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Department of Food Technology

College of Agriculture Engineering Sciences

University of Salahaddin

Subject: Inorganic Chemistry

Course Book – Second Class-1st semester

**Lecturer's name Assist Prof Dr Bashdar Abuzed Sadee**

 **Miss Saewan Ahmed Ali**

Academic Year: 2022/20233

**\*Course Book**

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| **1. Course name** | **Autumn semester** |
| **2. Lecturer in charge** | **Assist Prof Dr Bashdar Abuzed Sadee****\*Miss Saewan Ahmed Ali** |
| **3. Department/ College** | **Food Technology Department / Agriculture College****\*Water and soil department**  |
| **4. Contact** | **e-mail:Bashdar.sadee@su.edu.krd****Tel: (optional) 07504681186** **\*07504567002** |
| **5. Time (in hours) per week**  | **Theory: 2** **Practical: 3** |
| **6. Office hours** | **5 day a week**  |
| **7. Course code** | **--** |
| **8. Teacher's academic profile**  | **e.g Webpage, Blog, Moodle…** **or few paragraphs about not less than 100 words** |
| **9. Keywords** | **Ionization energy, periodic Table, trends for periods and groups.**  |
| **10. Course overview:**In this section the lecturer shall write an overview about the subject he/she is giving. The course overview must cover:Inorganic chemistry provides comprehensive and contemporary introduction to the diverse discipline of inorganic chemistry. Inorganic chemistry has considerable impact on our daily lives and other scientific disciplines. Inorganic chemistry is essential to the environmental and biological disciplines. Inorganic chemistry is also used in papermaking industry and by the food industry. Inorganic Chemistry deals with the properties of all of the elements in the periodic table. These elements range from highly reactive metals, such as sodium, to noble metals such as gold. The nonmetals include solids, liquids, and gases, and range from the aggressive oxidizing agent fluorine to unreactive gases such as helium. Although this variety and diversity are features of any study of inorganic chemistry, there are underlyingpatterns and trends which enrich and enhance our understanding of the discipline. These trends in reactivity, structure, and properties of the elements and their compounds provide an insight into the landscape of the periodic table and provide a foundation on which to build understanding. Inorganic compounds vary from ionic solids, which can be described by simple applications of classical electrostatics, to covalent compounds and metals, which are best described by models that have their origin in quantum mechanics.  Students will be introduced to different theory and concepts of inorganic chemistry. Practical Inorganic chemistry explores the diversity of the periodic table and its applications.There are some ninety-two naturally occurring elements as well as a handful of man-made radioactive elements. When in combination, these elements constitute all of our food, shelter, energy sources and everything we manufacture and use in our lives. This course provides a foundation for the understanding of the varying chemistries of the elements of the Periodic Table, with emphasis on inorganic materials. The course includes the descriptive chemistry of many of the most common elements and their compounds, integrating such topics as symmetry and structure, bonding models, reactions and the synthesis and characterization of inorganic compounds. An understanding of the behaviour of elements and their compounds is central to chemistry and borders the Earth and Life Sciences, as well as Engineering.▪The importance of studying the subject▪ Understanding of the fundamental concepts of the course▪Principles and theories of the course▪ A sound knowledge of the major areas of the subject▪Sufficient knowledge and understanding to secure employmentThis should not be less than 200 words |
| **11. Course objective:**The main object of this course being to give an introduction to inorganic chemistry and to demonstrate the properties of the elements and organizing them through a periodic table based on their atomic number. Practical1.To teach students how to treat with chemical materials & apparatuses 2. To teach students how they can solve the problems in the lab . 3. and to learn how to write a lab report 4. How can they obtain good results from experiments  |
| **12. Student's obligation**Students must follow the instructions illustrated by the department. The students must attend all classes otherwise the lecturer should report the administrative department. Student’s obligations throughout the academic year include for example the attendance, doing exams, assignments, reports, quiz…etcThe students activity in the class will be monitored in terms of quietness, their activities, and also the attendance in the class.  |
| **13. Forms of teaching**لێره‌ مامۆستا ڕێگه‌ی وانه‌‌ ووتنه‌وه‌ ده‌نووسێت، بۆ نموونه‌:‌ داتاشۆ و پاوه‌رپۆینت، ‌سه‌ر ته‌خته‌ڕه‌ش، ته‌خته‌ی سپی، سمارتبۆردیان‌ مه‌لزه‌مه‌... هتدDifferent teaching approaches will be used in the class in order to deliver the main topics of the subject. Prior the class the hard copy of the lecture will be handed to the students in order to make notes. Different forms of teaching will be used to the reach the objectives of the subject such as using data show to deliver the presentation and other classical tools for more clarification.  |
| **14. Assessment scheme**Breakdown of overall assessment and examinationلێره‌ مامۆستا جۆری هه‌ڵسه‌نگاندن (تاقیکردنه‌وه‌کان یان ئه‌زموونه‌کان) ده‌نووسێت بۆ نموونه‌ تاقیکردنه‌وه‌ی مانگانه‌، کویزه‌کان، بیرکردنه‌وه‌ی ڕه‌خنه‌گرانه (پریزه‌نته‌یشن)، ڕاپۆرت نووسین، ووتار نووسین‌ یان ئاماده‌نه‌بوونی خوێندکار له‌ پۆلدا...هتد. ئامانه‌ چه‌ند نمره‌ی له‌سه‌رده‌بێت و مامۆستا چۆن نمره‌کان دابه‌شده‌کات؟First Exam after five lecturesSecond Exam after nine lectures. Mark Distribution:Monthly Exam 50% (Theoretical 15% + Practical 35%)Final Exam 50% (Theoretical 50%)Final Mark 100%‌ |
| **15. Student learning outcome:**پڕکردنه‌وه‌ی ئه‌م خانه‌یه‌ زۆر گرنگه‌، مامۆستا ده‌رئه‌نجامه‌کانی فێربوون ده‌نووسێت. بۆ نموونه‌:ڕوونی ئامانجه‌ سه‌ره‌کیه‌کانی کۆرسه‌که‌ (بابه‌ته‌که‌) بۆ خوێندکار‌گونجاندنی ناوه‌ڕۆکی کۆرسه‌که‌ به‌ پێویستی ده‌ره‌وه‌ و بازاڕی کارقوتابی چی نوێ فێرده‌بێت له‌ ڕێگه‌ی پێدانی ئه‌م کۆرسه‌وه‌؟This should not be less than 100 wordsAt the end of the course the students will learn how to organize different elements and chemicals using periodic table based on their repeating patterns. They will be toughed the impacts and properties of these elements on our everyday lives. They will be informed about the importance and toxicity of these elements. Students will acquire considerable knowledge and demonstrate their ability to communicate and use this information in the next stage of their study.  |
| **16. Course Reading List and References‌:**1. Inorganic Chemistry **by: Shriver & Atkins**
2. **Inorganic chemistry by: Rajni Carg & Randhir Singh**
3. **Advanced in Inorganic Chemistry by: A.G. Skyes**
4. Tanaka John and Suib L.Steven; experimental methods in inorganic chemistry ;1st edition ;1993
5. Laboratory Manual of Practical Inorganic Chemistry; 1st edition; 2014.
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| **17. The Topics:** | **Lecturer's name** |
| Week 1: Introduction to inorganic chemistryDefinition of inorganic chemistry, structure of atom, subatomic particles and The modern view of atom.Week 2: Atomic Number, Mass Number, and IsotopesWeek 3:Atoms, Elements, and the Periodic TablePatterns Based on Energy Levels and Electron Arrangements Week4Trends for Ionization EnergyWeek5: The Group 1 elementsWeek 6: The Group 2 elementsWeek 7: The Group 13 elementsWeek 8: The Group 14 elementsWeek 9: The Group 15 elementsWeek 10: The Group 16 elementsWeek 11: The Group 17 elementsWeek 12: Week 13: The Group 18 elements | Lecturer's nameDr Bashdar Abuzed ex:(2 hrs) |
| **18. Practical Topics (If there is any)** |  |
| 1. Purification of chemical com. By sublimation
2. preparation of potassium dichromate
3. study the solubility of KCl in different temperature
4. - preparation of sodium hydroxide by Cosak method
5. preparation of copper(I) iodide
6. preparation of chrome alum
7. analysis of the silver group
8. the copper and arsenic group
9. - the iron and zinc group
 | Saewan Ahmed3 hrs each practical session  |
| **19. Examinations:****1.***Define atom and periodic table* *Answer* ***atom*** as *the basic unit of an element that can enter into chemical combination*According to the **periodic law**, *the chemical and physical properties of the elements repeat in a regular, periodic pattern when they are arranged according to their atomic number.*2. Using only their location in the periodic table, rank the atoms in each set by decreasing atomic size.(a) Mg, Be, Ba(d) Se, Br, Ca Answera. Ba, Mg, Beb. Ca, Se, BrPractical **Q1/Define sublimation process** **Sol/ is the process in which solid subs. Vaporized then up the vapor is condensed without passing the liquid phase** **Q2/ how could separate between AgCl ppt.&PbCl2 ppt.?****Sol/ by adding hot water because PbCl2 soluble in hot water.****Q3/fill the blanks:-****1-the color of AgCl ppt. is -----------------------(white )****2-the precipitate reagent for group (I) is---------------( dil. HCl solution)**  |
| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer reviewپێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |