#### Course Title: Chemistry 2 (Biochemistry)

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| **University** | **Benha** |
| **Faculty** | **Agriculture** |
| **COURSE SPECIFICATIONS:** |
| Program of which the course is given | Agricultural Biotechnology Program |
| Major or Minor element of program | Major |
| Departments offering the program | Agricultural Chemistry  |
| Department offering the course | Agricultural Chemistry  |
| Academic year (level) | Level 2 (First Semester) |
| Date of specification approval |  |

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| **A- BASIC INFORMATION**  |
| Title  | Chemistry 2 (Biochemistry) |
| Code | AC 0902 |
| Credit Hours  | 4 Hours/ week (14 week) |
| Lecture | 2 Hours / week |
| Practical | 2 Hours / week  |
| Total: | 56 Hours |

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| **B- PROFESSIONAL INFORMATION** |
| 1. OVERALL AIMS OF COURSE |
| This course concerns providing students with information about different topics and aims to: * Know the structure and chemistry of the major components of life cells: Carbohydrates, Proteins and Lipids.to know the student the importance of computers
* Understand the benefits of these compounds to man, plant, animal and bacteria in relation to food need.
* Identify the physical and chemical properties of base units of each compound group and how to detect and determine these units.
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| 2. INTENDED LEARNING OUTCOMES OF COURSE (ILOs) |
| **A. Knowledge and Understanding:** |
| ***By the end of the course, students should:**** Describe the structure of living cell and its compartment function.
* Specify the carbohydrates, proteins, lipids and nucleic acids: classification, structure & chemistry.
* Recognize the biological and feed importance of those mentioned compounds in addition to vitamins and hormones.
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| B. Intellectual Skills: |
| ***Successful completion of this course will allow students to:**** Understand the relation between chemical structure of major compounds and their function (in alive cell, food and industry).
* Recognize how the living organisms deal with the major biochemical compounds.
* Specify the relation between carbohydrates, proteins and lipids in connection with energy production and growth.
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| C. Professional and Practical Skills: |
| * Characterize and evaluate of sugars, proteins and lipid fractions in different samples.
* Determine the mentioned biological compounds.
* Differentiate between types of vitamins and hormone and the knowledge of their role in life.
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| D. General and Transferable Skills: |
| * Identify and solve the scientific problems.
* Find scientific informations from the different sources (Library: books, periodicals,...).
* Use computer for information retrieval..
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| 3. CONTENTS |
| **Topic** | **No. of hours** | **Lectures** | **Practical** |
| 1. Carbohydrates and their classification and their reactions.
 | 14 | 7 | 7 |
| 1. Proteins (amino acids, nucleic acids and their reactions).
 | 14 | 7 | 7 |
| 1. Lipids (classification), conjugated lipids, derived lipids and their reactions.
 | 14 | 7 | 7 |
| 1. Enzymes (classification, mechanisms, kinetics, inhibitions).
 | 14 | 7 | 7 |

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| 4. TEACHING AND LEARNING METHODS |
| 1. The main subject areas are covered in the lectures (see syllabus Plan).
2. Illustrate the chemical structures by specific models.
3. Use projector, slide projector and/ or data show.
4. Students are given a topic to research in small groups which to collect updated information and try to solve the problems that faced them by open discussion or by oral presentation.
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| 5. STUDENT ASSESSMENT METHODS |
| ***Students will be evaluated by attendance, fulfillment and effort in exercises and presentations, and examination grades:***1. Laboratory work: to assess the ability of students to understand and perform small laboratory experiments.
2. Practical analysis to assess of student to find the problem and solve it as well as writing the results in a weekly report.
3. Mid-Term exam to assess how to recognize the unknown material and understanding the scientific background.
4. Oral presentation to assess how to understand the question & answer and understanding professional skills.
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| 6. ASSESSMENT SCHEDULE |
| No | AssessmentAssessment | **Week** |
| 1 | Periodical exam  | 7 |
| 2 | Practical exam | 11 |
| 3 | Oral exam | 13 |
| 4 | Final exam | 14 |

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| 7. WEIGHING OF ASSESSMENT |
| No | AssessmentAssessment | **%** |
| 1 | Periodical exam  | 15% |
| 2 | Practical exam | 15% |
| 3 | Oral exam | 10 % |
| 4 | Final exam | 60 % |
| TOTAL | 100 % |

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| 8. LIST OF REFERENCES |
| 1. **Campbell, M.K. ‏ and Farrell, S.O. 2010**.Biochemistry. 7th Ed. Cengage Learning, China. [**Link**](http://books.google.de/books?id=J5NVrE_Uf-8C&printsec=frontcover&dq=Biochemistry&hl=en&sa=X&ei=D_T3UvTRGISetAa32oDwBQ&ved=0CC4Q6AEwAA#v=onepage&q=Biochemistry&f=false)

Garrett, R.H.‏ and Grisham, C.M. 2013. Biochemistry, 5th Ed. Cengage Learning China. [Link](http://books.google.de/books?id=-Lhp0ppRYWoC&printsec=frontcover&dq=Biochemistry&hl=en&sa=X&ei=D_T3UvTRGISetAa32oDwBQ&ved=0CDoQ6AEwAg#v=onepage&q=Biochemistry&f=false) |

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| 9. FACILITIES REQUIRED FOR TEACHING AND LEARNING |
| 1. Teaching aids/materials: e.g. smart boards-data-show projector-stationary.. etc.
2. Teaching room/hall.
3. Equipped lab
4. Computers connected to the internet.
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| **Course Coordinators:**  | **Prof. Dr.** **Prof. Dr.**  |
| **Date: / / 2015** |