TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	College of Dentistry /University of Kirkuk
2. University Department/Centre	Basic Science department.
3. Course title/code	Biochemistry / DEBS -212
4. Modes of Attendance offered	Weekly (E-learning and Traditional classroom through lectures and laboratories)
5. Semester/Year	2nd Year / 1st and 2nd Semester
6. Number of hours tuition (total)	120 (60 hours theory and 60 hours practical)
7. Date of production/revision of this specification	2020-2021
8. Aims of the Course	
Biochemistry is the study of basic human chemistry, with an emphasis on biomolecular structure, metabolic pathways and their relationship to human health and disease. Moreover, it is will cover the fundamental structures, function and interactions of biological macromolecules, including nucleic acids (RNA and DNA), proteins, carbohydrates and lipids.	
The general objective of this course is to illustrate biochemical changes and its metabolic pathway in human body.	
Clinical biochemistry is the study of the chemistry of the human body and how it is affected by disease. A fascinating subject combines expert theoretical knowledge with practical skills to help with the diagnosis and treatment of everything from endocrine disorders to antenatal complications.	
Provide student to general information on chemical and biological analysis and laboratory diagnosis on the principles of pointing out the extent of their application and clinical diagnostics results of laboratory tests.	
Teaching students in the college how to use the laboratory methods which are monitoring biochemistry reaction in biological samples & Study the biochemistry function of different human organs in normal and abnormal conditions	
Teaching students in the college how to detect some vital compounds found in the human body	
Providing the student with some basic skills that may be necessary for future studies, such as analyzing results and documents and using the Internet.	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals.

A1. The student acquires knowledge of understanding the basis of chemical reactions to vital processes that occur within the human body in normal and pathological situations.

A2 . The student should learn about the experiments and the rules of measurements in biochemistry that occur in the human body in normal and pathological cases and practical application of them

A3. Enhance student confidence to deal with all cases.

A4. Providing the student with full knowledge and scientific experience with the ability to dissolve problems

A5. Develop the student's ability to contribute effectively to medical progress through education and prepare qualified dentists to provide the best medical services and continue scientific research in all medical fields, which enables him to prepare treatment plan for the patient.

B. The skills goals special to the course.

B1. The student is proficient in using laboratories and equipment efficiently and conducting practical experiments to increase the student's understanding and witnessing it in a practical way

B2. Students acquire skills that keep him with scientific development in improving educational programs and using the latest developed programs for medical education accordance with the modern academic curriculum

B3. Contribute to providing the community with scientifically dentists with experience in the scientific foundations, They have the ability to perform all pathological analyzes of clinical biochemistry.

B4 Promoting the principle of continuous learning through scientific research and urging participation in courses, conferences, workshops and scientific discussions in order to continue to develop the profession and see the latest developments

Teaching and Learning Methods

The method of teaching changes according to the student's realization and his interaction with the lecture. It may be the method of discussion, the method of questions, or the method of conclusion and deduction... and all methods may be at the same time in addition to

1. Using laboratories and practical experiments to increase student understanding and awareness.
2. Teaching lectures using visual aids (data show and power point).
3. Educational videos
4. Discussing teamwork in the laboratory
5. Using scientific references and guiding students to some websites.
6. Site visits to hospitals and laboratories

Assessment methods

1. Examinations of all kinds.
2. The student's attendance in addition to his interaction with the scientific material and his activity during the lecture.
3. Practical tests on patient samples and discussion of the results.
4. Deductive surprising questions during theoretical and practical lectures.
5. Activities such as seminars.
6. Participation in scientific festivals.
7. Preparing reports

C. Affective and value goals

C1. Acquiring knowledge by understanding the basics of chemical reactions of the vital processes that occur inside the human body in normal and pathological cases.

C2 - Improving the student's skill and ability to think and increase his awareness to make the right decision

C3 - Adopting the method of dialogue between the student and the teacher by posing problems and finding

appropriate solutions to them.
C4. Excellence in innovating and following advanced scientific methods in conducting pathological analyzes
C 5- The ability to make decisions by recognizing the problem and finding solutions
C6 - Improving the skill of using information from a variety of sources, including scientific fields.

Teaching and Learning Methods

- Lectures using illustrations (data show and power point) and educational videos.
- Using laboratories and practical experiments to increase student understanding and awareness
- Providing the appropriate educational climate for logical thinking through continuous guidance to students during lectures and opening a space for the direct discussions with students.
- Lectures that research and teach students ways to confront and solve problems.
- Follow up on the way students think, express and respond quickly
- Asking external questions that relate to the topic and homework by referring to modern sources and the Internet

Assessment methods

- Monthly, quarterly and final exams, quizzes and laboratory reports.
- Student assessment in the classroom and laboratory through daily attendance and self-behaviour.
- Practical tests on samples of patients and discussion of the results
- Surprise deductive questions during theoretical and practical lectures
- Student interaction with the lecture and class discussions.

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D 1- The student's ability to work within the educational and professional team
D 2- Positive thinking and the use of the knowledge he has received
D 3- The ability to deal with parties outside the university, train with them and develop skills
D 4- The ability to analyze data to reach the correct result
D 5- Acquiring new capabilities and experiences related to the development taking place in various fields.
D 6 - Follow up on recent scientific topics via the Internet.

10. Course Structure (Theoretical)

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Digestion & absorption Organs & section, chemistry & composition of bile & feces	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars And the short and semester exams, the mid-year exam, and the final exam
2	2	Carbohydrate digestion & absorption	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
3	2	Protein digestion & absorption	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
4	2	Lipid digestion & absorption	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
5	2	Carbohydrate metabolism (Glycolysis (aerobic & anaerobic) , Kerb's cycle)	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam

6	2	Glycogenesis, Glycogenolysis ,Gluconeogenesis	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
7	2	HMP, Hormonal regulation of carbohydrate metabolism	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
8	2	Diabetes mellitus and GTT	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
9	2	Lipid metabolism (blood lipid , body store of fat)	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
10	2	Lipoprotein	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
11	2	Fatty acids oxidation, phospholipid and cholesterol synthesis	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
12	2	Ketosis and ketone body formation, Metabolism ion starvation	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
13	2	Protein metabolism (Anabolic and catabolic reaction of amino acid)	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
14	2	Transamination , Deamination, urea cycle and its disorder	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
15	2	Metabolism of individual amino acids	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
16	2	Enzymes (Nature of enzyme , mode of action , mechanism of enzyme action)	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
17	2	Specificity , Nomenclature, classification	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
18	2	Factor effecting enzyme action	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
19	2	Isoenzyme, clinical diagnosis, co-enzyme function & important	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
20	2	Hormone (structure of hormones , mechanism of hormone action)	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
21	2	Classification of hormone	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
22	2	Free radicals and antioxidant nutrient	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
23	2	Nucleic acid metabolism (Synthesis & catabolism of	Biochemistry	A theoretical lecture using the power point	And the short and semester exams, the mid-year exam, and the final exam

		purine and pyrimidine)		and educational video	
24	2	Purine and pyrimidine disorder	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
25	2	Porphrins & Bile pigments	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
26	2	Mineral metabolism (minor and major elements with special consideration for Na, K, Cl, PO4, Ca, F, iron , copper , zinc , iodin Mn, Mg cd, Mo)	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
27	2	Physiological role, deficiency & level in blood	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
28	2	Vitamins: Definition The major groups (fat& water-soluble vitamins) Study the individual vitamins under certain general heading:	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars
29	2	Sources ,chemistry ,metabolism ,phycological functions,	Biochemistry	A theoretical lecture using the power point and educational video	And the short and semester exams, the mid-year exam, and the final exam
30	2	deficiency diseases, daily requirements, hypervitaminosis, vitamin antagonists, vitamin A,D,E,K,C &B, niacin, pyridoxine, pantothenic acid ,biotin, folic acid	Biochemistry	A theoretical lecture using the power point and educational video	Class discussions, homework, reports, and seminars

10. Course Structure (practical)

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Laboratory rule & safety	Biochemistry	A theoretical lecture using the power point and educational video	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
2	2	Type of specimens & sample collection	Biochemistry	A theoretical lecture using the power point and educational video	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
3	2	Spectrophotometer	Biochemistry	A theoretical lecture using the power point	Daily participations, class discussions and practical

					experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
4	2	Stander curve	Biochemistry	And an instructional video with a practical application on a device	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
5	2	Determination of blood glucose	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
6	2	Determination of serum lipid (cholesterol)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
7	2	Determination of serum lipid (triglyceride)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
8	2	Determination serum Lipoprotein (HDL, LDL &VLDL)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
9	2	Determination Serum Total protein	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam

				laboratory	
10	2	Determination serum (Albumin+ Globulin)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
11	2	Determination Kidney function Test (urea)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
12	2	Determination Serum creatinine &creatinine clearness	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
13	2	Determination Serum uric acid	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
14	2	Determination Serum (Alkaline Phosphatase)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
15	2	Determination Serum Transaminases (GPT&GOT	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
16	2	Determination Serum	Biochemistry	A theoretical introduction using	Daily participations, class discussions and practical

		(Acid phosphatase)		the power point And an educational video with practical application on blood samples inside the laboratory	experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
17	2	Determination Amylase in serum+ saliva	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood & saliva samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
18	2	Determination serum creatine phosphokinase	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
19	2	Determination serum (lactate Dehydrogenase)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
20	2	Determination Liver function test (Bilirubin)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
21	2	Determination Serum Calcium	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
22	2	Determination Serum Phosphorus	Biochemistry	A theoretical introduction using the power point And an educational video with practical	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam ,

				application on blood samples inside the laboratory	semester exams, the mid-year exam, and the final exam
23	2	Determination serum Na	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
24	2	Determination serum K	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
25	2	Determination serum Iron	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
26	2	Determination Vitamin D	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
27	2	Determination Vitamin C	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on blood samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
28	2	General urine analysis (normal)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on urine samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam

29	2	General urine analysis (Constituents)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on urine samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam
30	2	General urine analysis (Constituents)	Biochemistry	A theoretical introduction using the power point And an educational video with practical application on urine samples inside the laboratory	Daily participations, class discussions and practical experiments on unknown samples of patients, reports and seminars And quiz& the short exam , semester exams, the mid-year exam, and the final exam

11. Infrastructure

1. Books Required reading:	- Lippincott' s Illustrated Reviews Biochemistry Richard Harvey and Denise - Textbook of biochemistry for dental students by MN chatteriea, 3rd
2. Main references (sources)	- Chemical Bases of life, Textbook of Biochemistry - General Chemistry principle and applications of Inorganic, Organic and Biochemistry - Textbook of biochemistry for medical students by DM Vasudevan, 6th ed. - Harper's Illustrated Biochemistry a LANGE medical book Robert K. Murray, 26th ed.
A- Recommended books and references (scientific journals, reports…).	Teitz ,Kaplan, and zeliva for clinical biochemistry
B-Electronic references, Internet sites…	Scientific search engines

12. The development of the curriculum plan

- Continuous update of curriculum due to his request to serve the educational process Maintain the scientific equanimity through the use of valuable resources and books International
- The annual evaluation to know the student's skill in the course and to quote the experiences of the corresponding faculties in the courses
- Continuous updating of the curriculum for students to serve the educational process and the addition of modern and emerging information
- Examining the curriculum of international universities and striving to assume their role in order to develop in science and work in twinning with reputable universities to raise the level of science.
- Linking laboratory analyzes to the theoretical materials of the subject