North South University
Department of Civil and Environmental Engineering
CHE 120 Sec 1 and 2: Inorganic Chemistry
Spring 2018

Instructor: Dr. Shama E. Haque
Assistant Professor, Department of Civil and Environmental Engineering

Room: SAC 730
Email: shama.haque@northsouth.edu ("CHE 120_SEC No." in the subject line)
Note that email sent to my personal account will NOT be replied to.

Office Hours: ST: 10:00 am – 11:00 am; 2:30 pm – 3:00 pm
MW10:00 am – 11:00 am; 2:30 pm – 3:00 pm
or by email appointment

Class Times: **SEC 1 Lecture meets** ST 11:10 am - 12:35pm**; Rm. SAC 201**
SEC 2 **Lecture meets** ST 12:45 pm - 02:10 pm; **Rm. SAC 304**

Course Description (4.0 Credits):

Lecture: includes Atomic Structure, Periodic Table, Chemical Bonds, Physical and Chemical Properties of Water, Different types of solution, Concentration Unit, Chemical Equilibrium and Thermo-Chemistry, Reaction Kinetics, Colloid and Colloidal Solution, Chemical Corrosion, Chemical of Environmental Pollution, Polymer Paint and Varnishes.

You MUST register for CHE 120 L concurrently.

Course Objective:

The objectives of this course are:

1. To understand the knowledge of inorganic chemistry fundamentals.
2. To develop skill and concepts to solve problems in inorganic chemistry using math, science and chemistry concepts.
3. To understand the central role of chemistry in the context of our society, environment and sustainable development.

Course Outcomes (COs):

Upon successful completion of this course, students will be able to:

CO1: apply knowledge of the fundamental chemical and scientific theories as relevant to inorganic chemistry.
CO2: ability to use concepts and solve inorganic chemistry problems dealing with chemical bonds and equilibrium, thermo-chemistry, reaction kinetics.

CO3: discuss the crucial role chemistry plays in our society and environment and utilize this as a basis for understanding safe handling and disposal of chemicals and various environmental issues facing our society.

Mapping of CO-PO

Sl.	CO Description	Program Outcome	Bloom's taxonomy domain/level *(C: Cognitive P: Psychomotor A: Affective)*	Delivery methods and activities	Assessment tools
CO1	apply knowledge of the fundamental chemical and scientific theories as relevant to inorganic chemistry.	**PO1**	C3	Lectures, Group Discussions	Midterm Exam
CO2	an ability to use concepts and solve inorganic chemistry problems dealing with chemical bonds and equilibrium, thermo-chemistry, reaction kinetics.	**PO2**	C3, P2	Lectures, Problem Solving; Group Discussions	Midterm Exam
CO3	discuss the crucial role chemistry plays in our society and environment and utilize this as a basis for understanding safe handling and disposal of chemicals and various environmental issues facing our society.	**PO7**	C2	Lectures, Group Discussions	Final Exam

Course Materials:

Text Books:

1. OpenStax College,Chemistry, OpenStax College. 11 March 2015. Rice University, Houston, Texas, USA.(OC)
2. Ebbing D.D., Gammon S.D., General Chemistry (2007). Ninth Edition. Houghton Mifflin Company, Boston, New York, USA. (EG)

References: Inorganic Chemistry, 2014 by Taro Saito. (TS)
Inorganic Chemistry, 2004, Second Edition by P.A. Cox. (PAC)

Lecture Note: Provided in the RESOURCE.

Other: Pen (black ink), pencil, eraser, calculator, ruler.

Evaluation:

Lecture		
Attendance	5%	
Class Tests (2)	20%	(10% each)
Midterm Exams (2)	40%	(20% each)
Final Exam	35%	

Exam Policy:

Both midterm exams will be comprehensive, drawing upon any course materials up to the date of the exam. The instructor will inform the students of the final exam syllabus well ahead of time. In order to prepare for the exams, the lecture notes should be thoroughly reviewed. **A missed test or exam will not be rescheduled for any reasons.** If due to unavoidable circumstances, a lab, midterm or final exam needs to be rescheduled, prior notice will be given.

Lectures:

The lecture is where you get an overview of the course material, and find out what is important to know. Most of your grade is derived directly from the lectures. Some concepts covered in the lecture are not in the text! Any changes to the schedule or to assigned work will be announced in the lecture.

Attendance:

Attendance is important because even if you come to the lecture barely awake, something will sink into your brain and you will take some knowledge home! In the event that you miss a lecture, find out what you have missed from a buddy, and pick up any missed assignments. If you are absent for 3 consecutive lectures without notification then you will be assigned a failing grade in the course. **To get attendance grade you MUST attend the section you are officially registered in.**

Responsibilities:

1. Instructors:
   - organise relevant lectures and labs;
   - guidance for studying and doing assignments, writing exams;
   - timely and impartial feedback, and consultation time.
2. Student:
   - attend lectures and take part in discussions;
   - learn by using many resources: text, lectures, discussions, etc;
   - maintain academic honesty;

- maintain discipline, conduct in a professional and respectful manner;
- **responsible for regularly checking their email and notices posted outside the Civil and Environmental Engineering Department Office and also the CHE 120 NOTICE subfolder in Resource.**
- **turn off cell phone before coming to a class or exams**.

Academic Dishonesty:

There are two types of behaviour that are considered academically dishonest. Plagiarism is the deliberate formal presentation or submission of the research, words, ideas, illustrations or diagrams of others as one's own without citation or credit. Cheating is the use of unauthorised aids (including electronic devices), assistance or materials in the preparation of assignments or in examinations. Note that electronic devices (Cell phone, Laptops, Tabs etc. are not allowed in the exam hall). Copying or showing your work to others, or asking for answers is also considered cheating. Penalties for cheating or plagiarism include one or more of the following: a zero grade on an assignment or exam, a failing grade in the course, suspension from the college, and expulsion from the college.

Code of Conduct:

On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: http://www.northsouth.edu/student-code-of-conduct.html

Tentative lecture Schedule:
***** One Day = 1.5 lecture hours, Total 24 days lecture = 36 lecture hours

Day*	Outcome/ Material Covered	Reference Reading	Activity
Day-1	Course overview	-	Lecture and Group Discussion
Day-2	Introduction to Inorganic Chemistry	Chap-1(OC, EG)	Lecture, Group Discussion
Day-3	Fundamental Chemistry, Periodic Table, Electron Configuration of Atoms	Chap-1 and 2 (OC, EG)	Lecture, Group Discussion
Day-4	Periodic Properties, Radioactivity, Isotopes	Chap- 2 (OC) Chap- 8 (EG)	Lecture, Class Assignment
Day-5	Early Chemical Discoveries, Significant figures	Chap-2 (OC)	Lecture, Group Discussion
Day-6	Calculations and Stoichiometry of Chemical Reactions	Chap-1 and 4 (OC) Chap-3 and 4 (EG)	Lecture, Group Discussion
Day-7	**MIDTERM EXAM 1 REVIEW**		
Day -8	**MIDTERM EXAM 1**		
Day-9	Chemical Bonding, Critical Thinking Exercise	Chap-9 (EG)	Lecture, Group Discussion

Day-10	Chemical Reactions, Reaction Kinetics	Chap-13 (EG) Chap-10	Lecture, Group Discussion
Day-11	Chemistry of Solution, Solution Stoichiometry	Chap-11 (OC) Chap-12 (EG) Section E (PAC)	Lecture, Group Discussion
Day-12	Physical and chemical properties of water	Chap-10 (OC) Handout	Lecture, Group Discussion
Day-13	Solution and Colloids	Chap-11 (OC) Chap-12 (EG)	Lecture, Group Discussion
Day-14	Chemical Equilibrium, Critical Thinking Exercise	Chap-14 (EG)	Lecture, Group Discussion
Day-15	**MIDTERM EXAM 2 REVIEW**		
Day-16	**MIDTERM EXAM 2**		
Day-17	Thermo-Chemistry	Chap-5 (OC) Chap-18 (EG)	Lecture, Group Discussion
Day-18	Thermo-Chemistry, Critical Thinking Exercise	Chap-5 (OC) Chap-18 (EG)	Lecture, Group Discussion
Day-19	Chemicals of Environmental Pollution	Chap-21 (OC), Chap-20 (EG), Section J (PAC); Handout	Lecture, Group Discussion
Day-20	Chemicals of Environmental Pollution, Critical Thinking Exercise	Chap-21 (OC), Chap-20 (EG), Section J (PAC); Handout	Lecture, Class Assignment
Day-21	Chemical Corrosion	Handout	Lecture, Group Discussion
Day-22	Chemistry of Polymer paints and Varnishes	Handout	Lecture, Group Discussion
Day-23	Civil Engineers and Chemistry	Handout	Lecture, Group Discussion
Day-24	**FINAL EXAM REVIEW**		Group Discussion, Class Assignment
FINAL EXAM (As per schedule declared by NSU)			