Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must

determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: **Al-Nahrain University**.....

Faculty/Institute: **College of Medicine**.....

Scientific Department: **Chemistry and Biochemistry**.....

Academic or Professional Program Name: **Molecular biology**

Final Certificate Name: .....

Academic System: **Quarterly** .....

Description Preparation Date: **20/2/2024**

File Completion Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

1. Program Vision

To be a leading center of excellence in biochemistry within the College of Medicine at Al-Nahrain University, dedicated to advancing scientific knowledge, fostering innovative research, and producing highly skilled graduates equipped to address the evolving challenges in healthcare and biomedical sciences.

2. Program Mission

Program mission is committed to providing exceptional education, conducting cutting-edge research, and contributing significantly to the medical field. Our mission is to nurture a learning environment that cultivates a deep understanding of biochemistry and molecular biology, fosters critical thinking, and prepares students for impactful careers in medicine, research, and healthcare leadership.

3. Program Objectives

1. To ensure the provision of students with the basic knowledge in biochemistry through an updated curriculum.
2. To equip students with the knowledge and skills necessary for medical practice, research, and advanced studies.
3. To encourage student involvement in research projects, internships, and extracurricular activities.
4. To consolidate professional cooperation in teaching and scientific research at the local and international levels.
5. To design postgraduate studies in the field of medical and clinical biochemistry in a manner that helps students become scholars and specialized researchers in this field.
6. To establish a high-quality research strategy in the field of medical and clinical biochemistry aimed at creating new insights, improving the health condition of community members, and overcoming diseases

4. Program Accreditation

5. Other external influences

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements	1	2		Basic, covers fundamental concepts and skills required by all students within the college
Department Requirements	1	2		Core, specialized courses that are essential for a deep understanding of molecular biology. These courses are tailored to equip students with both theoretical and practical knowledge in the field.
Summer Training				
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
2023-2024/ 2nd	CHMMol-22	Molecular Biology	1	2

8. Expected learning outcomes of the program

Knowledge	
The doctor as a scholar and	The graduate will be able to apply to medical practice biomedical

scientist	scientific principles, method and knowledge obtained from the program.
Skills	
The doctor as practitioner	Use information effectively in a medical context
The doctor as practitioner	Carry out practical procedures safely and effectively
Ethics	
Patient safety and quality assurance	Place patients' needs and safety at the center of the care process, promote and maintain health and safety in all care settings, and recognize how errors can happen in practice in order to overcome them.
Leadership and teamwork	Must learn and work effectively within a multi-professional and multi-disciplinary team and across multiple care settings.

9. Teaching and Learning Strategies

The Molecular Biology program for second-year medical students adopts a multifaceted approach to teaching and learning, designed to accommodate diverse learning styles and to foster a deep understanding of molecular biology principles and their application in medical science. The strategies outlined below are integral to implementing the program, ensuring that students achieve the desired learning outcomes effectively.

Interactive Lectures

Lectures serve as the foundational instructional method, delivering core

theoretical knowledge. To enhance engagement, lectures incorporate interactive elements such as real-time polling, question-and-answer sessions, and discussions of current research findings in molecular biology. This approach facilitates active learning and encourages students to engage critically with the material.

Laboratory Practicals

Hands-on laboratory sessions are a cornerstone of the program, allowing students to apply theoretical knowledge to practical scenarios. These sessions include demonstrations, supervised experiments, and independent projects, covering techniques such as DNA/RNA extraction, PCR, gene sequencing, and protein analysis. Emphasis is placed on developing technical proficiency, problem-solving skills, and an understanding of laboratory safety and protocols.

Case Studies and Problem-Based Learning (PBL)

Case studies and PBL sessions are integrated into the curriculum to simulate real-world scenarios and challenges in molecular biology. Through these activities, students work in teams to solve complex problems, fostering collaborative skills, critical thinking, and the ability to apply molecular biology concepts to clinical and research settings.

Digital Learning Resources

The program leverages digital learning resources, including online databases, bioinformatics tools, and virtual lab simulations, to complement traditional teaching methods. These resources offer flexibility in learning and the opportunity to explore molecular biology applications beyond the classroom setting.

Seminars

Seminars in related fields are regularly organized. These sessions expose students to cutting-edge research, emerging technologies, and contemporary issues in molecular biology, enhancing their learning experience and professional development.

Continuous Assessment and Feedback

Assessment is continuous and multifaceted, including quizzes, lab reports, group presentations, and exams. Feedback is provided promptly to support learning and improvement, with opportunities for one-on-one consultations to discuss progress and areas for development.

10. Evaluation methods

Quizzes and Written Exams

Laboratory Reports

4. Case Studies and Problem-Based Learning (PBL) Assessments To evaluate students' application of knowledge to real-world scenarios and their problem-solving skills. Engagement in case studies or PBL sessions where students must analyze scenarios, develop hypotheses, and propose solutions, often followed by group discussion and individual reflection.

5. Midterm and Final Exams: Structured exams that cover all topics discussed throughout the course, including both multiple-choice and essay questions to assess a range of learning outcomes.

6. Practical Skills Assessments To directly assess students' proficiency in laboratory techniques and safety procedures: Practical exams or direct observation during lab sessions, focusing on technique, accuracy, safety practices, and the ability to troubleshoot experiments.

9. Continuous Feedback: Regular feedback from instructors on assignments,

exams, and lab reports, including one-on-one meetings if necessary to discuss academic progress and areas for improvement.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor Associate Professor Lecturer	Chemistry Medicine & surgery	Biochemistry Molecular Immunology			2	
			Knowledge of immune response at the molecular level	Experience with clinical applications		
			Proficiency in PCR, western blotting, sequencing			

Professional Development

Mentoring new faculty members

The mentoring process for new, visiting, full-time, and part-time faculty members is a structured program designed to integrate them into the academic and cultural environment of the institution and department. This process includes:

Orientation Sessions: New faculty members attend orientation sessions that provide an overview of the institution's mission, academic policies, and available resources. These sessions also cover departmental goals, curriculum details, and expectations for teaching and research.

Assigned Mentors: Each new faculty member is paired with an experienced mentor from their department. Mentors are chosen based on their academic achievements, teaching excellence, and alignment with the new member's area of specialization. The mentor-mentee relationship facilitates the sharing of knowledge, teaching strategies, research interests, and professional networks.

Regular Meetings: Scheduled regular meetings between mentors and mentees ensure ongoing

support. These meetings are opportunities for new faculty to discuss challenges, seek advice, and reflect on their professional growth.

Peer Observation: New faculty are encouraged to observe the teaching of their peers and to have their teaching sessions observed in return. This practice fosters a culture of continuous improvement and collegial feedback on teaching methods, classroom management, and student engagement strategies.

Professional Development Workshops: The institution provides workshops and seminars on effective teaching strategies, research methodologies, grant writing, and publication processes. These workshops are tailored to the needs of new faculty and cover both general academic skills and specific topics related to molecular biology.

Professional development of faculty members

The academic and professional development plan for faculty members is a comprehensive approach that supports their continuous growth as educators and researchers. Key components of this plan include:

Teaching and Learning Strategies: Faculty members have access to workshops and seminars on innovative teaching methods, including active learning, online instruction, and assessment design. These sessions aim to enhance pedagogical skills and adapt to changing educational landscapes.

Research Support: The institution provides support for faculty research through grant writing workshops, research sabbaticals, and access to research databases and laboratories. Collaboration with other institutions and industries is also encouraged to foster multidisciplinary research projects.

Assessment of Learning Outcomes: Training sessions on the development and assessment of learning outcomes are offered, focusing on aligning teaching strategies with desired educational objectives and using assessment data to inform curriculum development.

Conferences and Seminars: Faculty are encouraged to participate in and present at national and international conferences. Financial support for conference attendance and participation is often provided, facilitating professional networking and exposure to the latest advancements in their fields.

Online Resources and E-Learning: Access to online platforms for professional development in teaching, research, and technology use in education. These resources offer flexibility for faculty to engage in learning opportunities that fit their schedules and interests.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

Important Sources of Information About the Program

1. University Website
2. Program Brochure
3. Academic Catalog
4. Faculty Advisors
5. Open Days and Information Sessions
6. Alumni Testimonials
7. social media and Forums

14. Program Development Plan

Curriculum Enhancement
Conduct annual reviews of course content and learning outcomes in collaboration with faculty, students, and industry experts.
Integrate interdisciplinary courses that connect molecular biology with other medical fields, such as bioinformatics, pharmacogenomics, and personalized medicine.
Expand hands-on laboratory experiences and research opportunities for students to apply their learning in real-world contexts.
Faculty Development and Research
Implement professional development programs focusing on innovative teaching methods, research skills enhancement, and leadership in academia.
Encourage and support faculty participation in national and international conferences, workshops, and collaborations.
Promote interdisciplinary research projects and partnerships with other institutions, healthcare organizations, and the biotechnology industry.
Student Support and Engagement
Develop mentoring programs that pair students with faculty mentors for academic guidance, career advice, and research collaboration.
Establish student-led organizations and interest groups to promote community engagement, leadership, and professional networking.
Provide resources and workshops on career planning, graduate school applications, and skills

development relevant to the molecular biology field.

1. Course Name:

2. Course Code:

3. Semester / Year: Second/ 2023-2024

4. Description Preparation Date: August 15, 2023

5. Available Attendance Forms:

In-person, Hybrid (In-person and Online)

6. Number of Credit Hours (Total) / Number of Units (Total)

2 Credit Hours / 2 Units

7. Course administrator's name (mention all, if more than one name)

Name: Mohammed A. M. Albayati Email: mohammedchina@nahrainuniv.edu.iq
Estabraq AR. AlWasiti Email: estabraqalwasiti@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	**To introduce students to the fundamental concepts and techniques of molecular biology.** **To develop practical laboratory skills relevant to molecular biology research and applications in medicine.** **To foster critical thinking and analytical skills through the application of molecular biology concepts to medical case studies.**

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	Definition of molecular biology History and importance of molecular biology in medicine Techniques used in molecular biology research Laboratory safety and basic	Introduction to molecular biology	Lecture, Discussion	Quiz

		techniques			
2	3	Structure and function of DNA and RNA DNA replication, repair, and recombination Practical: DNA extraction and purification	Nucleic acids and DNA replication	Lecture, Lab	Lab Report
3	6	Transcription and translation Gene regulation and epigenetics Practical: RNA isolation and analysis	Gene expression and regulation	Lecture, Lab	Quiz, Lab Report
4	3	Genetic variation and inheritance Genomics and next-generation sequencing Practical: primer design for PCR amplification	Genetic variation and genomics	Lecture, Case Study	Case Study Presentation
5	3	Protein synthesis and post-translational modification Practical: Protein isolation and analysis, western blotting	Proteins and protein synthesis	Discussion, Guest Lecture	Reflective Essay
6	6	Cloning and expression vectors Restriction enzymes and DNA ligation Practical: Cloning and expression of recombinant proteins	Recombinant DNA technology	Lecture, Project	Group Project
7	3	Polymerase chain reaction (PCR) and its applications RT-PCR and gene expression analysis Practical: PCR amplification and	PCR and gene amplification	Lecture, Discussion	Quiz

		gene expression analysis			
8	3	Sanger sequencing and its applications Next-generation sequencing and bioinformatics Practical: DNA sequencing and bioinformatics analysis	DNA sequencing and analysis	Lecture, Seminar	Final Exam
9		CRISPR-Cas9 technology and its applications Gene therapy and its challenges Practical: Genome editing and gene therapy experiments	Genome editing and gene therapy		
10		Molecular diagnostics and its applications Pharmacogenomics and personalized medicine Practical: Molecular diagnostic experiments and data analysis	Molecular diagnostics and personalized medicine		

11. Course Evaluation

Quizzes: 10%
Lab Reports: 10%
Midterm exam:20
Final Exam: 60%

12. Learning and Teaching Resources

Required textbooks	**Required Textbooks:** Stryer, L., Berg, J. M., Tymoczko, J. L., & Gatto, G. J. (2019). Biochemistry. W. H. Freeman. https://books.google.iq/books?id=S7-CDwAAQBAJ
Main references	Molecular Biology: Principles and Practice by Cox, Doudna, and O'Donnell
Recommended books and references (scientific journals, reports…)	Scientific journals such as Nature Reviews Molecular Cell Biology and The Journal of Molecular Biology. Molecular Diagnostics: Fundamentals, Methods, and Clinical Applications by Lela Buckingham.
Electronic References, Websites	• NCBI (National Center for Biotechnology Information): https://www.ncbi.nlm.nih.gov/PubMed: https://pubmed.ncbi.nlm.nih.gov/

Infrastructure and Resources
Invest in the latest laboratory equipment, software, and digital learning tools to enhance the practical training and research capabilities of the program.
Expand access to online databases, journals, and professional networks for students and faculty.
Improve classroom and laboratory spaces to facilitate interactive learning and collaboration.
Quality Assurance and Accreditation
Conduct regular self-assessments and participate in external reviews by accreditation bodies.
Collect and analyze feedback from students, alumni, employers, and faculty to identify areas for improvement.
Implement changes and innovations based on assessment findings to continuously enhance the program's quality and outcomes.
Community and Industry Engagement
Organize guest lectures, workshops, and internships involving professionals and alumni from various sectors of the molecular biology and healthcare industries.
Facilitate collaborative research projects and initiatives with external partners to address current challenges in healthcare and biotechnology.
Establish an advisory board comprising industry leaders, alumni, and faculty to guide the program's strategic direction and ensure its relevance to workforce needs.

Program Skills Outline															
				Required program Learning outcomes											
Year/ Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A 1	A 2	A 3	A 4	B 1	B 2	B 3	B 4	C 1	C 2	C 3	C 4
2023-2024/2nd	CHMMol-22	Molecular biology	Basic	✓					✓					✓	

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

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2024

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Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

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Academic Program Description Form

University Name: .**Al–Nahrain University**……

Faculty/Institute: .**College of Medicine**……

Scientific Department: .**Chemistry and Biochemistry**……

Academic or Professional Program Name: **Biochemistry**……

Final Certificate Name: .**Biochemistry**……

Academic System: **Quarterly** ……

Description Preparation Date: **20/2/2024**

File Completion Date:

Signature:

Head of Department Name:

Date:

Signature:

Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

1. Program Vision

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3. Program Objectives

1. To ensure the provision of students with the basic knowledge in biochemistry through an updated curriculum.
2. To equip students with the knowledge and skills necessary for medical practice, research, and advanced studies.
3. To encourage student involvement in research projects, internships, and extracurricular activities.
4. To consolidate professional cooperation in teaching and scientific research at the local and international levels.
5. To design postgraduate studies in the field of medical and clinical biochemistry in a manner that helps students become scholars and specialized researchers in this field.
6. To establish a high-quality research strategy in the field of medical and clinical biochemistry aimed at creating new insights, improving the health condition of community members, and overcoming diseases.

4. Program Accreditation

5. Other external influences

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements	**1**	**3.5**		**Basic**
Department Requirements	**1**	**3.5**		**Basic**
Summer Training				
Other				

1. Expected learning outcomes of the program

Knowledge	
The doctor as a scholar and scientist	The graduate will be able to apply to medical practice biomedical scientific principles, method and knowledge relating to biochemistry
Skills	
The doctor as practitioner	Use information effectively in a medical context
The doctor as practitioner	Carry out practical procedures safely and effectively
Ethics	
Patient safety and quality assurance	Place patients' needs and safety at the center of the care process, promote and maintain health and safety in all care settings, and recognize how errors can happen in practice in order to overcome them.
Leadership and teamwork	Must learn and work effectively within a multi-professional and multi-disciplinary team and across multiple care settings.

* This can include notes whether the course is basic or optional.

2. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
2023-2024/ First	CHMBio-12	Biochemistry	2	1.5

3. Teaching and Learning Strategies

Traditional lectures, large group teaching, seminars, and practical sessions

4. Evaluation methods

Summative assessment: Quizzes, mid-term and final exams (including both theoretical and practical examinations)
Formative assessment includes analysis of students understandings and recognizing the points of strength and weakness in learning process and hence working on areas that need improvement; these are achieved via asking strategic questions such as "how" and "why" during the lectures, practical sessions and assigning homework for clinical problem-solving.

5. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor Lecturer Chemist	Chemistry	Medical Chemistry Or Biochemistry	• MSc or PhD in Chemistry, Medical chemistry or Biochemistry • BSc in Chemistry		8	

Professional Development
Mentoring new faculty members
By urging them to attend theoretical and practical lectures to gain experience and skill in the teaching and learning process
Professional development of faculty members
By contributing and participating in local and international workshops, courses and conferences

6. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

7. The most important sources of information about the program

Sources of information come mainly from textbooks, also animations or images that provide further aid to understand the program lectures are obtained from internet sources.

8. Program Development Plan

- Update sources, lectures and practical methods annually.
- Develop and update with other relevant clinical programs, and present them for discussion with the department's scientific committee.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2023-2024/ First	CHMBio-12	Biochemistry	Basic	—					—					—	

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name: Biochemistry

2. Course Code: CHMBio-12

3. Semester / Year: Second/ 2023-2024

4. Description Preparation Date: 20/2/2024

5. Available Attendance Forms:

6. Number of Credit Hours (Total) / Number of Units (Total)

75 hours(total): 2hrs (theory) and 3hrs (practical)/week
(3.5 credits)

7. Course administrator's name (mention all, if more than one name)

Name: Assistant Professor Dr. Raid Jasim Al-Tamimi
Email: rjtimimi68@nahrainuniv.edu.iq
Name: Lecturer Dr. Wasan Taha Saadoon
Email: wasanbashaga@ nahrainuniv.edu.iq
Name: Lecturer Dr. Hend Ahmed Abbas
Email: hind.abass@nahrainuniv.edu.iq
Name: Lecturer Hiba Jasim Swadi
Email: haibi.83.89.83@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	• **Examination of the structure of and function of proteins, carbohydrates, lipids, in detai order to understand how their unique chemical and physical properties contribute to t biological function……** • **The structures, specificities and kinetics of selected enzymes will illustrate the enorm diversity of this group of catalytic molecules……** • **Explain normal human structure, functions and scientific bases for common dise presentations…..**

9. Teaching and Learning Strategies

Strategy	**Lectures whether theoretical or practical given in power point presentation.** **Animations or Figures that help understand lectures better obtained from inter**

	reliable sources are presented **Power point presentation of seminars assigned to students related to the differ** **subjects of the program.** **Practical experiments in accordance with the subjects of the program.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Weeks 1-4	8 theory +12 practical	Structure, function, and biological importance	Carbohydrates	Lectures	Summative and formati assessment
Weeks 5-7	6 theory and 9 practical	Structure, function, and biological importance	Lipids	Lectures	Summative and formati assessment
Weeks 8-11	8 theory and 12 practical	Structure, function, and biological importance	Amino acids and proteins	Lectures	Summative and formati assessment
Weeks 12-15	8 theory and 12 practical	Structure, function, and biological importance	Enymes	Lectures	Summative and formati assessment

11. Course Evaluation

The mark is distributed as follows:

- **Mid-term average of 30% divided into:**

✓ **15 % for the midterm theoretical exam** (that includes multiple choice questions, matching questions, fill in the blanks, true and false statements, labeling diagrams, and essay questions.

✓ **10% for practical exam and reports** (that includes the results and calculations of unknown samples of the studied subjects).

✓ **5% of short quizzes** (4 summative tests and 2 formative tests).

midterm theory	Practical	Quizzes	Total
15%	10%	5%	30%

- **Final course exam of 70% divided into:**

✓ **50% theoretical examination:** include (60%) of single choice questions answered on a bubble sheet, and (40%) of essay questions of short answers.

✓ **20% practical exam:** 10% theoretical: spot examination or multiple choice questions, matching, blanks or true or false, and 10% performing an experiment within the practical biochemistry studied subjects.

Final theory	Final Practical	Total
50%	**20%**	**70%**

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Biochemistry, Lippincotts's Illustrated Reviews
Main references (sources)	Biochemistry, Lippincotts's Illustrated Reviews
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

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University Name: .**Al–Nahrain University**……

Faculty/Institute: .**College of Medicine**……

Scientific Department: .**Chemistry and Biochemistry**……

Academic or Professional Program Name: **Medical Chemistry**……

Final Certificate Name: **…Medical Chemistry**……

Academic System: **Quarterly** ……

Description Preparation Date: **20/2/2024**

File Completion Date:

Signature:

Head of Department Name:

Date:

Signature:

Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

1. Program Vision

To be a leading center of excellence in biochemistry within the College of Medicine at Al-Nahrain University, dedicated to advancing scientific knowledge, fostering innovative research, and producing highly skilled graduates equipped to address the evolving challenges in healthcare and biomedical sciences.

2. Program Mission

Program mission is committed to providing exceptional education, conducting cutting-edge research, and contributing significantly to the medical field. Our mission is to nurture a learning environment that cultivates a deep understanding of biochemistry, fosters critical thinking, and prepares students for impactful careers in medicine, research, and healthcare leadership.

3. Program Objectives

1. To ensure the provision of students with the basic knowledge in biochemistry through an updated curriculum.
2. To equip students with the knowledge and skills necessary for medical practice, research, and advanced studies.
3. To encourage student involvement in research projects, internships, and extracurricular activities.
4. To consolidate professional cooperation in teaching and scientific research at the local and international levels.
5. To design postgraduate studies in the field of medical and clinical biochemistry in a manner that helps students become scholars and specialized researchers in this field.
6. To establish a high-quality research strategy in the field of medical and clinical biochemistry aimed at creating new insights, improving the health condition of community members, and overcoming diseases.

4. Program Accreditation

None

5. Other external influences

None

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements	1	4.5		Basic
Department Requirements	1	4.5		Basic
Summer Training				
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
2023-2024/ First	CHMMed-11	Medical Chemistry	3	1.5

8. Expected learning outcomes of the program

Knowledge	
The doctor as a scholar and scientist	The graduate will be able to apply to medical practice biomedical scientific principles, method and knowledge obtained from the program.

Skills	
The doctor as practitioner	Use information effectively in a medical context
The doctor as practitioner	Carry out practical procedures safely and effectively
Ethics	
Patient safety and quality assurance	Place patients' needs and safety at the center of the care process, promote and maintain health and safety in all care settings, and recognize how errors can happen in practice in order to overcome them.
Leadership and teamwork	Must learn and work effectively within a multi-professional and multi-disciplinary team and across multiple care settings.

9. Teaching and Learning Strategies

Traditional lectures, large group teaching, seminars, and practical sessions

10. Evaluation methods

Summative assessment: Quizzes, mid-term and final exams (including both theoretical and practical examinations)
Formative assessment includes analysis of students understandings and recognizing the points of strength and weakness in learning process and hence working on areas that need improvement; these are achieved via asking strategic questions such as "how" and "why" during the lectures, practical sessions and assigning homework for clinical problem-solving.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor Lecturer Chemist	Chemistry	Medical Chemistry Or	• MSc or PhD in Chemistry, Medical chemistry or Biochemistry		8	

		Biochemistry	• BSc in Chemistry			

Professional Development
Mentoring new faculty members
By urging them to attend theoretical and practical lectures to gain experience and skill in the teaching and learning process
Professional development of faculty members
By contributing and participating in local and international workshops, courses and conferences

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

Sources of information come mainly from textbooks, also animations or images that provide further aid to understand the program lectures are obtained from internet sources.

14. Program Development Plan

- Update sources, lectures and practical methods annually.
- Develop and update with other relevant clinical programs, and present them for discussion with the department's scientific committee.

Program Skills Outline																
				Required program Learning outcomes												
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics				
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	
2023-2024/ First	CHMMed-11	Medical Chemistry	Basic	—					—					—		

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name: Medical Chemistry

2. Course Code: CHMMed-11

3. Semester / Year: First/ 2023-2024

4. Description Preparation Date: 20/2/2024

5. Available Attendance Forms:

6. Number of Credit Hours (Total) / Number of Units (Total)

90 hours(total): 3hrs (theory) and 3hrs (practical)/week
(4.5 credits)

7. Course administrator's name (mention all, if more than one name)

Name: Assistant Professor Dr. Raid Jasim Al-Tamimi
Email: rjtimimi68@nahrainuniv.edu.iq
Name: Lecturer Dr. Wasan Taha Saadoon
Email: wasanbashaga@ nahrainuniv.edu.iq
Name: Lecturer Dr. Hend Ahmed Abbas
Email: hind.abass@nahrainuniv.edu.iq
Name: Lecturer Hiba Jasim Swadi
Email: haibi.83.89.83@nahrainuniv.edu.iq

8. Course Objectives

Course Objectives	• **The primary goal of this course in general medical chemistry is to present the fundamental principles and chemical foundation essential to understanding physiologi chemistry for students of medicine.** • **Throughout the course, chemistry is presented as an experimental science v biomedical examples in which theories evolve and change as new information is acqui to show how this vast science is applied to areas of interest to the medical students.**

9. Teaching and Learning Strategies

Strategy	**Lectures whether theoretical or practical given in power point presentation. Animations or Figures that help understand lectures better obtained from inter reliable sources are presented**

	Power point presentation of seminars assigned to students related to the differ subjects of the program. **Practical experiments in accordance with the subjects of the program.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3 theory +3 practical	Radiation dosages and medi uses of radioactive isotop	Radioactivity	Lectures	Summative and formati assessment
Week 2	3 theory +3 practical	Aqueous solutions, solubility, concentrations of solutions. Electrolytes & nonelectroly	Aqueous solutions	Lectures	Summative and formati assessment
Week 3	3 theory +3 practical	Osmosis & osmotic Pressure. Colloids and their properties, emulsions, emulsifying agents, dialys haemodialysis.	Some properties o aqueous solutio	Lectures	Summative and formati assessment
Week 4	3 theory +3 practical	Their medical relations, and diffusion of respiratory gases.	Gases	Lectures	Summative and formati assessment
Weeks 5-6	6 theory and 6 practical	Acid and Bases, pH buffer acid-base balance in bloo	Buffer systems	Lectures	Summative and formati assessment
Week 7	3 theory +3 practical	Reaction rate, activation energy chemical equilibri	Rate of reactions	Lectures	Summative and formati assessment
Week 8	3 theory and 3 practical	Cis and trans conformation Organic structure of triglyceri Saturated fats, cis-fats and trans-fats Health concerns of trans-fats Sources of aromatic hydrocarbons Polyaromatic hydrocarbons (PAHs) Health effects of PAHs	Hydrocarbons	Lectures	Summative and formati assessment
Week 9	3 theory and 3 practical	The physiological effects of alcohols	Alcohols	Lectures	Summative and formati assessment
Weeks 10	3 theory and 3 practical	Biologically important Phenolic Compounds. Health effects of certain Phenols The importance of the disul bonds in proteins	Phenols and Thiol	Lectures	Summative and formati assessment
Week 11	3 theory and 3 practical	Biologically important aldehydes and ketones Formation of hemiacetals, imines, and their biologic importance	Aldehydes and Ketones	Lectures	Summative and formati assessment
Week 12	3 theory and 3 practical	Biologically important amin and ethers Biological importance of quaternary ammonium compounds and Alkaloid	Amines and Ether	Lectures	Summative and formati assessment
Week 13	3 theory and 3 practical	Structures, properties, and biological importance	Carboxylic acids a their derivatives	Lectures	Summative and formati assessment
Week 14	3 theory and	Recognizing Chiral	Sterioisomers	Lectures	Summative and formati

	3 practical	Compounds Optical Activity of enantion S and R, Nomenclature Chiral Compounds and Livi Systems			assessment
Week 15	3 theory and 3 practical	Important polymers Medical Uses of Polymers	Polymers	Lectures	Summative and formati assessment

11. Course Evaluation

The mark is distributed as follows:

- **Mid-term average of 30% divided into:**

✓ **15 % for the midterm theoretical exam** (that includes multiple choice questions, matching questions, fill in the blanks, true and false statements, labeling diagrams, and essay questions.

✓ **10% for practical exam and reports** (that includes the results and calculations of unknown samples of the studied subjects).

✓ **5% of short quizzes** (4 summative tests and 2 formative tests).

midterm theory	Practical	Quizzes	Total
15%	10%	5%	30%

- **Final course exam of 70% divided into:**

✓ **50% theoretical examination:** include (60%) of single choice questions answered on a bubble sheet, and (40%) of essay questions of short answers.

✓ **20% practical exam:** 10% theoretical: spot examination or multiple choice questions, matching, blanks or true or false, and 10% performing an experiment within the practical medical chemistry studied subjects.

Final theory	Final Practical	Total
50%	**20%**	**70%**

12. Learning and Teaching Resources

Required textbooks (curricular books, if a	The Chemical Basis of Life By George H. Schmid
Main references (sources)	The Chemical Basis of Life By George H. Schmid Organic Chemistry: A Short Course By Hart, Craine, Hart

Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	Abozenadah, H., Bishop, A., Bittner, S., Lopez, O., Wi C., and Flatt, P.M. (2017) Consumer Chemistry: H Organic Chemistry Impacts Our Lives. CC BY-NC-SA. https://wou.edu/chemistry/courses/online-chemistrytextbooks/ch105-consumer-chemistry/

وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

دليل وصف البرنامج الأكاديمي والمقرر الدراسي

2024

المقدمة:

يُعد البرنامج التعليمي بمثابة حزمة منسقة ومنظمة من المقررات الدراسية التي تشتمل على إجراءات وخبرات تنظم بشكل مفردات دراسية الغرض الأساس منها بناء وصقل مهارات الخريجين مما يجعلهم مؤهلين لتلبية متطلبات سوق العمل يتم مراجعته وتقييمه سنوياً عبر إجراءات وبرامج التدقيق الداخلي أو الخارجي مثل برنامج الممتحن الخارجي.

يقدم وصف البرنامج الأكاديمي ملخص موجز للسمات الرئيسة للبرنامج ومقرراته مبيناً المهارات التي يتم العمل على اكسابها للطلبة مبنية على وفق اهداف البرنامج الأكاديمي وتتجلى أهمية هذا الوصف لكونه يمثل الحجر الأساس في الحصول على الاعتماد البرامجي ويشترك في كتابته الملاكات التدريسية بإشراف اللجان العلمية في الأقسام العلمية.

ويتضمن هذا الدليل بنسخته الثانية وصفاً للبرنامج الأكاديمي بعد تحديث مفردات وفقرات الدليل السابق في ضوء مستجدات وتطورات النظام التعليمي في العراق والذي تضمن وصف البرنامج الأكاديمي بشكلها التقليدي نظام (سنوي، فصلي) فضلاً عن اعتماد وصف البرنامج الأكاديمي المعمم بموجب كتاب دائرة الدراسات ت م2906/3 في 2023/5/3 فيما يخص البرامج التي تعتمد مسار بولونيا أساساً لعملها.

وفي هذا المجال لا يسعنا إلا أن نؤكد على أهمية كتابة وصف البرامج الاكاديمية والمقررات الدراسية لضمان حسن سير العملية التعليمية.

مفاهيم ومصطلحات:

وصف البرنامج الأكاديمي: يوفر وصف البرنامج الأكاديمي ايجازاً مقتضباً لرؤيته ورسالته وأهدافه متضمناً وصفاً دقيقاً لمخرجات التعلم المستهدفة على وفق استراتيجيات تعلم محددة.

وصف المقرر: يوفر إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ويكون مشتق من وصف البرنامج.

رؤية البرنامج: صورة طموحة لمستقبل البرنامج الأكاديمي ليكون برنامجاً متطوراً وملهماً ومحفزاً وواقعياً وقابلاً للتطبيق.

رسالة البرنامج: توضح الأهداف والأنشطة اللازمة لتحقيقها بشكل موجز كما يحدد مسارات تطور البرنامج واتجاهاته.

اهداف البرنامج: هي عبارات تصف ما ينوي البرنامج الأكاديمي تحقيقه خلال فترة زمنية محددة وتكون قابلة للقياس والملاحظة.

هيكلية المنهج: كافة المقررات الدراسية / المواد الدراسية التي يتضمنها البرنامج الأكاديمي على وفق نظام التعلم المعتمد (فصلي، سنوي، مسار بولونيا) سواء كانت متطلب (وزارة، جامعة، كلية وقسم علمي) مع عدد الوحدات الدراسية.

مخرجات التعلم: مجموعة متوافقة من المعارف والمهارات والقيم التي اكتسبها الطالب بعد انتهاء البرنامج الأكاديمي بنجاح ويجب أن يُحدد مخرجات التعلم لكل مقرر بالشكل الذي يحقق اهداف البرنامج.

استراتيجيات التعليم والتعلم: بأنها الاستراتيجيات المستخدمة من قبل عضو هيئة التدريس لتطوير تعليم وتعلم الطالب وهي خطط يتم إتباعها للوصول إلى أهداف التعلم. أي تصف جميع الأنشطة الصفية واللاصفية لتحقيق نتائج التعلم للبرنامج.

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة .... النهرين .....

الكلية/ المعهد: كلية .....الطب.....

القسم العلمي: قسم .....الكيمياء والكيمياء الحياتية.....

اسم البرنامج الأكاديمي او المهني: بكالوريوس .....الطب والجراحة.

اسم الشهادة النهائية: بكالوريوس في . الطب والجراحة.....

النظام الدراسي: فصلي

تاريخ اعداد الوصف: **5/10/2023**

تاريخ ملء الملف: 2024/02/18

التوقيع: **التوقيع:**

اسم رئيس القسم: **اسم المعاون العلمي:**

التاريخ: **التاريخ:**

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي:

التاريخ

التوقيع

مصادقة السيد العميد

1. رؤية البرنامج

أن نكون مركزًا رائدًا للتميز في علم الكيمياء السريرية داخل كلية الطب في جامعة النهرين، ملتزمين بتقديم المعرفة العلمية المتقدمة، وتعزيز البحث الابتكاري، وإنتاج خريجين مهرة بشكل كبير مجهزين لمواجهة التحديات المتطورة في مجالات الرعاية الصحية والعلوم الطبية السريرية.

2. رسالة البرنامج

يلتزم فرع الكيمياء الحيوية في كلية طب النهرين بتوفير تعليم استثنائي وإجراء أبحاث متطورة والمساهمة بشكل كبير في المجال الطبي.
رسالتنا هي رعاية بيئة تعليمية تنمي الفهم العميق للكيمياء الحياتية السريرية، وتعزز التفكير النقدي، وتعد الطلاب لمهن ذات تأثير في مجال الطب والبحث وقيادة الرعاية الصحية.

3. اهداف البرنامج

الريادة والتميّز في الاداء الأكاديمي من خلال تحقيق الأهداف الأتية:-

1. تحقيق مخرجات الكلية من الأطباء من خلال منهاج شامل.
2. تطوير البرامج الأكاديمية للكلية.
3. تنمية المهارات التعليمية والتدريبية والإدارية والقيادية لدى أعضاء هيئة التدريس والإداريين.
4. تشجيع ألبحث العلمي ورفع كفاءة القدرات البحثية.
5. تفعيل المشاركة والتنسيق والتكامل بين الكلية والمجتمع.
6. اقامة علاقات التبادل العلمي والثقافي والمعرفي مع الجامعات والمنظمات المهنية الأقليمية والعالمية .

4. الاعتماد البرامجي

5. المؤثرات الخارجية الأخرى

6. هيكلية البرنامج				
هيكل البرنامج	عدد المقررات	وحدة دراسية	النسبة المئوية	ملاحظات *
متطلبات المؤسسة				
متطلبات الكلية	1	3.5		مقرر اساسي
متطلبات القسم	1	3.5		مقرر اساسي
التدريب الصيفي	لا يوجد			
أخرى				

* ممكن ان تتضمن الملاحظات فيما اذا كان المقرر أساسي او اختياري .

7. وصف البرنامج				
السنة / المستوى	رمز المقرر أو المساق	اسم المقرر أو المساق	الساعات المعتمدة	
			نظري	عملي
2023-2024 / الثانية	CHMBio-22	الكيمياء السريرية	2(2 عدد الوحدات)	3 (1.5 عدد الوحدات)

8. مخرجات التعلم المتوقعة للبرنامج	
المعرفة	
الطبيب كعالم	سيكون الخريج قادرًا على تطبيق المبادئ العلمية الطبية الحيوية والطريقة والمعرفة المتعلقة بالكيمياء الحيوية في الممارسة الطبية
المهارات	
الطبيب كممارس	استخدام المعلومات بشكل فعال في السياق الطبي
الطبيب كممارس	تنفيذ طريقة العمل لاي قياس بأمان وفعالية
القيم	
سلامة المرضى وضمان الجودة	وضع احتياجات المرضى وسلامتهم في قلب عملية الرعاية، وتعزيز الصحة والسلامة والحفاظ عليها في جميع أماكن الرعاية، والتعرف على كيفية حدوث الأخطاء في الممارسة العملية للتغلب عليها.
القيادة والعمل الجماعي	يجب أن يتعلم ويعمل بفعالية ضمن فريق متعدد المهنيين ومتعدد التخصصات وعبر إعدادات رعاية متعددة.

9. استراتيجيات التعليم والتعلم

1. بيان المحاضرة من خلال عرض الرسالة الرئيسية للموضوع.
2. كتابة اهداف المحاضرة.
3. طرح أهم المواضيع التي تناولتها المحاضرة والمقدمة.
4. تقسيم وقت المحاضرة لتغطي الموضوع الرئيسي والخلاصة والمناقشة

10. طرائق التقييم

- التقييم بالدرجات: الاختبارات اليومية، النصفية والنهائية (وتشمل الاجزاء النظرية والعملية)
- التقييم التكويني من خلال تحليل فهم الطلاب والتعرف على نقاط القوة والضعف في عملية التعلم وبالتالي العمل على المجالات التي تحتاج إلى تحسين؛ ويتم تحقيق ذلك من خلال طرح أسئلة استراتيجية مثل "كيف" و"لماذا" أثناء المحاضرات والجلسات العملية وتعيين الواجبات المنزلية لحل المشكلات السريرية.

11. الهيئة التدريسية

أعضاء هيئة التدريس

الرتبة العلمية	التخصص		المتطلبات/المهارات الخاصة (ان وجدت)	اعداد الهيئة التدريسية	
	عام	خاص		ملاك	محاضر
استاذ أستاذ مساعد مدرس	كيمياء طب وجراحة	كيمياء حياتية سريرية	• شهادة الماجستير او الدكتوراة في (الكيمياء الحياتية السريرية).	4	

التطوير المهني
توجيه أعضاء هيئة التدريس الجدد
من خلال حثهم وتشجيعهم على التواجد في المحاضرات النظرية والعملية لاكتساب الخبرة والمهارة في عملية التعليم والتعلم
التطوير المهني لأعضاء هيئة التدريس
من خلال المساهمة والمشاركة في ورش العمل والدورات والمؤتمرات المحلية والعالمية

12. معيار القبول

13. أهم مصادر المعلومات عن البرنامج
1.Martin Andrew Crook, EIGHT Ed., CLINICAL BIOCHEMISTRY & METABOLIC MEDICINE,2012 2.Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics, 9th Ed,2010

14. خطة تطوير البرنامج
العمل المستمر على اجراء اجتماعات دورية لاساتدة المقرر الدراسي الواحد مع اساتدة المقررات الدراسية الاخرى ذات الصلة الواحدة بالاخرى للمراحل الدراسية المختلفة الاولى والثانية والخامسة لفرع الكيمياء والكيمياء الحياتية لتطوير وتحديث المقررات الدراسية ذات الصلة وكذلك تحديث المصادر وطرحها للمناقشة في اللجنة العلمية للفرع.

مخطط مهارات البرنامج																	
				مخرجات التعلم المطلوبة من البرنامج													
السنة / المستوى	رمز المقرر	اسم المقرر	اساسي أم اختياري	المعرفة				المهارات				القيم					
				أ1	أ2	أ3	أ4	ب1	ب2	ب3	ب4	ج1	ج2	ج3	ج4		
2023-2024		الكيمياء السريرية	اساسي														

يرجى وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرنامج الخاضعة للتقييم

نموذج وصف المقرر

1. اسم المقرر:
الكيمياء السريرية
2. رمز المقرر:
CHMBio-22
3. الفصل / السنة:
الفصل الثاني/ 2023-2024
4. تاريخ إعداد هذا الوصف
2024-2-18
5. أشكال الحضور المتاحة :
حضوري + جزء من التقييمات الالكترونية
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي):
75 ساعة (2 نظري + 3 عملي/ اسبوع) 3.5 عدد الوحدات
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
الاسم: أ.د. محمد عمران حمزة البريد الالكتروني: moh_alsafi75@nahrainuniv.edu.iq م. د. زينة عبدالاله عبد علي البريد الالكتروني:- zeenaalsedi@colmed.ahrainuniv.edu.iq

8. اهداف المقرر	
في نهاية التدريس سيكون الطالب قادرا على:-	• .... العمل بامان في المختبرات والقدرة على جمع ومعاملة العينات البايولوجية. • .. استخدام االجهزة والادوات المختبرية الضرورية وادامتها.... • ..... الربط بين الامراض والتغيرات الغير طبيعية في مكونات الدم وأجزاء الجسم الاخرى • معرفة وتمييز اصناف الكربوهيدرات واصناف اللبيدات (الشحوم، الدهون، الزيوت) في الغذاء ووظائفها ونسبها المطلوبة في الجسم، والفهم الكامل لدورها في العديد من الامراض. • معرفة وتمييز اصناف البروتينات في الغذاء ووظائفها ونسبها المطلوبة في الجسم، والفهم الكامل لايض البروتينات واضطراباتها ابتداءا من هضمها وامتصاصها والامراض المتعلقة بها وعلاقتها مع امراض النقص الايضي

9. استراتيجيات التعليم والتعلم	
الاستراتيجية	-1استراتيجية التعليم تخطيط المفهوم التعاوني. -2استراتيجية التعليم العصف الذهني. -3استراتيجية التعليم سلسلة الملاحظات

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
1	2ن + 3ع	تمكين واكساب الطالب المعارف: 1.تنظيم مستوى السكر في الدم ,ودراسة دور الهرمونات في موازنة مستوى السكر في الدم 2.انواع السكر في الدم ومعرفة الحالات السريرية وطرق تشخيص انواع مرض السكر 3.دراسة المضاعفات الحادة والمزمنة التي تصاحب مرض السكر 4.التعرف على امراض خزن الكلايكوجين وسبب حدزث كل نوع. 5.دراسة الدهون وانواعها وعلاقة اضطراباتها بالامراض 6.دراسة علاقة مرض السكري بتحلل الدهون وماهية ذلك ودراسة انواع خزن الدهون في الجسم وسبب حدوث كل نوع. 7.دراسة اسباب فقر الدم وانواعه وطرق تشخيصه وعلاجه 8.دراسة الامراض الناجمة عن اضطرابات تفاعلات الاحماض الامينية وعلاقتها في الايض النقصي التي تحدث بعمر مبكر. 9. اكتساب الطالب المهارات العملية في تشخيص ومعرفة الكيمياء الحيوية السريرية والطب المخبري.	1.مقدمة عن مرض السكر وتعريفه ودراسة انواعه. 2.دراسة دور الهرمونات في تنظيم مرض السكر 3.تكوين الاجسام الكيتونية في مرضى السكر ودور الكبد في تخليقها 4.دراسة انواع انخفاض السكر ومعرفة انواع امراض خزن السكر في الدم 5.تعريف الدهون وانواعه في الجسم ودراسة دور الهرمونات في تنظيم الدهون 6.دراسة دور الكبد في ايض الدهون 7.دراسة الاضطرابات الايضية في ايض الدهون ومعرفة انواع اضطرابات الدهون بالاعتماد على قياسات منظمة الصحة العالمية امتحان منتصف القصل 8.معرفات انواع نقص المعقدات الدهينة (البروتينات الدهنية واسبابها) 9.دراسة امراض خزن الدهون وانواعها واسبابها. 10..تعريف البروتينات ومعرفة الامراض المرتبطة بها في حال وجود خلل انزيمي 11.امراض النقص الايضي انواعها وسببها 12.الهيموغلوبين في الدم .انواع فقر الدم وانواع ارتفاع الهيموغلوبين في الدم. 13.البورفيريا سببها وانواعها وطرق تشخيصها 14.الهرمونات .تعريفها	1. بيان المحاضرة من خلال عرض الرسالة الرئيسية للموضوع. كتابة اهداف المحاضرة. طرح أهم المواضيع التي تناولتها المحاضرة والمقدمة. تقسيم وقت المحاضرة لتغطي الموضوع الرئيسي والخلاصة والمناقشة	من خلال اجراء عدد من التقييمات التكوينية والتقييمات الختامية في الجانب النظري والعملي واجراء الندوات وعمل التقارير في الجانب العملي وامتحان منتصف الفصل ونهاية الفصل.
2	2ن + 3ع				
3	2ن + 3ع				
4	2ن + 3ع				
5	2ن + 3ع				
6	2ن + 3ع				
7	2ن + 3ع				
8	2ن + 3ع				
عطلة					
عطلة					
11	2ن + 3ع				
12	2ن + 3ع				
13	2ن + 3ع				
14	2ن + 3ع				
15	2ن + 3ع				

			وانواعها واسباب الخلل في افرازها زيادتها او نقصانها وعلاقة ذلك بالحالات المرضية الصاحبة لها. 15.مناقشة الحالات المرضية الناجمة عن اضطرابات الغدد الصم		

11. تقييم المقرر

توزيع كالتالي: 20 درجة امتحانات نصفية واليومية +10 درجات للعملي (عملي +نتائج + تقرير) + 70 درجة نهائي (50 نظري + 20 عملي)

12. مصادر التعلم والتدريس

الكتب المقررة المطلوبة (المنهجية أن وجدت)	Martin Andrew Crook, EIGHT Ed., CLINICAL BIOCHEMISTRY & METABOLIC MEDICINE,2012 .
المراجع الرئيسة (المصادر)	Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics, 9th Ed,2010
الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)	William J. Marshall, S. K. Banger, 6th ed.2008 (Clinical Chemistry) ..
المراجع الإلكترونية ، مواقع الانترنيت	

Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: ….**Al–Nahrain University**……

Faculty/Institute: ….**College of Medicine**……

Scientific Department: .**Chemistry and Biochemistry Department**……

Academic or Professional Program Name: .**Biochemistry 2**……

Final Certificate Name: … **Bachelor of Medicine and Surgery**……

Academic System: … **Bachelor of Medicine and Surgery** ……

Description Preparation Date: **5/10/2023**

File Completion Date: **18/2/2024**

Signature:
Head of Department Name:

Date:

Signature:
Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

1. Program Vision

To be a leading center of excellence in biochemistry within the College of Medicine at Al-Nahrain University, dedicated to advancing scientific knowledge, fostering innovative research, and producing highly skilled graduates equipped to address the evolving challenges in healthcare and biomedical sciences.

2. Program Mission

The Biochemistry Department at the Al-Nahrain College of Medicine is committed to providing exceptional education, conducting cutting-edge research, and contributing significantly to the medical field. Our mission is to nurture a learning environment that cultivates a deep understanding of biochemistry, fosters critical thinking, and prepares students for impactful careers in medicine, research, and healthcare leadership.

3. Program Objectives

1. To ensure the provision of students with the basic knowledge in clinical biochemistry through an updated curriculum.
2. To equip students with the knowledge and skills necessary for medical practice, research, and advanced studies.
3. To encourage student involvement in research projects, internships, and extracurricular activities.
4. To consolidate professional cooperation in teaching and scientific research at the local and international levels.
5. To design postgraduate studies in the field of medical and clinical biochemistry in a manner that helps students become scholars and specialized researchers in this field.
6. To establish a high-quality research strategy in the field of medical and clinical biochemistry aimed at creating new insights, improving the health condition of community members, and overcoming diseases.

4. Program Accreditation

5. Other external influences

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements				
College Requirements	**1**	**4.5**		Basic course
Department Requirements	**1**	**4.5**		Basic course
Summer Training				
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	**practical**
2023-2024/ 2nd grade	**CHMBio-21**	**Biochemistry 2**	**3**	**3**

8. Expected learning outcomes of the program

Knowledge	
The doctor as a scholar and scientist	The graduate will be able to apply to medical practice biomedical scientific principles, method and knowledge relating to biochemistry
Skills	

The doctor as practitioner	Use information effectively in a medical context
The doctor as practitioner	Carry out practical procedures safely and effectively
Ethics	
Patient safety and quality assurance	Place patients' needs and safety at the center of the care process, promote and maintain health and safety in all care settings, and recognize how errors can happen in practice in order to overcome them.
Leadership and teamwork	Must learn and work effectively within a multi-professional and multi-disciplinary team and across multiple care settings.

9. Teaching and Learning Strategies

1. Explain the lecture by presenting the main message of the topic.
2. Writing the lecture objectives.
3. Presenting the most important topics covered in the lecture and introduction.
4. Divide the lecture time to cover the main topic, conclusion, and discussion.

10. Evaluation methods

By conducting a number of formative assessments and summative assessments in the theoretical and practical aspects, conducting seminars and making reports in the practical aspect, and mid-term and end-of-semester examinations.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor Assistant Professor Lecturer	Biochemistry Medicine & surgery	Clinical Biochemistry			4	

Professional Development
Mentoring new faculty members
By urging and encouraging them to attend theoretical and practical lectures to gain experience and skill in the teaching and learning process.
Professional development of faculty members
By contributing and participating in local and international workshops, courses and conferences

12. Acceptance Criterion

13. The most important sources of information about the program

Lippincott's Illustrated Reviews, 5th Ed., Williams & Wilkins, 2011
Harper's Illustrated Biochemistry, 28th Ed,. McGraw-Hill Companies, Inc, 2009.

14. Program Development Plan

Continuing work to hold periodic meetings for the professors of one course with the professors of other courses related to each other for the various first, second, and fifth academic stages of the Chemistry and Biochemistry branch to develop and update the relevant courses, as well as update the sources and present them for discussion in the branch's scientific committee.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2nd/1st semes	CHMBio-21	Biochemistry II	Basic												

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name:
Biochemistry II
2. Course Code:
CHMBio-21
3. Semester / Year:
1st / 2023-2024
4. Description Preparation Date:
18/2/2024
5. Available Attendance Forms:
Attendance + part of electronic assessments
6. Number of Credit Hours (Total) / Number of Units (Total)
90 hours for semester (45theoretical + 45 practical)/ 4.5 units
7. Course administrator's name (mention all, if more than one name)
Name: Asst Prof Dr. Hassan H. Al-Saeed Email: dr.hasanalsaeed@nahrainuniv.edu.iq Name: Asst Prof Dr. Mohammed Abdulatif Mohammed Ali:- mohammedchina@nahrainuniv.edu Name: Lecturer Dr. Zeena Abdulelah Abd Ali:- zeenaalsedi@colmed.ahrainuniv.edu.iq
8. Course Objectives

Course Objectives	**At the end of the teaching, the student will be able to recognize:** **1- What are life processes, their types, and how to generate energy.** **2- Characteristics of bioenergy, the laws of thermodynami thermodynamic coefficients (free energy of compression, enthalpy, a enthalpy), the importance of energy interactions and mechanics in biolog interactions, the central role of high-energy phosphate molecules in transfer and capture of energy, and the importance of the adenos triphosphate molecule and its central role in the transfer and capture energy.** **3- What is biological oxidation and knowledge of the types of reactions t occur in living cells, the importance of oxidation-reduction reactions, a the types of cofactors and enzymatic aids that play important roles transferring electrons.**

9. Teaching and Learning Strategies

Strategy	1 - Educational strategy, collaborative concept planning. 2- Brainstorming education strategy. 3- Education Strategy Notes Series

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3T + 3P	Empowering and providing the student with knowledge: 1- Knowledge of biochemistry and metabolism of biomolecules and linking them to the body's physiology. 2- Knowing the types chemical reactions th occur in living cells, what bioenergy is, ho to transfer electrons through the respirato chain, oxidative phosphorylation, and the pathological conditions associated with a defect in the transfer of electrons through the respirato chain. 3- Complete knowled of the metabolism of carbohydrates, lipids, proteins, their derivatives, and othe compounds that cont nitrogen through knowing the food molecules, their functions, and their required proportions the body and their metabolism, starting with their digestion, absorption, metabolis (synthesis and breakdown), and 12excretion, and how obtain and calculate	Bioenergetic and biological oxidation	Explain the lecture by presenting the main message of the topic. Writing the lecture objectives. Presenting the most important topics covered in the lecture and introduction. Divide the lecture time to cover the main topic, conclusion, and discussion	By conducting a number of formative assessments and summative assessments in the theoretical and practical aspects, conducting seminars and preparing reports in the practical aspect, and taking the mid-term and end-of-term examinations.
2	3T + 3P		Respiratory chain and oxidative phosphorylation		
3	3T + 3P		Carbohydrates (digestion and absorption)		
4	3T + 3P		Glycolysis, Krebs cycle and gluconeogenesis		
5	3T + 3P		Glycogenesis and glycogenolysis		
6	3T + 3P		Lipid metabolism, digestion and absorption		
7	3T + 3P		Fat oxidation		
8	3T + 3P		Ketone bodies and fat synthesis		
Holiday			Midterm exam		
Holiday			Midterm exam		
11	3T + 3P		Metabolic control of oxidation and synthesis of fats and cholesterol		
12	3T + 3P		Proteins (digestion and absorption)		
13	3T + 3P		proteins degradation and breaks down of		

14 15	3T + 3P 3T + 3P	energy, and the diseas associated with their metabolism, and how deal with them. 4- Knowing the natur of hormones, their receptors, types, mechanisms of action and accompanying diseases resulting fro lack or excess of their secretion. 5- Providing the student with practical skills in diagnosis and knowledge of clinical biochemistry and laboratory medicine.	amino acids Degradation of the carbon skeleton of amino acids Other nitrogen containing compounds		

11. Course Evaluation

Distribution as follows: 20 marks for midterm and daily exams + 10 marks for practical (practical + results + report) + 70 final marks (50 theoretical + 20 practical)

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Liplipincott's Illustrated Reviews, 5th Ed., Willia & Wilkins, 2011
Main references (sources)	Harper's Illustrated Biochemistry, 28th E McGraw-Hill Companies, Inc, 2009
Recommended books and references (scientific journals, reports…)	1. Lehninger Principles of Biochemistry, 4th Ed. 2. Stryer Biochemistry, 5th ed.
Electronic References, Websites	