A. COURSE INFORMATION
   Course number/section: GEOL 4416.001
   Class meeting time: Monday, Wednesday and Friday 09:00-09:50
   Class location: BH-202
   Course Website: bb9.tamucc.edu

B. INSTRUCTOR INFORMATION
   Instructor: Dr. Valeriu Murgulet
   Office location: CS 205
   Office hours: Monday 2:00-4:00
   Telephone: 361-825-6023
   e-mail: valeriu.murgulet@tamucc.edu
   Appointments: by email

C. COURSE DESCRIPTION
   Introductory study of the Earth processes using principles of chemical equilibrium, thermodynamics, isotope geochemistry and organic geochemistry. Applications of low-temperature geochemistry to geologic problems.

D. PREREQUISITES AND COREQUISITES
   Prerequisites
   CHEM 1311 and CHEM 1111, CHEM 1312/1112, MATH 2413, GEOL 3414 and/or with instructor’s permission.
   Corequisites
   None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
   Required Textbook(s)
   None
   Optional Textbook(s) or Other References
Supplies
Lab notebook

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

By the end of this course, students should be able to:

1. Review the fundamentals and applications of geochemistry and its relevance in the Earth processes.
2. Discuss the most important concepts of inorganic, organic and isotope geochemistry.
3. Discuss current issues in the field of geochemistry.
4. Apply geochemical models and equations to solve geochemical problems.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

The class will meet on Mondays, Wednesdays and Fridays throughout the semester in the classroom to cover the geochemistry topics. Lecture power point slides, class exercises, discussions will be used while in the classroom. Class lectures prepare you for the lab assignments. In addition, you are expected to read relevant textbook chapters as announced in class in preparation for lecture and lab assignments. Thus, laboratory exercises will complement the material presented during the lectures.

H. MAJOR COURSE REQUIREMENTS AND GRADING

The following assessment tools will be used:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Midterm Exams</td>
<td>30</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15</td>
</tr>
<tr>
<td>Homework</td>
<td>30</td>
</tr>
<tr>
<td>Abstract and Presentation</td>
<td>5</td>
</tr>
<tr>
<td>Lab Assignments</td>
<td>20</td>
</tr>
</tbody>
</table>

HOMEWORK
Eight problem sets will be assigned throughout the semester and are due a week later. You must do your own work. Late problems sets will receive half credit and will not be graded if turned in after graded problem sets have been handed out.

PRESENTATION
Each student will select a topic from an approved list, research the topic, give a 15 minute presentation and write a one page (typed) abstract. The subject of the presentation will be chosen in consultation with the instructor.

I.
## J. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>WEEK OF</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 26</td>
<td>Introduction. Fields of Geochemistry. Origin of the Elements. Distribution and Associations of the Elements.</td>
<td>PPT</td>
<td>Homework</td>
</tr>
<tr>
<td>August 31</td>
<td>Equilibrium Thermodynamics and Kinetics</td>
<td>Chapter 2 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>September 7</td>
<td>Acid-Base Equilibria</td>
<td>Chapter 3 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>the 7th of September</td>
<td>LABOR DAY HOLIDAY – No classes</td>
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<tr>
<td>September 14</td>
<td>Oxidation-Reduction Reactions</td>
<td>Chapter 4 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>September 21</td>
<td>Oxidation-Reduction Reactions. Mineral Chemistry</td>
<td>Chapter 7 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>September 28</td>
<td>Mineral Chemistry</td>
<td>Chapter 7 (Nelson, G., Ryan, P.)</td>
<td>Homework</td>
</tr>
<tr>
<td>October 5</td>
<td><strong>Exam # 1. Carbonate Geochemistry</strong></td>
<td>Chapter 6 (Nelson, G.) Chapetr 4 (Krauskopf, K. B.)</td>
<td>Homework</td>
</tr>
<tr>
<td>October 12</td>
<td>Carbonate Geochemistry. Radioactive Isotopes</td>
<td>Chapter 6 (Nelson, G.) Chapetr 4 (Krauskopf, K. B.)</td>
<td>Homework</td>
</tr>
<tr>
<td>October 19</td>
<td>Stable Isotopes</td>
<td>Chapter 6 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>October 26</td>
<td>Carbon Chemistry</td>
<td>Chapter 5 (Ryan, P.)</td>
<td>Homework</td>
</tr>
<tr>
<td>November 9</td>
<td>The Continental Environment. Geochemistry of Surface and Ground Waters.</td>
<td>Chapter 9 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>November 16</td>
<td><strong>Exam # 2. The Marine Environment. Seawater Chemistry. Geochemistry of Marine Sediments.</strong></td>
<td>Chapter 10 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>November 23</td>
<td>The Marine Environment.</td>
<td>Chapter 10 (Nelson, G.)</td>
<td>Homework</td>
</tr>
<tr>
<td>the 27th of November</td>
<td>Thanksgiving Holidays – No classes</td>
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<tr>
<td>November 30</td>
<td>The Atmospheric Environment. Climate Change and the Geologic Record</td>
<td>Chapter 8 (Nelson, G.)</td>
<td>Homework</td>
</tr>
</tbody>
</table>
December 7
8:00 – 10:30 a.m.  FINAL EXAM

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

K. COURSE POLICIES

Attendance/Tardiness
Lecture attendance is not required but it is strongly advised. Poor attendance will result in missed lecture material and may reflect in less than desired class performance and/or unsuccessful class completion. **Lab attendance is mandatory.** Unexcused absences result in a zero. Lab assignments are due after one week, 10% grade deduction/day is enforced for assignments that are not turned in time.

Late Work and Make-up Exams
There is no provision for making up late and/or missed (lab) work. It is also your responsibility to obtain notes and announcements from fellow students in the event you miss a class.

Extra Credit
None

Cell Phone Use
Not allowed in the class.

Laptop Use
Not allowed in the class.

Food in Class
Not allowed in the class.

Missed Exam
Exams can only be taken during the scheduled time, except in cases of emergencies. Documented proof is required of such emergencies. There will be no make up exams or quizzes for unscheduled and unexcused absence. Make-up exams cannot be taken after the graded test has been given back to the class.

Participation
Group discussion and collaboration are encouraged during lab exercises.

Others
None
L. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- Statement of Civility
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- Deadline for Dropping a Course with a Grade of W (University)
  The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- Grade Appeals (College of Science and Engineering)
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading,
may appeal the final grade given in the course. The burden of proof is upon the student to
demonstrate the appropriateness of the appeal. A student with a complaint about a grade
is encouraged to first discuss the matter with the instructor. For complete details,
including the responsibilities of the parties involved in the process and the number of
days allowed for completing the steps in the process, see University Procedure
13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible
through the University Rules website
at http://www.tamucc.edu/provost/university_rules/index.html, and the College of
Science and Engineering Grade Appeals webpage
at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the
grade appeal process, students may contact the chair or director of the appropriate
department or school, the Office of the College of Science and Engineering Dean, or the
Office of the Provost.

• Disability Services
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that
provides comprehensive civil rights protection for persons with disabilities. Among other
things, this legislation requires that all students with disabilities be guaranteed a learning
environment that provides for reasonable accommodation of their disabilities. If you
believe you have a disability requiring an accommodation, please call (361) 825-5816 or
visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access
issues in the classroom or on campus, please contact the Disability Services office
for assistance at (361) 825-5816.

http://disabilityservices.tamucc.edu/

• Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes
could not be held on the campus of Texas A&M University–Corpus Christi;
this course would continue through the use of Blackboard and/or email. In addition,
the syllabus and class activities may be modified to allow continuation of the course.
Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be
operational within two days of the closing of the physical campus. However,
students need to make certain that the course instructor has a primary and a
secondary means of contacting each student.

M. OTHER INFORMATION

• Academic Advising
The College of Science & Engineering requires that students meet with an Academic
Advisor as soon as they are ready to declare a major. The Academic Advisor will set
up a degree plan, which must be signed by the student, a faculty mentor, and the
department chair. Meetings are by appointment only; advisors do not take walk-ins.
Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.