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| جامعة بنها | **Benha University****Faculty of Science****Department of Zoology** | E:\الجودة\templets\وحدة الجودة لوجو.jpg |

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| **Course Specification** **601 Z PhI: Metabolism and enzymes**  |
| **A- Affiliation** |
| **Relevant program:** | Physiology and immunology Msc. Program |
| **Department offering the program:** | Department of Zoology |
| **Department offering the course:** | Department of Zoology |
| **Date of specifications approval:** |  |
| ***B - Basic information*** |
| **Title:** Metabolism and enzymes.  | **Code:** 601 Z PhI |  |
| **Teaching Hours: 3 h/week** | **Lectures:** 3 | **Tutorial:** 0 |
|  | **Practical:**  0 | **Total:** 3 h/week |
| ***C - Professional information*** |
| **1 – Course Learning Objectives:** |
| The objective of this course is to enable the students to study main principles of metabolism. Understand the relationship between sources of debt and their metabolism. |

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| **2 - Intended Learning Outcomes (ILOS)** |
| **a - Knowledge and understanding:** On successful completion of the course, the student should be able to: a1- Define the different Scientific terms in Metabolism. a2-Understand the basic knowledge about oxidation in living cells. a3- Summarize the role of Metabolism in the living cells..  a4- Realize How can write a thesis and research proposal. |
| **b - Intellectual skills:**On successful completion of the course, the student should be able to. b1- Estimate and Evaluate the articles and collected research papers in biochemistry of metabolism. b2- Interpret symptoms, signs and biochemical laboratory findings of some metabolic disorders |
| **c - Practical and professional skills:** c1 - Perform relevant statistical analysis on data obtained from own research which support his biochemical skills. c2 –Conduct research project using an appropriate range of experimental techniques:  |
| **d - General skills:**On successful completion of the course, the student should be able to: d1- Use computers and internet for communication, data handling and word processing. d2 - Solve problems on scientific basis in practical.  d3 - Communicate and collaborate with others, work in a team effectively, manage time and involvement in group discussion and seminars. d4 - Modify sense of beauty and neatness.  d 5- Develop the skills effectively in research activities. |
| **3 - Contents** |
| **Topic** | **Lecture hours** | **Tutorial hours** | **Practical hours** |
| Biological oxidations-respiratory chain and oxidative phosphorylation. | 3 | - | - |
| Fate of absorbed sugars (glycogenesis-glycogenolysis) | 3 | - | - |
| Oxidation of cytoplasmic NAD | 3 | - | - |
|  Aerobic oxidation of glucose Pentose phosphate shuntUronic acid pathwayCoris cycleGluconeogenesisBlood glucose-diabetes mellitus | 6 | - | - |
| Fate of absorbed lipid | 3 | - | - |
| Oxidation of fatsβ oxidationα oxidationketogenesis-ketolysis | 3 | - | - |
| Triglyceride biosynthesisDopt fatCholesterolFatty liver | 6 | - | - |
| Protein catabolismOxidation deamination | 3 | - | - |
| Transamination  | 3 | - | - |
| Transdeamination | 3 | - | - |
|  Fate of ammonia removed | 3 | - | - |
| Urea cycle | 3 | - | - |
| **Total hours** | **42** | - | **-** |

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

4-1. Visiting Libraries.

 4-2. Using Information Technology.

4-3. Researches.

 4-4. Internal seminars and discussions.

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| **5- Students’ Assessment Methods and Grading:** |
| **Method of Assessment** | **Percent**  |
| 1-  | Semester work & mid Term Exam | 10% |
| 4- | Final Oral Exam | 10% |
| 5-  | Final Term Examination | 80% |
|  | **Total** | 100% |

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| **6- List of references:** |