**Course Description Form**

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| 1. Course Name: | | |
| Biochemistry | | |
| 1. Course Code: | | |
| 404CHBC2 | | |
| 1. Semester / Year: | | |
| Year | | |
| 1. Description Preparation Date: | | |
| 1/ 10/ 2024 | | |
| 1. Available Attendance Forms: | | |
| Weekly / obligatory(mandatory) | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | |
| 60 hours- 6 – unit | | |
| 1. Course administrator's name (mention all, if more than one name) | | |
| Name: Assist. Prof. Khalid Shaalan Sahab  Email: [Khalidshalaan@yahoo.com](mailto:Khalidshalaan@yahoo.com) | | |
| 1. Course Objectives | | |
| **Course Objectives** | | * Define the metabolism and it is importance * Biosynthesis of molecules of cells * Catabolism of dietary molecules to liberation the energy * Define the fates of molecules(clinical importance) that produced from metabolism * Knowledge the chemistry of blood * Define the determination methods used to estimation the blood molecules and it is applications * Teaching and learning the students any essential and necessary information related to biochemistry. |
| 1. Teaching and Learning Strategies | | |
| **Strategy** | * Lecture method and use of interactive whiteboard with explanation and clarification * Provide students with the basics and additional topics related to the outcomes of thinking and biochemical analysis * Homework that requires subjective explanations in causal ways | |

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| 1. Course Structure | | | | | |
| **Week** | **Hours** | **Required Learning Outcomes** | **Unit or subject name** | **Learning method** | **Evaluation method** |
| 1 | 2 | Introduce biochemical processes to students | Introduction to metabolism | Board and interactive whiteboard | * Daily exams * Homework * Monthly exams |
| 2 | 2 | Digestion and absorption of dietary carbohydrate | Nutrition / Digestion and absorption of dietary carbohydrate | = | = |
| 3 | 2 | -Fate of absorbed glucose/  -glycolysis and formation of pyruvate | Catabolism of glucose | = | = |
| 4 | 2 | Conversion of pyruvate to acytyl-CoA/  Krebs cycle | Explain Krebs cycle | = | = |
| 5 | 2 | Energy calculation from catabolism of glucose,  Conversion of pyruvate to lactate and Cori cycle | Energy liberated from catabolism of glucose/  Cori cycle | = | = |
| 6 | 2 | Glycogenesis and glycogenolysis | Glycogenesis and glycogenolysis | = | = |
| 7 | 2 | -Gluconeogenesis  -pentose phosphate pathway | Gluconeogenesis and  pentose phosphate pathway | = | = |
| 8 | 2 | First exam of first course |  |  |  |
| 9 | 2 | Digestion and absorption of dietary lipids  Beta-oxidation of fatty acids | Nutrition / Digestion and absorption of dietary lipids  Beta-oxidation of fatty acids | = | = |
| 10 | 2 | Energy from oxidation of fatty acids  Fatty acids Biosynthesis | Energy from oxidation of fatty acids  Fatty acids Biosynthesis | = | = |
| 11 | 2 | Biosynthesis of Triglycerides and phospholipids | Biosynthesis of Triacylglycerol and phospholipids | = | = |
| 12 | 2 | Biosynthesis of cholesterol  Ketone bodies | Biosynthesis of cholesterol  Ketone bodies | = | = |
| 13 | 2 | Nutrition / Digestion and absorption of dietary proteins/  State of oxidation of amino acids | -absorption of dietary proteins/  -Oxidative-degradation State of amino acids | = | = |
| 14 | 2 | Transformation of amino group in liver | Transformation of amino group in liver | = | = |
| 15 | 2 | Glutamine transfer amino from extra-hepatic cells to liver | Glutamine transfer of amino group via blood to liver | = | = |
| 16 | 2 | Alanine transfer amino group from muscles to liver | alanine transfer amino via blood to liver | - | = |
| 17 | 2 | Second exam of first course |  |  |  |
| 18 | 2 | Excretion methods of nitrogen and urea cycle |  | = | = |
| 19 | 2 | Urea cycle and Krebs cycle | Krebs bicycles/ aspartate-argininosuccinate shunt | = | = |
| 20 | 2 | Genetic defects of urea cycle enzymes | Genetic defects of urea cycle enzymes | = | = |
| 21 | 2 | Metabolism of nucleotides/ anabolism of purine nucleotides | Metabolism of nucleotides | = | = |
| 22 | 2 | Anabolism of pyrimidine nucleotides  Catabolism of nucleotides | Metabolism of nucleotides | = | = |
| 23 | 2 | Replication and transcription of DNA | Replication, transcription and translation of genetic information | = | = |
| 24 | 2 | Translation of genetic information and biosynthesis of proteins | Replication, transcription and translation of genetic information | = | = |
| 25 | 2 | First exam of second course |  |  |  |
| 26 | 2 | Constituents of blood/ Blood proteins and its biological role | Blood chemistry | = | = |
| 27 | 2 | Red and white blood cells and its biological role | Blood chemistry | = | = |
| 28 | 2 | Human nutrition | Human nutrition | = | = |
| 29 | 2 | Human nutrition | Human nutrition | = | = |
| 30 | 2 | Second exam of second course |  |  |  |

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| 1. Course Evaluation | |
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc | |
| 1. Learning and Teaching Resources | |
| Required textbooks (curricular books, if any) |  |
| Main references (sources) | **1- Harpers Illustrated Biochemistry,**  **2- Principle of Bio Chemistry, Smith & White**  **3- Biochemistry by Armstrong**  **4-Lehninger Principle of Bio Chemistry** |
| Recommended books and references (scientific journals, reports...) |  |
| Electronic References, Websites |  |