nervous-system&ei=CGRpUuyaCNOshQeExYHIDw&usg=AFQjCNFkuK2lXw2daKHDAOWcsgx2W95_5w)[**Nervous system - Wikipedia, the free encyclopedia**](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=11&cad=rja&ved=0CFUQFjAK&url=http%3A%2F%2Fen.wikipedia.org%2Fwiki%2FNervous_system&ei=CGRpUuyaCNOshQeExYHIDw&usg=AFQjCNHW9r08gQ-55CLCOlxsRs_iAl1Mng)[**Urinary System - Web Books Publishing**](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0CG0QFjAI&url=http%3A%2F%2Fwww.web-books.com%2FeLibrary%2FMedicine%2FPhysiology%2FUrinary%2FUrinary.htm&ei=jWVpUvKPMIXMhAf924CYCg&usg=AFQjCNEMvxxpBEEtnJ9BdODG23WvUNk0iA&cad=rja)[**Excretory system - Wikipedia, the free encyclopedia**](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&ved=0CDQQFjAF&url=http%3A%2F%2Fen.wikipedia.org%2Fwiki%2FExcretory_system&ei=uGZpUvKNIMuJhQeo04GYBA&usg=AFQjCNGqrI21HRHx5_-ExBVuXkKrvQ3iEg)[**www.watchknowlearn.org**](http://www.watchknowlearn.org)[**en.wikibooks.org/wiki/Human\_Physiology**](http://en.wikibooks.org/wiki/Human_Physiology)[**www.neurologychannel.com/multiplesclerosis/**](http://www.neurologychannel.com/multiplesclerosis/)[**/the\_human\_kidney\_structure\_and\_function**](http://generalmedicine.suite101.com/article.cfm/the_human_kidney_structure_and_function)[**www.kidney.org/atoz/content**](http://www.kidney.org/atoz/content/kidneytransnewlease.cfm) |

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| **7- Facilities required for teaching and learning:** |
| * Physiological Lab.
* Chemicals and kymograph analysis.
* Data show
* Using a black board
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| **Course coordinator:** | Prof. Dr. Magda M. El-Ezabi |  |
| **Head of the Department:** | Prof. Dr. Aziza A.M. El-Shafey |  |
| **Date:** | 2013 / 2014 |  |