نموذج وصف المقرر

1. اسم المقرر
كيمياء صيدلانية لا عضوية
2. رمز المقرر
MU0713104
3. الفصل / السنة
الفصل الدراسي الاول / المرحلة الثالثة / 2025-2026
4. تاريخ إعداد هذا الوصف
2025/9/29
5. أشكال الحضور المتاحة
الدوام حضوري
6. عدد الساعات الدراسية (الكلي)/ عدد الوحدات (الكلي)
عدد الساعات الدراسية الكلي 30 عدد الوحدات 3
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)
الاسم: م. د. سامر عزت مالك الاسم: م.د. ذوالفقار علي عبد الآيميل : thulfigar.ali@uomus.edu.iq
8. اهداف المقرر

اهداف المادة الدراسية	**تعريف الطلاب بالذرات والجزيئات** **توضيح دور المنتجات اللاعضوية في الصيدلة**
9. استراتيجيات التعليم والتعلم	
الاستراتيجية	محاضرات نظرية مع الوسائل التعليمية مثل أشرطة الفيديو والرسوم البيانية مختبرات عملية يقوم فيها الطلاب بإجراء التجارب بشكل فعال

10. بنية المقرر

الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
3-1	2	Understanding the Alkali Metals and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	**Alkali Metals**: Lithium, Sodium, Potassium: Electron configuration, chemial properties of metals, Advantages and disadvantages using lithium-based drugs, Sodium as an essential ion in the human body, Active transport of sodium ions, Drugs, diet and toxicity of	محاضرات	امتحانات ورقية

		sodium ions, Potassium and its clinical application.			
امتحانات ورقية	محاضرات	**Alkaline Earth Metals**: Magnesium, Calcium: Electron configuration of metals, Major uses and Chemical properties, Magnesium Biological importance and clinical applications and preparations. Calcium: the key to many human functions.	Understanding the Alkaline Earth Metals and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	2	6-4
امتحانات ورقية	محاضرات	**Group 13:** Aluminium, Boron and Gallium: General chemistry of group 13 elements, Pharmaceutical applications of boric acid, Bortezomib, Biological importance of Aluminiumant its adjuvants, Antacids, Aluminium-based therapeutics, Phosphate binders, Antiperspirant. Gallium Introduction, Chemistry, Pharmacology of gallium-based drugs and their uses	Understanding the Aluminium, Boron and Gallium: General chemistry of group 13 elements, Pharmaceutical applications of boric acid, Bortezomib, Biological importance of Aluminiumant its adjuvants, Antacids, Aluminium-based therapeutics and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	4	7
امتحانات ورقية	محاضرات	**The Carbon Group**: General chemistry of group 14 elements, Silicon-based drugs versus carbon-based analogues, Introduction of silicon groups, Silicon isosters, Organosilicon drugs.	Understanding the chemi of group 14 elements, Silicon-based drugs versu carbon-based analogues	2	9+8
امتحانات ورقية	محاضرات	**Transition Metals and d-Block Metal Chemistry:** Electronic configurations, platinum anticancer agents, Iron and its role in biological systems, clinical applications. Copper-containing drugs, Silver: the future of antimicrobial agents?, Gold: the fight against rheumatoid arthritis and zinc and its role in biological systems, clinical applications and toxicity.	Understanding the **Metal Chemistry** and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	4	15-10
امتحانات ورقية	محاضرات	Chelation Therapy: What is heavy-metal poisoning? What is chelation? Chelation therapy, Calcium disodium edetate, Dimercaprol (BAL), Dimercaptosuccinic acid	Understanding the clinical application of heavy-metal, focusing on the relationship between chemical structure and	2	15-10

		(DMSA), 2,3-Dimercapto-1-propanesulfonic acid (DMPS), and Lipoic acid (ALA).	therapeutic or diagnostic function.		
امتحانات ورقية	محاضرات	Protective adsorbents	Miscellaneous inorganic agents	2	15-10
امتحانات ورقية	محاضرات	Topical agents	Miscellaneous inorganic agents	2	15-10
امتحانات ورقية	محاضرات	Dental agents	Miscellaneous inorganic agents	2	15-10
امتحانات ورقية	محاضرات	Organometallic Chemistry: What is organometallic chemistry and metallocenes? Ferrocene derivatives as potential antimalarial agent and antibreast cancer, Titanocenes in titanium-based anticancer agents and Vanadocene dichloride as anticancer agents, Further vanadium-based drugs: insulin mimetics.	Miscellaneous inorganic agents	2	15-10
امتحانات ورقية	محاضرات	Radioactive Compounds and Their Clinical Application, Radiopharmacy: dispensing and protection, Therapeutic use of radiopharmaceuticals.	Miscellaneous inorganic agents	4	15-10
امتحانات ورقية	محاضرات	Radiopharmaceuticals for imaging	Miscellaneous inorganic agents	2	15-10

11. تقييم المقرر

توزيع الدرجة من 100 على وفق المهام المكلف بها الطالب مثل التحضير اليومي والامتحانات اليومية والشفوية والشهرية والتحريرية والتقارير .... الخ
20 درجة مختبر عملي
20 درجة النظري وتشمل امتحان المد وكوزات وحضور
60 درجة االمتحان النهائي

12. مصادر التعلم والتدريس

الكتب المقررة المطلوبة (المنهجية أن وجدت)	**1)** Essentials of Inorganic Chemistry For Students of Pharmacy, Pharmaceutical Sciences and Medicinal Chemistry by KATJA A. STROHFELDT, School of Pharmacy, University of Reading, UK
المراجع الرئيسة (المصادر)	**2)** Inorganic Medicinal and Pharmaceutical Chemistry by Block, Roche Soine and Wilson, latest edition
المراجع الإلكترونية ، مواقع الانترنيت	Pubmed, Google scholar

Course Description Form

13. Course Name:	
Inorganic Pharmaceutical Chemistry	
14. Course Code: MU0713201	
MU0713104	
15. Semester / Year:	
1st course/ 3rd stage 2025−2026	
16. Description Preparation Date:	
2025/9/29	
17.Available Attendance Forms:	
Actual attendance	
18.Number of Credit Hours (Total) / Number of Units (Total)	
30 hr / 3 credit units	
19. Course administrator's name (mention all, if more than one name)	
Name: Dr. Samir Ezzat Dr. Dhulfiqar Ali Abed, Email: thulfigar.ali@uomus.edu.iq	
20. Course Objectives	
Course Objectives	1) This course examines the clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function. 2) Students will study the roles of key metals in medicine, including platinum anticancer agents and chelation therapy. 3) A significant component is dedicated to radiopharmacy, covering the principles, safe handling, and application of radiopharmaceuticals in advanced medical imaging and treatment.
21. Teaching and Learning Strategies	
Strategy	• Theoretical lectures with teaching aids such as videos a diagrams

	• Practical laboratories in which students actively condu experiments

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-3	2	Understanding the Alkali Metals and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	**Alkali Metals**: Lithium, Sodium, Potassium: Electron configuration, chemial properties of metals, Advantages and disadvantages using lithium-based drugs, Sodium as an essential ion in the human body, Active transport of sodium ions, Drugs, diet and toxicity of sodium ions, Potassium and its clinical application.	Lectures	Exam + Quiz
4-6	2	Understanding the Alkaline Earth Metals and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	**Alkaline Earth Metals**: Magnesium, Calcium: Electron configuration of metals, Major uses and Chemical properties, Magnesium Biological importance and clinical applications and preparations. Calcium: the key to many human functions.	Lectures	Exam+Quiz
7	4	Understanding the Aluminium, Boron and Gallium: General chemistry of group 13 elements, Pharmaceutical applications of boric acid, Bortezomib, Biological importance of Aluminiumant its adjuvants, Antacids, Aluminium-based therapeutics and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	**Group 13:** Aluminium, Boron and Gallium: General chemistry of group 13 elements, Pharmaceutical applications of boric acid, Bortezomib, Biological importance of Aluminiumant its adjuvants, Antacids, Aluminium-based therapeutics, Phosphate binders, Antiperspirant. Gallium Introduction, Chemistry, Pharmacology of gallium-based drugs and their uses	Lectures	Exam + Quiz
9+8	2	Understanding chemistry of group elements, Silicon-based d versus carbon-b analogues	**The Carbon Group**: General chemistry of group 14 elements, Silicon-based drugs versus carbon-based analogues, Introduction of silicon groups, Silicon isosters, Organosilicon drugs.	Lectures	Exam + Quiz
15-10	4	Understanding the	**Transition Metals and d-Block Metal**	Lectures	Exam + Quiz

		Metal Chemistry and their clinical application of inorganic compounds, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	**Chemistry:** Electronic configurations, platinum anticancer agents, Iron and its role in biological systems, clinical applications. Copper-containing drugs, Silver: the future of antimicrobial agents?, Gold: the fight against rheumatoid arthritis and zinc and its role in biological systems, clinical applications and toxicity.		
6-1	2	Understanding the clinical application of heavy-metal, focusing on the relationship between chemical structure and therapeutic or diagnostic function.	Chelation Therapy: What is heavy-metal poisoning? What is chelation? Chelation therapy, Calcium disodium edetate, Dimercaprol (BAL), Dimercaptosuccinic acid (DMSA), 2,3-Dimercapto-1-propanesulfonic acid (DMPS), and Lipoic acid (ALA).	Lectures	Exam + Quiz
8-7	2	Miscellaneo us inorganic agents	Protective adsorbents	Lectures	Exam + Quiz
10+9	2	Miscellaneo us inorganic agents	Topical agents	Lectures	Exam + Quiz
12+11	2	Miscellaneo us inorganic agents	Dental agents	Lectures	Exam + Quiz
14+13	2	Miscellaneo us inorganic agents	Organometallic Chemistry: What is organometallic chemistry and metallocenes? Ferrocene derivatives as potential antimalarial agent and antibreast cancer, Titanocenes in titanium-based anticancer agents and Vanadocene dichloride as anticancer agents, Further vanadium-based drugs: insulin mimetics.	Lectures	Exam + Quiz
15	4	Miscellaneous inorgani agents	Radioactive Compounds and Their Clinical Application, Radiopharmacy: dispensing and protection, Therapeutic use of radiopharmaceuticals.	Lectures	Exam + Quiz
	2	Miscellaneous inorgani agents	Radiopharmaceuticals for imaging		

23. Course Evaluation

20 Laboratory assessments, Quiz, report,…
20 mid-term exam
60 final exam

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**1)** Essentials of Inorganic Chemistry For Students of Pharmacy, Pharmaceutical Sciences and Medicinal Chemistry by KATJA A. STROHFELDT, School of Pharmacy, University of Reading, UK
	2) Inorganic Medicinal and Pharmaceutical Chemistry by Block, Roche Soine and Wilson, latest edition
Electronic References, Websites	Pubmed, Google scholar