SYLLABUS

A. Course Description

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab.*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Language*
CHM	**211**	**Inorganic Chemistry (1)**	**4**	**2**	**3**	**1**	**8**	**CHM 102**	**3**	**English**

In this module, students will study the elements of the periodic table in their different groups, alkali metals, halogens, s and p-block, inert gases, relation of properties with the position in the periodic table. The experimental part of this module deals with the identification of some anions and cations.
At the end of this course the student will be able to:

- To memorize the different groups of elements.
- To recognize the properties of groups I-VIIA and its compounds.
- To describe the methods of preparation of elements and compounds of groups I-VIIA.
- To list different uses and applications of inorganic compounds.
- To label environmentally harmful substances and materials.

B. References: Required Textbook & Internal Website

I shall use ***Inorganic Chemistry*****,** Catherine E. Housecroft and Alan G. Sharpe**. (**2nd Ed.), Pearson Education Limited, Essex CM20 2JE, England, 2005 (ISBN: 0130-39913-2) **(it is an obligation).** The book contains the lecture notes as well as activities for the students to take part in; the book serves as a workbook.

Other references:

- ***Inorganic Chemistry.*****,** Atkins, P., Overton, T., Rourke, J., Weller, M., Armstrong, F. and Hagerman, M**.** (5th Ed.) New York, NY: W.H. Freeman and Company, 2010 (ISBN: 978-1-42-921820-7)

- Internal website: **\\10.10.70.70\ScienceShareFolder**
  http://www.chemistry.college.hmco.com

Google Classroom Webpage: http://www.imamm.org/

C. Topics Outline

Disclaimer: this is a very fast-paced course. There will be little time—if any—for review. What follows is an approximate outline of the pace of the course. We may go faster or slower, contingent on the class response. The tentative list of topics to cover:

a. Theory:

1. **Review on The elements and their compounds:** Periodic trends, Valence electron configurations
2. **Hydrogen:** The hydrogen ion (proton), The hydride ion, Isotopes of hydrogen, protonium and deuterium, Deuterated compounds, Tritium, Dihydrogen.
3. **Group 1: The alkali metals and their compounds:** Introduction, Occurrence, extraction and uses, Extraction, Major uses of the alkali metals and their compounds, Physical properties and General properties.
4. **Group 2:** The alkali earth metals and their compounds: Introduction, Occurrence, extraction and uses, Major uses of the group 2 metals and their compounds, Physical properties and General properties.
5. **Group 13: elements and their compounds:** Introduction, Occurrence, extraction and uses, Major uses of the group 13 elements and their compounds, Physical properties, Electronic configurations and oxidation states.
6. **Group 14: elements and their compounds:** Introduction, Occurrence, extraction and uses, Occurrence, Extraction and manufacture, Uses, Physical properties, Ionization energies and cation formation, Some energetic and bonding considerations, Allotropes of carbon, Graphite and diamond: structure and properties.
7. **Group 15: elements and their compounds:** Introduction, Occurrence, extraction and uses, Physical properties, Bonding considerations, Nitrogen, Phosphorus, Arsenic, antimony and bismuth.
8. **Group 16: elements (Chalcogen) and their compounds:** Introduction, Occurrence, extraction and uses, Physical properties and bonding considerations.
9. **Group 17 elements (Halogens) and their compounds:** the Introduction, Fluorine, chlorine, bromine and iodine, Astatine, Occurrence, extraction and uses, Physical properties and bonding considerations, NMR active nuclei and isotopes as tracers, The elements, Difluorine, Dichlorine, dibromine and diiodine,, Hypofluorous acid, Oxoacids of chlorine, bromine and iodine and their aqueous solution chemistry
10. **Group 18 elements (Noble Gas):** Introduction, Occurrence, extraction and uses, Physical properties, NMR active nuclei, Compounds of xenon, Fluorides, Chlorides, Oxides, Oxofluorides, Other compounds of xenon, Compounds of krypton and radon

b. ***Practical:***

Qualitative Analysis of Anions, Qualitative Analysis of HCl Group (CO_3^{2-}, HCO_3^-, S^{2-}, $S_2O_3^{2-}$, NO_2^- and SO_3^{2-}), Qualitative Analysis of H_2SO_4 Group, (Cl^-, Br^-, I^- and NO_3^-), Qualitative Analysis of Miscellaneous Group, (SO_4^{2-}, $B_4O_7^{2-}$ and PO_4^{3-}), Review on Qualitative Analysis of Anions, Qualitative Analysis of Cations, Qualitative Analysis of Group I (Pb^{2+}, Hg^+ & Ag^+), Qualitative, Analysis of Group IIA (Cu^{2+}, Hg^{2+}, Cd^{2+} and Bi^{3+}), Qualitative Analysis of Group III, (Al^{3+}, Fe^{3+}, & Cr^{3+}), Qualitative Analysis of Group IV (Zn^{2+}, Mn2+, Co^{2+} and Ni^{2+}), Qualitative Analysis of Group V (Ba^{2+}, Ca^{2+} & Sr^{2+}), Qualitative Analysis of Group VI (NH^{4+}, Mg^{2+}, K^+ and Na^+), Review on Qualitative Analysis of Cations, Review on Qualitative Analysis of Salt (Cation + anion).

D. Exams & Grading System

The semi-official dates of the exams for this course, with all the caveats, that the word "semi-official" entails, can be found here:

- **Midterm 1:** 6th or 7th week & **Midterm 2:** 11th or 12th week
- **Quizzes & Homeworks: During the semester**

Your course grade will be based on Final Exam, Midterms, Homework, Quizzes, Participation, Attendance and Project.

Midterm 1: 10 %	**Midterm 2:** 10 %	**Final Exam:** 40 %
Laboratory: 30 %	**Quizzes; Homework & Attendance & Participation:** 10 %	

Grading distribution:

A^+: [95, 100], A: [90, 95), B^+: [85, 90) , B: [80, 85), C^+: [75, 80), C: [70, 75), D^+: [65, 70), D: [60, 65), F: [0, 60).

E. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

Executive Rules for Study Regulations and Exams
goo.gl/ykm7t3

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