GEL 4970 Undergraduate Research in Geology Syllabus

Spring 2017

- A Senior Experience Course -

Meeting: Sec.001 - 34978: T R 8:00am - 10:15pm Room: SI2012

Professor: Uwe Richard Kackstaetter, Ph.d. (Dr. "K") Office: SI2025

Office Hours: M, W 09:00-11:00am; T 2:00-3:30pm; Other times by appointment!

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This syllabus may be modified at any time without prior notice.

Course Description

This course is a senior-level capstone course for geoscience majors that will focus on independent research investigating a selected geological problem involving field and/or laboratory observations. Presentation of results at an undergraduate research conference as well as submittal of a paper for publication is required. (Senior Experience)

Prerequisits: MTH1210, GEL3050, senior standing.

Highly Recommended: 4 hrs GEL field coursework, 9 hrs upper-division GEL courses, or written permission of instructor; completion of all Level I and Level II General Studies course requirements

Required Materials

- Reading material will be provided by instructor according to selected and individualized research topics.

Specific (Measurable) Student Behavioral Learning Objectives

Upon completion of the course the student should be able to:

1. Select a focused and definite research project in the geosciences that can be concluded within a specified time frame.
2. Compose a project prospectus which includes a written investigation outline and timeline, hypotheses, methodology, budget if applicable, and expected contribution of each group member if applicable.
3. Plan and execute publication research relevant to the project using library resources.
4. Prepare and conduct detailed laboratory and/or field investigations utilizing multiple research specific equipment and techniques.
5. Evaluate collected data from investigations according to precision, accuracy, and standard statistical methods.
6. Construct useful figures, charts, graphs from collected data and results from associated computational analytical approaches.
7. Prepare a complete report of the research which includes introduction, methods, results, discussion, and conclusion, as well as any pertinent tabulated or graphic displays and submit the report in the correct format to a pertinent publication of choice (e.g.; science journal accepting student work).
8. Design a professional oral and/or poster presentation and present at a conference of choice (e,g.; Metropolitan State University of Denver Undergraduate Research Conference).

Outline of Course Content

Major Topics & Subtopics

I. Introduction to Undergraduate Research
   - A. Designing a research question
   - B. Field / laboratory investigations and techniques
   - C. Writing a scientific paper
   - D. Getting published and presenting
   - E. Working individually or with one or multiple partners

II. Library Resources
   - A. Library research
   - B. Internet research
   - C. Citations
   - D. Plagiarism

III. Project Prospectus
   - A. Research proposal
   - B. Research groups or individualized research?
     1. Lead researcher
     2. Contributions contract
     3. First author
   - C. The timeline
   - D. Budget, funding, grants

IV. Lab & Field Equipment
   - A. Overview of available instrumentation
   - B. Instrument training
   - C. Liability

V. Data Collection
   - A. Sampling techniques
   - B. Precision, accuracy and error - when to redo your analysis.
   - C. Field time / Field visits

VI. Data Evaluation and Compilation
   - A. Nominal vs. Ordinal Data
   - B. Simple Statistics
   - C. Regression analysis
   - D. Correlation analysis

VII. Graphic Arts
   - A. Beyond simple graphs
   - B. Presentation aesthetics
   - C. Map and poster making

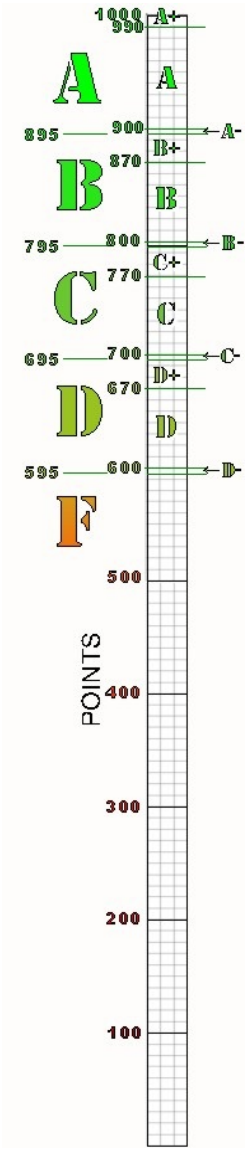
VIII. Oral / Written Presentation Preparation
   - A. Writing an abstract
   - B. Research posters
   - C. Effective PowerPoints - beyond writing
   - D. Paper rough drafts and formatting
   - E. Writing and proof reading
   - F. In-class "peer-review"

IX. Project Presentations
   - A. Presenting at an undergraduate conference
     1. Registration
     2. Abstracts and deadlines
     3. Attendance
   - B. Submitting the paper
     1. Revisions

Grading in GEL4970

	Max. Points
UR Contract & Deadline Schedule	50
UR certificates offered	50
Phase Ia: Library Research *Product to Present*: Bibliography List & Copies of Maps / Articles	100
Phase Ib: Experimental / Lab / Fieldwork Design *Product to Present*: Materials List, Lab Access, Funding Layout, Design Drawings, Purchase Plans, Travel Plans, Co-op Agreements	100
Phase IIa: Experiment / Lab / Fieldwork *Product to Present*: Raw Data	100
Phase IIb: Processed Experiment / Lab / Fieldwork *Product to Present*: Procedural Write-up, figures, tables + Oral defense	100
Phase IIIa: Finished Product Rough Draft *Product to Present*: Rough Draft minus Abstract; however with figures, maps, photos, tables, etc.	100
PEER REVIEW	50
Phase IIIb: Final Product *Product to Present* (check ONE): ☐Oral Presentation: PPT plus written Presentation Abstract ☐Poster Presentation: Completed quality print large scale poster ☐Journal Paper: w/ abstract & figures, maps, photos, tables, etc.	300
Time Log	50
TOTAL	**1000**

FINAL GRADE: A+ > 990 A = 900-990 A- = 895-899 B+ = 870-894 B= 800-869 B- = 795-799
C+ = 770-794 C = 700-769 C- = 695-699 D+ = 670-694 D = 600-669 D- = 595-599
F = ≤ 594 points



WARNING! MINUS POINTS FOR LAB INFRACTIONS, ESPECIALLY CLEAN-UP VIOLATIONS!
FINAL GRADE POINT DEDUCTIONS: 1st Infraction: Warning! 2nd Infraction: -5pts of Final Grade
3rd Infraction: -10pts of Final Grade 4th Infraction: -15pts of Final Grade
5th Infraction: -20pts of Final Grade and revocation of Lab privileges
Note: Deductions are cumulative!!! Example: 4th Infraction = -15 + -10 (3rd Infr.) + -5 (2nd Infr.) = -30pts

GRADING / ASSESSMENT OVERVIEW, SCHEDULE, and HARD DEADLINES
Note: M or W dates are for MW classes, T or R dates are for TR classes. F and S dates and date spans designated by "through" are for ALL sections, MW as well as TR.

UR CONTRACT & DEADLINE SCHEDULE (50pts): Basically PASS-FAIL grading. Your own completed and detailed deadline schedule needs to be turned in by the 2nd week or 4th course meeting. Otherwise a 5pt penalty will incur for each late day.

UR CERTIFICATES OFFERED (50pts + EXTRA CREDIT): The Applied Learning Center offers **Undergraduate Research Workshops** every Spring in preparation for the Undergraduate Research Conference. You need to attend at least 2 of these workshops and submit a certificate of participation for each to your instructor for full credit. The first certificate will count 30 pts, the second 20 pts. A third certificate would earn you 10pts extra credit and any subsequent certificate of attendance for these undergraduate workshops would earn 5 pts extra credit each. All certificates are to be submitted fr credit by the last day of the semester BEFORE finals week.

PHASE IA: LIBRARY RESEARCH (100 pts): SET YOUR OWN DEADLINE FOR COMPLETION. IT WILL BE YOUR RESPONSIBILITY TO MEET THIS DEADLINE OR FACE A 10 PT DEDUCTION FOR EVERY DAY LATE IN ADDITION TO DEDUCTIONS INCURRED THROUGH GRADING.
Please download **Zotero**, a free, easy-to-use tool to help you collect, organize, cite, and share your research sources. Use **Zotero** to generate a complete list of possible sources to be used in your research. Do not forget maps, figures, photographs,`software, and similar (e.g.; Google Earth w/ Geology kmz plug in).
Product to Present at meeting: Bibliography List & Copies of Maps / Articles
Minimum to present for full credit: ☐10 printed sources ☐5 web sources ☐3 figures/graphs ☐1 map

PHASE IB: EXPERIMENTAL / LAB / FIELDWORK DESIGN (100 pts): SET YOUR OWN DEADLINE FOR COMPLETION. IT WILL BE YOUR RESPONSIBILITY TO MEET THIS DEADLINE OR FACE A 10 PT DEDUCTION FOR EVERY DAY LATE IN ADDITION TO DEDUCTIONS INCURRED THROUGH GRADING.

Present a completed design of your proposed lab and field work. Don't forget simple things like lab access (copy of your badge) or materials list. Also transportation and lodging plans if applicable. The following is a detailed list of what should be included..

Product to Present: Materials List, Lab Access, Funding Layout, Design Drawings, Purchase Plans, Travel Plans, Co-op Agreements

Minimum to present for full credit: Details for 5 of the 7 products listed

PHASE IIA: EXPERIMENT / LAB / FIELDWORK (100 pts): SET YOUR OWN DEADLINE FOR COMPLETION. IT WILL BE YOUR RESPONSIBILITY TO MEET THIS DEADLINE OR FACE A 10 PT DEDUCTION FOR EVERY DAY LATE IN ADDITION TO DEDUCTIONS INCURRED THROUGH GRADING.

This part should document the extent / completion of your lab / field work. The easiest way is to keep a dedicated filed and/or lab notebook and present it with your raw data. Use Pictures / Photos to document this phase of your work.

Product to Present: Raw Data + pictures and field / lab notebook

Minimum to present for full credit: 10 pages of lab / field notebook entries w/ detailed explanations, 3 photos/ pictures, 1 spreadsheet print-out.

PHASE IIB: PROCESSED EXPERIMENT / LAB / FIELDWORK (100 pts): SET YOUR OWN DEADLINE FOR COMPLETION. IT WILL BE YOUR RESPONSIBILITY TO MEET THIS DEADLINE OR FACE A 10 PT DEDUCTION FOR EVERY DAY LATE IN ADDITION TO DEDUCTIONS INCURRED THROUGH GRADING.

At this point you should have a completed, typed, procedural write up of your experiment / field work. You also will start interpreting your raw data in the form of visuals, such as graphs, charts and maps. Come prepared to defend your choice of graphics or lack thereof for full credit.

Product to Present: Procedural write-up, figures, tables, maps. Be able to defend your choices (Oral Exam).

Minimum to present for full credit: 1 complete, detailed, publication ready procedural write up, 1 table, 3 figures, 2 photos/ pictures, 1 map or 1 lab / experimental set-up presentation, + defense

PHASE IIIA: FINISHED PRODUCT ROUGH DRAFT (100 pts): SET YOUR OWN DEADLINE FOR COMPLETION. IT WILL BE YOUR RESPONSIBILITY TO MEET THIS DEADLINE OR FACE A 10 PT DEDUCTION FOR EVERY DAY LATE IN ADDITION TO DEDUCTIONS INCURRED THROUGH GRADING

Bring a compilation of your paper, poster and or power point. This is not the finished product but should show your layout as you envision it. You should also have your writing in place, even if it is current lacking expression . At this point you will receive feedback / critique from the instructor without losing points.

Product to Present: Rough Draft minus Abstract; however with figures, maps, photos, tables, etc.

Minimum to present for full credit: Fully Assembled Product minus Abstract. Feedback exercise (self grading)

PHASE IIIB: FINAL PRODUCT (300 pts): SET YOUR OWN DEADLINE FOR COMPLETION. IT WILL BE YOUR RESPONSIBILITY TO MEET THIS DEADLINE OR FACE A 10 PT DEDUCTION FOR EVERY DAY LATE IN ADDITION TO DEDUCTIONS INCURRED THROUGH GRADING

Your final product will be graded together with your instructor. As part of the assessment you should be able to explain in an ORAL INTERVIEW:

- ☐ How you have incorporated the Peer Review into your final product
- ☐ What you have done to make sure your final product meets professional criteria
- ☐ What you anticipate the target audience will say about your final product and which question they might have
- ☐ How you will use your final product in your profession or continuing education
- ☐ If you had to do it again, in what way would your final product change, if at all and why

Your grade on PHASE IIIB will be a combination of your answer to those question (50%) and the grade you will receive from the instructor (50%)

Product to Present (check ONE):

☐Oral Presentation: PPT ready to present plus written Presentation Abstract

☐Poster Presentation: Completed quality print large scale poster ready for presentation

☐Journal Paper: Ready for pre-submittal with finalized abstract & figures, maps, photos, tables, etc.

PEER REVIEW (50 pts): You will participate in a peer review process. The grade you will receive depends on the thoroughness of your review and the comments / suggestions you will make for improving the final product of your colleague. Your critique needs to be summarized in a 1 page write-up to be presented to the author after grading.

TIME LOG (50 pts): Basically PASS-FAIL grading. However, in order to get a grade in this course you must accrued a minimum of 180 work hours. Completed time logs must be submitted in a timely manner or a 5pt penalty will incur for each late day.

CIVILITY: The student code of conduct will be enforced in this class. The short version of the code: Students are expected to assist in maintaining a classroom environment conducive to learning and respectful of the instructor and fellow students. Students have an opportunity to gain from time spent in class. Therefore, students are prohibited from using cell-phones or beepers, text messaging, eating or drinking in class, making offensive remarks, reading newspapers, using their laptop or PDA for class unrelated activities (such as browsing the internet, checking email, watching videos, etc.) or doing other assignments unrelated to the class, sleeping or engaging in any other form of distraction. While you may feel that you are doing it quietly and unobtrusive enough, it does indeed distract other students (as scores of them have reported to me). Inappropriate behavior shall result minimally in a request to cease the behavior and upon continuation despite warnings to leave the class.

ELECTRONIC DEVICES: Put ALL your consumer electronics away (which means they are NOT to be visible, even if you don't use them) including but not limited to cell phones, ipods, MP3 players, headphones, etc. They are NOT to be used at any time during my class. Cell phone calculators are NOT ALLOWED, you must bring a "real" calculator. Personal computers are allowed in class only with approval from the instructor and a written and signed contract. Permission for use of PCs will be immediately revoked for the remainder of the course if a students is found to be engaged in unrelated activities, such as checking e-mail, surfing the web, playing games, etc. Texting, emailing, gaming, listening to music or similar unrelated activities during classtime is not only rude and unprofessional, it is highly annoying to me and the majority of your fellow students. If you are caught you will be unceremoniously asked to leave my class and you will lose any or all participation points for that day. Repeat offenders will face disciplinary action on the college level. You have been warned!

CELL PHONE WARNING: There are NO cell phones allowed in the classroom! PERIOD! If you text or do anything with your cell phone, Dr. K has the right to REMOVE YOU FROM THE CLASS. PERIOD! First infraction will most likely involve a stern, public and very embarrassing warning. Continued infractions will result in a removal from the class and possible failing grades.

LAB ASSIGNMENTS: Lab assignments carry extra credit. Please see outline above.

LAB TIME: This class requires a lot of lab time. While some time for lab exercises will be given during the assigned lecture block, we have created an open lab schedule outside regular class periods. Please look carefully at the posted calendar and sign-up accordingly. Lab spaces are limited and sign-ups will be taken on a first-come, first-served basis. While you may sign-up for several lab times in advance, keeping these times is a crucial commitment. If you miss ANY of your appointments, ALL your future sign-ups will be bumped in favor of other students willing to keep their commitment. You have been warned! Also, be aware that certain labs are only set up during certain times. Missing these labs does not automatically qualify you for a lab make-up at a later date. In fact, these make-ups will be RARELY GRANTED and will need full **official** documentation of circumstances preventing a student from completing the lab during the assigned time slot. You have been warned again!

LAB RULES:

ATTN. NEW LAB POLICY IN FORCE

All students needing to work in the lab MUST:

- ☐ attend a Lab Safety Lecture, pass a Lab Exam and be certified (Only those will get FOB access and can be in the Lab)
  If you are already certified, bring proof
- ☐ sign a Lab Liability Waiver
- ☐ sign in, state the purpose of their activities
- ☐ wear an appropriate name badge identifying you legitimacy to be in the lab
- ☐ work in groups of at least two while in the Lab

Students must follow instructions of the Lab Assistants and are responsible for thoroughly cleanig their work space and lab equipment used after the completion of the lab exercise. BE AWARE: LAB INFRACTIONS CONCERNING EQUIPMENT & CLEAN-UP CARRY MINUS POINTS FOR THE COURSE! ALL students must read and sign the following Liability Waiver:

LAB LIABILITY WAIVER

(1) Students in the course will use analytical & cutting machinery as well as assemble chemical kits for rapid mineral field assay to be taken outside of the classroom. All students participating in such lab activities taught by the Department of Earth and Atmospheric Sciences should be aware that there is always an element of risk involved when working with equipment, machinery and/or chemicals. These risks involve serious injury or death, especially if safety protocols are not followed and/or equipment, machinery, and chemicals are misused. Instructors and/or Lab Personnel will use all reasonable

precautions and students need to exercise prudent behavior during such activities, but even then there exists the possibility of an accident or injury. Since many of these activities are to be undertaken in the field and outside of the classroom without the direct supervision of an instructor, students must be alert and aware of possible risks and dangers when using chemicals, equipment, and/ or machinery with or without supervision.

(2) Neither the University, nor the instructor, nor any assigned Lab Personnel shall be liable for any damages, including but not limited to injuries, death, loss of property or profits, or incidental, consequential, exemplary, special or other damages that may result from use of chemical, equipment, and/or machinery used in conjunction with or outside the framework of this college course. This condition also expands to the use of procedures and formulations given in LAB texts.

(3) The associated LAB instructions and described analytical procedures are intended for use by persons with a basic knowledge of inorganic chemistry, they are advised to follow strictly the safety instructions. Neither the author, nor the instructor, nor the University does accept liability or responsibility for any injury or damage to persons or property incurred by performing the experiments described in the LAB texts, nor for the content of any outside material referred to in class or manual, including linked websites.

(4) EXPLICIT SAFETY RULES & REGULATIONS:

I. Students MUST wear Safety Goggles when working with chemicals or using equipment or machinery.

II. Students MUST read and follow instructions precisely.

III. Students shall NOT misappropriate chemicals, equipment and/or machinery other than its intended and prescribed use.

IV. Students must take care not to ingest, inhale, taste or otherwise orally contact chemicals or reactive products. Students MUST wash hands after each experiment.

V. Some tests may include open flames. Students MUST take precautions in hair and clothing to avoid accidental or intentional contact of persons and property with flames and fire.

VI. Students MUST take care when transporting equipment to avoid spillage and unintended contact with property and persons.

(5) Students who violate any of the above rules, policies and stipulations which are written in this document or implied through instruction and professional laboratory behavior or who fail to conform to directives from the instructor or lab personnel **may be immediately dismissed from the course.** They may also be subject to a failing grade in the course, be required to withdraw from the course, and be subject to disciplinary action by the University.

(6) All participants **MUST SIGN** the following **LIABILITY WAIVER**.

In consideration of my being permitted to participate in this activity, I, the undersigned hereby release and hold harmless: the Trustees of the Metropolitan State Universities of Denver, the Earth and Atmospheric Sciences Department, and respective employees, from all claims, losses, damages, or expenses because of property damage or personal or bodily injury incurred or caused by me during or in conjunction with the above mentioned activity or activities. In filling out this form, I acknowledge that I fully understand the risk that is inherent with on and off campus laboratory procedures and/or equipment and/or machinery use. The undersigned also indicate with their signature that they will follow appropriate safety rules and regulations. Furthermore, I have fully read and understand the department policies and my liability and do accept the restrictions.

COLLEGE OF LETTERS, ARTS, AND SCIENCES SYLLABUS POLICIES – Spring 2017

Students are responsible for full knowledge of the provisions and regulations pertaining to all aspects of their attendance at MSU Denver, and should familiarize themselves with the policies found in the MSU Denver Catalog.

WITHDRAWAL FROM A COURSE

Students should be aware that any kind of withdrawal can have a negative impact on some types of financial aid and scholarships. For further information, click on read the Withdrawals page.

The Withdrawal (W) notation is assigned when a student officially withdraws from a course via the Student Hub after the drop deadline (census date) and before the withdrawal deadline posted in the 2016-2017 Academic Calendar. Deadlines differ proportionally for courses offered during part of a semester, including late-start and weekend courses. Students should refer to the Student Detail Schedule via the Student Hub to review drop and withdrawal deadlines for individual courses. When a student withdraws from a course, no academic credit is awarded. The course remains on the student's academic record with a "W" notation and counts toward the student's attempted hours. The course is not calculated in the student's GPA or quality points. Students who withdraw from a course are responsible for the full tuition and fees for that course. After the withdrawal deadline, students may not withdraw from a course and will be assigned the grade earned based on the course syllabus. A student-initiated withdrawal will appear as an "F" on the student's academic record in any case of academic misconduct resulting in a permanent "F".

For more information see the Withdrawal page.

For your drop/refund or Withdrawal dates logon to your STUDENT HUB account and look at your Student Detail Schedule.

ADMINISTRATIVE WITHDRAWAL

The Administrative Withdrawal (AW) notation is assigned when a student requests to be withdrawn from a course due to unforeseen or extenuating circumstances beyond the student's control.

Students may withdrawal themselves online through the withdrawal deadline. Students should meet with an academic advisor prior to withdrawing from a course. After the withdrawal deadline, students may submit a request for AW due to unforeseen or extenuating circumstances.

For more information see Administrative Withdrawal page.

INCOMPLETE POLICY

The Incomplete (I) notation may be assigned when a student who is achieving satisfactory progress in a course and who has completed most class assignments is unable to take the final examination and/or does not complete all class assignments due to unusual circumstances, such as hospitalization or disability. Incomplete work denoted by the Incomplete "I" notation must be completed within one calendar year or earlier, at the discretion of the faculty member. If the incomplete work is not completed within one year, the "I" notation will convert to an "F." Students must have completed at least 75% of the course work to qualify for consideration for an incomplete. The student must be passing the course in order to be granted an incomplete. The course counts toward the student's attempted hours, does not count toward earned hours, and is not calculated in the GPA or quality points.

Determination of eligibility does not guarantee that an incomplete will be granted. Students who meet the qualifications may request an incomplete from the faculty member who is teaching the course. The decision to grant an incomplete is up to the faculty member or at the department chair's discretion. The decision to grant an incomplete as an

accommodation based on a student's disability shall be made by the faculty member or the department chair, if the faculty member is not available, in consultation with the Director of the Access Center.
If an incomplete is granted, the student and instructor should fill out and sign an Incomplete Agreement form to clarify what the student needs to do to complete the course.

For further information see the Incomplete notation page.

BEST GRADE STANDS

A student's grades for repeated courses will be removed from GPA calculations up to 18 semester hours, regardless of the original grade earned. If a student repeats more than 18 credit hours, the student may designate which of the course grades are removed from GPA calculations (up to 18 semester hours). Only the best grade and its associated credit will be calculated in the GPA and earned hours totals. Other attempts for the course will appear on the official academic record but will be annotated to indicate they do not count for academic credit or GPA calculation. This policy applies only to courses taken at MSU Denver, and it does not apply to courses designated as repeatable toward degree requirements.

For more information see the Best Grade Stands page.

ACADEMIC INTEGRITY

As students, faculty, staff and administrators of Metropolitan State University of Denver, it is our responsibility to uphold and maintain an academic environment that furthers scholarly inquiry, creative activity and the application of knowledge. We will not tolerate academic dishonesty. We will demonstrate honesty and integrity in all activities related to our learning and scholarship. We will not plagiarize, fabricate information or data, cheat on tests or exams, steal academic material, or submit work to more than one class without full disclosure.

For further information see the Academic Integrity and Academic Dishonesty page.

PROHIBITION ON SEXUAL MISCONDUCT

Metropolitan State University of Denver prohibits sexual misconduct in any form, including sexual assault or sexual abuse, sexual harassment, and other forms of nonconsensual sexual conduct, including stalking and electronic harassment. Forms of intimate partner violence, including dating violence and domestic violence, are also prohibited under this policy. Students, faculty, staff and visitors, should be able to live, study, and work in an environment free from sexual misconduct. It is the policy of MSU Denver that sexual misconduct in any form will not be excused or tolerated. Retaliation in any form for reporting such sexual misconduct or for cooperating in a sexual misconduct investigation is strictly prohibited and will be addressed as a separate violation of the Student Code of Conduct. This policy is promulgated under Title IX of the Education Amendments of 1972 (Title IX), 20 U.S.C. §§ 1681 *et seq*., and its implementing regulations, 34 C.F.R. Part 106; Title IV of the Civil Rights Act of 1964 (42 U.S.C. § 2000c).

For further information, see the Title IX page and refer to the Student Code of Conduct page.

ACCOMMODATIONS TO ASSIST INDIVIDUALS WITH DISABILITIES

The Metropolitan State University of Denver is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this class and are requesting accommodations, then you must first register with the Access Center, located in the Plaza Building, Suite 122, 303-556-8387.

The Access Center is the designated department responsible for coordinating accommodations and services for students with disabilities. Accommodations will not be granted prior to my receipt of your faculty notification letter from the Access Center. Please note that accommodations are never provided retroactively (i.e., prior to the receipt of your faculty notification letter.) Once I am in receipt of your official Access Center faculty accommodation letter, I would be happy to meet with you to discuss your accommodations. All discussions will remain confidential. Further information is available by visiting the Access Center website.

CLASS ATTENDANCE ON RELIGIOUS HOLIDAYS

Students at MSU Denver who, because of their sincerely held religious beliefs, are unable to attend classes, take examinations, participate in graded activities or submit graded assignments on particular days shall without penalty be excused from such classes and be given a meaningful opportunity to make up such examinations and graded activities or assignments provided that advance written notice that the student will be absent for religious reasons is given to the faculty members during the first two weeks of the semester.

For further information, see the Class Attendance policies page.

ELECTRONIC COMMUNICATION POLICY

Electronic communication (i.e., email and personal portal announcements) is a rapid, efficient and cost-effective form of communication. Consequently, reliance on electronic communication is expanding among students, faculty, staff and administration at MSU Denver. Because of this increasing reliance and acceptance of electronic communication, forms of electronic communication have become in fact the means of official communication to students, faculty and staff within MSU Denver. This policy acknowledges this fact and formally makes electronic communication an official means of communication for the University.

For more information, see the Electronic Communication policy page.

FRESH START

Students returning from a period of absence from MSU Denver may request that credit and grades from designated semesters previously attempted at MSU Denver not be calculated in GPA's or total earned hours. If such a "Fresh Start" is approved, all courses from designated semesters will appear on the official academic record but will be annotated to indicate they do not count for academic credit or GPA calculation.

For more information, see the Fresh Start page.

NOTE: If you have any difficulty accessing the hyperlinks in this document, please inform the instructor.

ADDENDUM: Essential General Knowledge Prerequisites!

It is assumed that you have acquired the following general knowledge skills in the sciences, language, and math through your education up to this point. It is the students FULL responsibility to make-up ANY deficiencies in these areas, preferably before enrolling in the course. I will NOT teach, lecture, or tutor any student in these basic High School skills and general knowledge subjects and no further instruction on the topics listed below will be given.

Basic Office Software

You know how to properly use and command MS Word, MS Powerpoint, MS Excel. Graphing with Excel, putting figures / pictures into Word documents, compiling a short presentation using PowerPoint are expected skills in my course.

English Language

Students should be able to write in short, clear, concise sentences when answering questions. Proper syntax becoming to a college student is expected. In many instances you will also be graded on professionalism which includes expressing yourself accordingly in writing. Unless otherwise instructed, always use third person when writing for the sciences. Usage of "I", "we", "my", "mine", "our", is uncommon in technical writing and needs to be avoided.

Basic Mathematical Operations

Students should be able to do the following mathematical operations without any further instructions:

- Round answer to significant digits
- Doing unit conversions (e.g.; continental drift happens at about 5.5cm/yr. How fast would this be in mph?)
- Percent calculations (e.g.; you measure 2.58g/cm^3. The actual density is 2.65g/cm^3. What is your percent error?)
- Using **units** in ALL your operations (*I am real stickler about that!*)
- Solving equations for an unknown value; manipulating equations (basic Algebra)
- Basic Geometry: surface areas, volumes, circumferences, areas, angles
- Scientific notations (e.g.; 1.8×10^{-9}m/s) & scientific prefixes (milli-, mega-, terra-, micro-, etc.)
- Metric system & conversions within (µg, mg, g, kg, t, µm, mm, cm, m, km, m^2, km^2, cm^3, m^3, km^3)
- Weights & Measurements (Both American and Metric)
- Operating a scientific calculator (e.g.; know how to switch between degrees and radians, know how to use the arctangent function) θ°=arctan(rise/run) *Warning: NO cell phone calculators are allowed!*
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Graphing

You are required to be able to differentiate between bar, line and scatter graphs and know how and when each one needs to be constructed. Students should be able to hand-draw curved graphs without being sloppy. Be able to extrapolate values from any graph given, no matter the scale and type. You should also be very familiar with various types of graph paper and how to plot & read data with semi-log and log-log paper.

Physics

Students should be familiar with basic Newtonian laws of motion and understand terms such as velocity, acceleration, inertia, mass vs. weight, force, gravitational constants, kinetic energy, potential energy. Being able to work with the following basic physics equations is a must (Middle School Physics!):

$v=d/t$ $a=d/t^2$ $a=(v_f-v_i)/t$ $F=ma$ $I=mv$ $KE=\frac{1}{2}mv^2$ $PE=ma_g\Delta h$ $a_g=9.8m/s^2$ or $30ft/s^2$

Chemistry

Background in basic High School chemistry is essential. Students should know element names and associated symbols, how to read atomic weight and atomic mass from the periodic table, difference between covalent, ionic, metallic and hydrogen bonding, meaning of chemical formulas and subscripts. Students also need to understand pH and the difference between oxidizing and reducing environments. Furthermore, a working knowledge of solutions, solubility, mixtures, homogenous and heterogenous systems, and precipitation is a must.

Geography

Students should know basic physical geography, which includes the location of countries, major mountain ranges, and major rivers.

Drawing & Drafting

While the world is moving rapidly to electronic PC drafting, sketching results by hand is a essential skill in geology. Students must be able to use a drawing compass and a protractor. Sketching curves through data points neat and clean is another requisite skill.