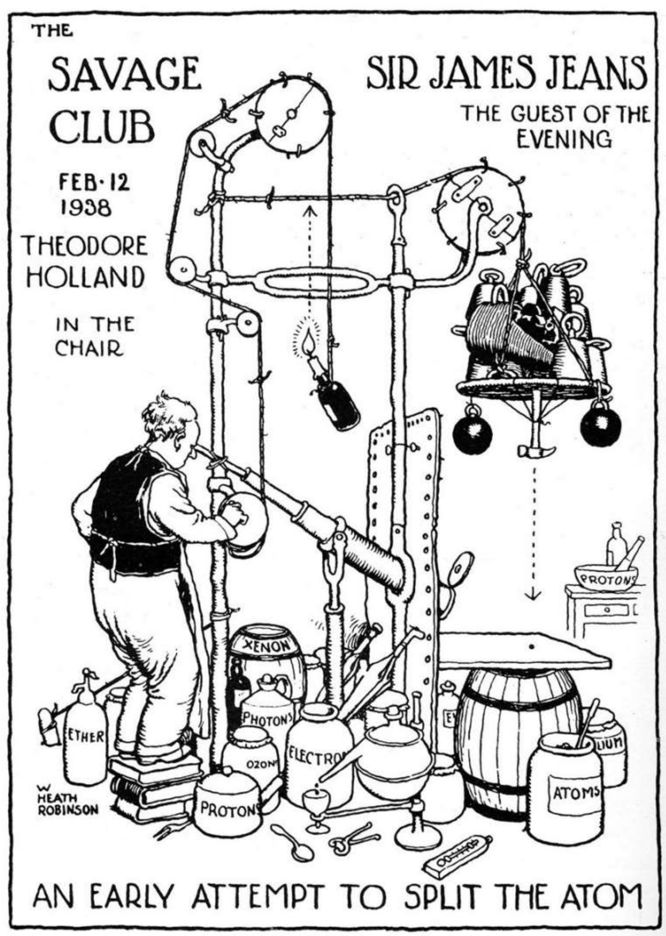
University of Alaska Fairbanks **Spring 2019**

Physics 381

Advanced Physics Laboratory – 3 Credits

Instructor – Dr. Mark Conde



http://cdni.wired.co.uk/853x1280/s_v/Sir%20James%20Jeans%20Savage%20Club%20Invitation.jpg

Overview

Description

The overarching purpose of this class is to prepare students to conduct and report on real-world experimental physics, as distinct from the much more sanitized lab experience provided in lower-division physics courses.

Do not underestimate the importance of verifying principles through your own personal measurements. The modern connected world exposes us all to a torrent of inexpert opinions, conspiracy theories, and fake news. Ideally, we would personally verify by absolute measurements any such postulates presented to us. This is of course not feasible in most cases, and we must instead try to weight information according to some assessment of the reliability of the source. But lab work is one small exception – in which we can, personally, make our own measurements to absolutely verify (or not) the reliability of some assertion. This absolute personal experience with the underlying behavior of a system is the foundation of genuine expertise.

In laboratory work there is a major distinction between studies designed to verify existing knowledge, versus those intended to create new knowledge. In particular, undergraduate teaching labs do not usually attempt to create new knowledge; that is the domain of research. Research (almost by definition) requires making measurements or performing studies that have never been done before.

While many universities do allow undergraduates to participate in true research, that is not the goal here. Rather, we will be repeating famous experiments of great historical importance that did, in their day, fundamentally change our understanding of physics. The goal is for you to recreate the experience of those pioneering researchers, by making your own measurements and determining for yourself whether their conclusions are indeed justified.

The key idea here is to "repeat the experience." Research requires us to push boundaries and, as such, it rarely goes smoothly. Measurement uncertainties are usually large compared to the accuracy required to reach a definitive conclusion. (If a quantity could be measured accurately enough to demonstrate some conclusion with "no brainer" confidence, then that conclusion would likely have been verified already.) Equipment underperforms or breaks, results are unclear, and mistakes are made. All this is normal. One goal of this class is to illustrate that robust conclusions can often still be made, even when our procedures and data are imperfect. This is how real science works.

Conclusions drawn from lab measurements can undoubtedly be satisfying and useful for the experimenters. But their value is vastly amplified if the experimenters can communicate the outcomes to a wider audience – by conveying not only the conclusions drawn, but also the methods used to reach them, and by justifying the level of confidence that the data provides for those conclusions. The rise of misinformation means that society will increasingly depend on professionals like you to disseminate clear, unambiguous, rigorous knowledge, whose veracity is justified. But such messages face intense and growing competition for audience attention. To be heard, they must be understandable and engaging.

Course goals and student learning outcomes

Motivated by the discussion above, the goals and learning outcomes for this course are to:

- Allow students to recreate a number of key experiments that shaped our modern understanding of physics.
- Personally verify the results of those experiments, and the resulting theory derived from them. Students will test through their own personal measurements whether the conclusions drawn from these experiments are justified.
- Introduce the idea that all such experimental verification is subject to uncertainty – no measurement is perfectly accurate, so we need to establish the degree of confidence that we can have in experimental conclusions, based on the uncertainties in our observational data.
- Learn a number of key experimental techniques and procedures that are used to make physical measurements and to interpret the meaning of the results.
- Learn how communicate experimental conclusions in a clear rigorous manner, both orally and in writing. Completion of this 3-credit course also provides students with one credit toward each of the oral and writing requirements for an undergraduate degree at UAF.

My goal as an instructor is to provide every student with maximum possible opportunity for success. This means that I try to be as flexible as possible with the course requirements, to avoid creating needless hurdles. Nevertheless, some penalties for missed or late work are necessary; my policies in this regard are outline below.

Instructor information

Instructor:	Dr. Mark Conde
Office locations:	Reichardt room 110 & 135 and Elvey room 706C.
Office Phone:	474-7741
Email:	mgconde@alaska.edu
Office hours:	I do not intend to establish fixed office hours for this small class. I will always be available during lab hours and immediately after lectures, or at other times by arrangement. If you need to see me, speak to me after class or send me an email, to setup a time.

Approximate schedule

Week	*Dates*	*Class Topics*	*Labs*
1	Aug 26 - Aug 30	Class intro; intro to lab & experiments	
2	Sep 02 - Sep 06	Electronics for measurement	Lab 1
3	Sep 09 - Sep 13	Electronics for measurement	Lab 1
4	Sep 16 - Sep 20	Experimental Uncertainties	Lab 1
5	Sep 23 - Sep 27	Statistical Analysis of Uncertainties	Lab 1 & 2
6	Sep 30 - Oct 04	Statistical Analysis of Uncertainties	Lab 2
7	Oct 07 - Oct 11	Statistical Techniques	Lab 2
8	Oct 14 - Oct 18	AC signals, transmission lines	Lab 2
9	Oct 21 - Oct 25	Transmission lines	Lab 3
10	Oct 28 - Nov 01	Waveguides	Lab 3
11	Nov 04 - Nov 08	Antennas	Lab 3
12	Nov 11 - Nov 15	Radiation Detection	Lab 4
13	Nov 18 - Nov 22	Radiation Detection	Lab 4
14	Nov 25 - Nov 29	Thanksgiving Week	Lab 4
15	Dec 02 - Dec 06	Vacuum Techniques	Lab 4
16	Dec 09 - Dec 13	Finals Week	Oral presentations
17	Dec 16 - Dec 20	Grades posted by noon Dec 18	

Lecture topics are a target only. I expect this is far too ambitious, and we will not cover all of this material.

Course components and instructional methods

Course materials

Material for this course will be prepared electronically and will be available *over the web via the "Blackboard"[1] system* at https://classes.alaska.edu/. Material to be posted this way includes:

- Course syllabus (this document)
- Lecture notes (see comments below)
- Homework problem sets
- Lab notes
- Supplementary handouts
- Online student grades

Note that I will not be distributing homework solutions to the web. These will instead be posted in the glass cabinets in the physics departmental area of the Reichardt building.

Laboratory work

Overview

Laboratory work represents the main component of this course. There are two three-hour lab sessions each week, on Tuesdays and Thursdays from 2:30-5:30 pm in Reichardt room 135.

[1] All students should have access to Blackboard. Please let me know if you have difficulties with this.

Over the course of the semester, each student is required to conduct four experiments, and to prepare a formal written report on each one in a format similar to that of a publishable scientific paper. In addition, each student must give two 20-minute oral presentations. The first of these will be presented solely to the 381 class. However the second must be presented to a wider audience of faculty and students from the Physics Department. The first presentations will be scheduled near the middle of the semester, whereas the second will occur during or close to the final exam week. Actual dates for the presentations will be determined by student progress and by mutual agreement among the class and instructor.

In conducting an experiment, each group working on a given experiment will be required to:

- Develop an understanding of the experiment being performed – its purpose, method, historical context and outcome, and its impact on how physics was understood at the time.
- Identify and setup the necessary equipment.
- Perform an initial first-pass at the experimental procedure to become familiar with all required steps, identify difficulties, refine any steps that may be limiting the quality of the final results, and verify that the proposed procedure is likely to lead to definitive conclusions.
- Conduct an “implementation readiness review” with the instructor to verify that the group understands the experiment, has developed a viable and safe procedure, and is ready to conduct the “live” version of the experiment.
- Perform the experiment, recording all necessary background and setup information, calibration data, and observational results. All experimental setups should be photographed.
- Analyze the experimental data and all associated uncertainties.
- Develop conclusions and discuss anomalies.
- Prepare a formal written (and, in two cases, oral) report. Written reports will be prepared electronically and will undergo two levels of review before final submission (see below.)

Typical Schedule

The semester timetable allows students to spend roughly 3 weeks on each of the four experiments. Notionally, I am expecting the resulting ~6 lab sessions per experiment to be used as:

1. Become familiar with the equipment and experiment goals. Begin work on background sections of the written report.
2. Prepare and test a draft experimental procedure. Begin written description of the proposed procedure.
3. Implementation Review, then begin performing the live measurements. Complete written descriptions of the experimental background and procedure.
4. Complete live measurements.
5. Analyze data and prepare preliminary results; correct or repeat any steps that appear to have produced anomalous outcomes. Submit first draft of the report.

6. Complete second draft of the report. The final draft will be due at the end of the following week – which will either be week one of your work on the next experiment or, at the end of the semester, it will be during finals week.

This is of course only a target schedule; substantial departures from it may be required, and are to some extent expected. Nevertheless, it is vital that you start each new experiment on time, to avoid getting behind.

In general, you should not disassemble your apparatus until you are certain that your results are finalized. You may discover that you need to repeat some measurements, either due to an anomaly in the results, or because you failed to record some necessary measurement. Under no circumstances should you interfere with the setup of any other group's experiment. If you need to borrow some item that they are using, ask first. Do not assume that anything can be touched without impacting another group's work. Once your work is finalized on an experiment, it is your responsibility to pack equipment away carefully and safely. The department and students following behind you are depending on you to do this.

We will generally begin each lab session with each group giving a brief verbal summary of their progress on the experiment they're working on, a description of any issues encountered, and a brief statement of plans for the coming lab session.

Laboratory Notebook

An important requirement for this work will be to maintain a **detailed bound laboratory notebook.** (I will provide suitable books.) This notebook must accompany you at all times in the lab and be available for inspection by the instructor. A portion of your grade for each experiment will be based on the completeness and appropriateness of your lab notebook.

You lab notebook is intended to be readily at hand and used to easily maintain a permanent record of all relevant information, including (but not limited to): clear and labeled diagrams of all equipment setups, identification of all equipment and materials (including serial numbers when available), all measurements made, along with their associated uncertainties, notes on all intermediate calculations used to tune or validate the procedure, rationale for rejecting any measurements, and notes of any anomalous factors that may impact the results.

Each entry in your notebook should begin with a HH:MM time stamp, identifying when it was written. Generally each new lab session should begin on a new page, with the date of the session specified at the start. If you ended up working past midnight for some reason, then the change of date should of course be prominently noted in the appropriate place in your log. These notes will form the source material for you lab report. All entries should be sufficiently neat, clear, and complete that you could pick up the notebook in five years' time and still understand what you did. (This is a surprisingly difficult goal – do not skimp on descriptions or detail when recording your activities!)

Many students may prefer to use a laptop or tablet for their log and, indeed, there is now a plethora of software options and strategies available for both general-purpose note taking and specifically for electronic lab notebooks. Nevertheless, **for this class, we will use paper notebooks**. Once you have gained experience with traditional lab note-taking, you will be better positioned to decide what form of electronic laboratory notebook, if any, would work best for you.

Nature of the Lab Work

These labs are intended to include a substantial element of self-discovery. As you begin each experiment I will provide a brief verbal overview and demonstration of its purpose, the major equipment required, and a general discussion of the recommended procedure. But it will be up to you to flesh out the procedure, identify how to obtain the most accurate results, and how to deal with practical limitations of the equipment and the working environment. You may have to improvise or design strategies for conducting parts of your chosen procedure.

You will be able to choose freely from equipment available in Reichardt room 135. You may also request use of other departmental apparatus that is not usually available in our lab. Any such requests need to be approved by the PHYS381 instructor and by the departmental Lab Supervisor. By design, this is not a highly structured class. The instructor is there to guide and advise, but most of the practical problem solving is your responsibility.

You are expected to maintain a neat work area at all times. This is for reasons of both safety and experimental reliability. Messy cables are confusing and can lead to erroneous connections that could damage equipment or cause injury. Cables draped loosely over equipment and running across the floor are a tripping hazard. All equipment should be positioned stably, so it will not readily topple. Any hazardous apparatus should be prominently labeled, to alert other lab users of the danger.

List of Experiments

Our advanced lab has a pool of ten experiments to draw from. In approximate order of increasing complexity, these are:

1. Rutherford scattering of alpha particles
2. Franck-Hertz experiment
3. Bragg scattering of x-rays
4. Millikan oil-drop experiment
5. Speed of light
6. Gravitational constant
7. Compton scattering of gamma rays
8. Electron spin resonance
9. Zeeman effect
10. Mossbauer effect

Experiments 1-6 are usually available for the 381 version of this class. Several of these experiments involve potentially hazardous apparatus, including high voltages, radioactive sources, lasers, and x-rays. Safety procedures will be explained, and unsupervised access to the lab will not normally be permitted.

Written Reports

As a result of the course goals and the “W” course designation, a major portion of your grade will be based on your written lab reports. It is expected that your writing skills will improve during the semester, which means your first two written reports will contribute less weight (i.e. 10% each) to your overall grade; the latter two reports will each contribute 15% to your grade.

While your lab notebook will be paper-based, your written reports must be submitted electronically. There are several reasons for this, including:

- You will be required to submit two drafts for review before your final submission. Review and revision is far easier when the source material is in electronic form.
- I will be in Norway for a rocket mission during the last 2-3 weeks of the semester. Exchanging drafts with me for review, and submitting your final report, will only be possible if it is done electronically.

- Electronically formatted reports are neater and easier to read.
- Professional written communication in science is invariably electronic nowadays, and many journals provide templates for ensuring that submitted articles are consistent with the journal's style.

Reports may be submitted using either Microsoft Word, LaTeX, or in PDF format.[2] While LaTeX is by far the best environment for authors, it is less convenient for review. MS Word has by far the best review and markup tools, which means it is my preferred format for submitting your draft and final reports. But I will work with LaTeX/PDF if necessary. I will discuss this further in class.

To comply with the course's "W" designation, written reports must be subject to two levels of instructor review and student revision before the final report is submitted – see the "typical schedule" listed above for a description of when these drafts should be submitted.

Grading of Written Reports

The format of the reports should follow that of papers published in refereed physics journals. Useful templates for AGU style journal articles can be found here:

https://publications.agu.org/author-resource-center/checklists-and-templates/

Reports will be graded out of 100 points. Factors that will determine the grade include:

- *Quality, clarity and rigor of the writing*: Does the report make sense? Could it be understood by class peers who have not yet done that experiment? Is it free of errors in spelling and grammar? Are the ideas expressed using precise and unambiguous language?
- *Understanding*: Does the report clearly and correctly state the purpose and historical significance of the experiment, the physical principles behind the measurements, the results obtained in this instance, and conclusions that can be drawn?
- *Quality of the data and analysis*: Were good results obtained? Were the data analyzed appropriately, and was this analysis clearly explained? Were the uncertainties clearly derived and presented? Were the conclusions justified, given the uncertainties? Were any anomalous outcomes identified and appropriately discussed?
- *Quality of presentation*: Was the paper well organized? Were tables and figures clear, adequately labelled, and unambiguous? Were figure captions appropriate and complete? Were all references provided in an accepted publication-quality format?

A typical report will contain the following sections, weighted for grading as indicated:

- *Abstract*: A brief summary (10-30 lines) stating the purpose of the experiment, how it was conducted, and what the major conclusions were. Abstracts are used by researchers to quickly determine whether it is worth their time obtaining a complete copy of the paper (which may be expensive) and reading it in full. [10%]
- *Introduction*: A statement of the underlying physical problem, what is known about it already, and why further study of this topic is needed. In our case the introduction should also describe the historical context and significance of the experiment. [25%]

[2] Talk to me if you want use Google Docs. I generally find Google Docs horrible to use. But possibly newer tweaks have improved the review and markup environment.

- *Experimental Method*: A general description of the physical principles behind the measurements, any relevant equations or mathematical derivations, the apparatus and procedures used, and any special techniques that may not be widely understood by the expected readers. [25%]
- *Results, Analysis, and Discussion*: This section contains narrative and tabular presentations of the original measurements, a description of the analysis techniques used (with equations as necessary) to derive final results, tabular presentation of intermediate and final results, and a description of the procedures used and outcomes obtained when deriving estimates of experimental uncertainties. This section should also discuss the meaning of the results, and the conclusions that can be drawn from them, including any anomalous results obtained. [25%]
- *Summary and Conclusions*: The main body of a paper can contain many lengthy discussions. All papers should end with a brief summary that restates what has been learned, in a compact and straightforward manner. [15%]

A well-written lab report should be concise – but do not confuse "concise" with "sparse". Your report must be complete, and must include sufficient detail to allow other workers at different institutions to replicate your work using their own equipment, based solely on what you have written.

Oral Reports

To fulfil this course's "O" designation, you will be required to give two 20-minute oral presentations – one mid-semester to the rest of the class, and one during finals week to the wider physics department. The topics for each of these presentations will be to report on one of the experiments that you have completed. You are free to choose which, provided you choose two different experiments. As with written reports, these presentations should cover the science problem addressed by the experiment, its historical background, the physical principles behind it, the apparatus and method that you used, the results and uncertainties you obtained, and the conclusions derived.

Your oral presentation should be accompanied by computer-based visual aids (powerpoint, LaTeX Beamer, etc.) You should practice your talk multiple times, to ensure that you can make your points clearly and within the time allocated. Experience shows that a very good speaker with a well-practiced presentation can cover at most one slide per minute.[3] You should expect to achieve at most half this rate. Your 20 minutes includes 2-3 minutes for questions, so 9 slides would be a good upper limit for planning purposes.

Your oral presentation will be graded according to the following criteria:

- Were the objectives and conclusions of the work stated clearly at the outset?
- Did the speaker clearly explain the motivation, historical context, experimental principles and method, measured results, derived results, uncertainties, and conclusions?
- Was this done in a clear, engaging, and easily-followed manner?
- Were the graphics clear, unambiguous, and easily followed?
- Did the speaker engage the audience with clear speech, eye contact, body language, and enthusiasm?
- Were the responses to audience questions clear and reasonable?

Oral presentations expose the speaker to very direct judgement by the audience. Many beginning speakers find this intimidating, and you should not feel unusual if that is your experience as well. Fear of public speaking is something that all professionals must face

[3] At the other end of the spectrum, I once saw a presenter in Japan speak for two hours while showing just 4-5 slides. I have no idea how she did it – it was all in Japanese and I didn't understand a word. But the audience was fully engaged throughout!

and overcome. There are two simple secrets to becoming comfortable with public speaking:

- Believe that your material is important and interesting to your audience.
- Understand your material, and practice your talk!

A previous instructor for this course included this superb quote in their syllabus: "Outstanding presentations are not given casually – they only look like it."

Lectures

Lectures will be held on Wednesday from 3:30 pm to 4:30 pm in room 207 of the Reichardt Building. Lectures material will be taken from a number of sources, so there is no single textbook assigned for this course. It is recommended that you read the lecture notes beforehand, and take notes during the lecture. The emphasis in the lectures will be on clarification of the key concepts, rather than lengthy mathematical derivations.

I will be presenting lectures using a combination of computer and blackboard. I intend to post electronic lecture notes online as well, provided this does not appear to be adversely affecting lecture attendance.

Homework

A small amount of homework will be assigned each week during the Wednesday lecture and will be due at the start of the following Wednesday's lecture. Hand your homework to me at that lecture. You are encouraged to work with others, but you are prohibited from simply copying other's work. Homework is designed to reinforce the concepts presented in lectures, and is a vital part of the learning process.

Problems assigned in this class can often be solved in several ways, with each solution involving a number of steps. So please be aware that even if you submit a correct solution to a problem, I may not recognize it as correct if it's poorly presented. While I will accept almost any work that you turn in, it is unlikely that I'll award many points for a homework or exam solution unless it:

- Is neatly laid out
- Is largely free from crossing out and over-writing
- Is accompanied by **descriptions in words of what you are doing at each step**

Plain-text explanations are **required** for any major mathematical steps. This is an upper-division class, which means students should be preparing either to enter the professional workforce or to begin graduate school. The point of submitting homework solutions is not to tell me the final answer. (I already know that.) The point is to demonstrate that you can explain clearly and professionally *how that answer is obtained*.

Exams

There will be no exams or quizzes for this class.

Course policies

Grading

The course grade will consist of the following components

- Homework 16%
- First two written lab reports 22% (11% for each of two.)
- Second two written lab reports 30% (15% for each of two.)
- Oral presentations 16% (8% for each of two)
- In-lab performance and notebook 16% (4% for each of four labs)

I will post all grades online, using the UAF's "Blackboard" system (https://classes.alaska.edu/). All registered students have access to this system for checking their grades.

Final grades will be returned as letter grades with plus/minus modifiers. These will be derived from your overall percentage grade. The approximate conversions for each letter grade will be as follows. A: ≥90%; B: 75% to 90%; C: 60% to 75%; D: 50% to 60%; F: <50%. Plus/minus modifiers will subdivide each main grade into three equally spaced sub-levels.

Attendance

Your laboratory work can only be performed if you are actually present in the labs. Safety concerns with these experiments mean that there will be limited opportunity to use the lab outside of scheduled times. Also, this class requires significant interaction with the instructor during the lab sessions – including your brief oral "progress reports" at the start of each session. Thus, by Physics Department policy, significant attendance is an absolute requirement for the laboratory portion of this class. That said, it is also expected that you may use some of the time later in a lab session to work on your reports or to use other resources such as the library or outside computers. Reasonable times for such activities outside the lab will be permitted, after discussion with the instructor.

Class participation

16% of your grade will be derived from an assessment of your in-lab performance and of your lab notebook. I will be working with each student in the lab, and will allocate these points based on my assessment of the degree of participation and quality of work done in the lab.

Missed or late work

This class requires students to keep up a steady pace of experimental work and written & oral presentations. These are very time consuming activities – which means it will be very difficult to recover if you get behind. (And, due to safety concerns, there will be little if any opportunity to use the lab equipment outside our scheduled sessions.) For this reason I will discourage late submission of work, by penalizing each item by 2% of its value for each day that it's late.

Students having documented illnesses, family crises, or clashes with other UAF commitments may arrange alternate submission deadlines with me. All decisions regarding late work or alternate deadlines will be at the discretion of the instructor.

Student conduct and academic honesty

It is the responsibility for each student to be informed about the policies for student conduct and safety at the University of Alaska. You are encouraged to read these policies at https://www.uaf.edu/student-affairs/student-resources/conduct.php#condu. It should go without saying that students are expected to do their own original work for all assignments. Any deviation from this may be considered academic misconduct and may result in a failing grade and referral to university authorities for possible disciplinary action.

Course requirements and materials

Prerequisites

Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHYS.

Required text

I will be drawing material from multiple sources, so that there is no single text book assigned for this class. All required learning material will be provided via notes uploaded to Blackboard.

Technology Requirements

Course materials will be delivered via Blackboard, which means students will require easy web-browser access to the internet. Most material will be delivered in PDF format, so that students will need access to Adobe Acrobat Reader or other third-party equivalent software.

A simple digital camera or cellphone camera may be useful (but not absolutely required) for recording setups and results during lab sessions.

Other issues

Complaints and concerns

You are always welcome to discuss your concerns with me. However, if you have a concern that you feel cannot be resolved by discussion with me, you may wish to contact the Physics Department chair, Dr. Wackerbauer. If your concern cannot be resolved at the department level, you may also discuss the matter with the Dean of the College of Natural Science and Mathematics.

Disabled students

Disability services are provided free of charge, and are available to any student who qualifies as a person with a disability. Student seeking special accommodations for a disability must first discuss their needs with Disability Services. Call 474-5655 to schedule an appointment.

UAF Disability Services is located in the Whitaker Building, room 208. Extensive support is available, as described at http://www.uaf.edu/disability/

REQUIRED INFORMATION FOR UNDERGRADUATE SYLLABI

STUDENT PROTECTIONS AND SERVICES STATEMENT:
Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student services, etc. to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go the following site: www.uaf.edu/handbook/.

UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual: https://alaska.edu/nondiscrimination/.

Your instructor follows the University of Alaska Fairbanks Incomplete Grade Policy: “The letter “I” (Incomplete) is a temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of work in a course but for personal reasons beyond the student’s control, such as sickness, has not been able to complete the course during the regular semester. Negligence or indifference are not acceptable reasons for an “I” grade.”

Effective communication: Students who have difficulties with oral presentations and/or writing are strongly encouraged to get help from the UAF Department of Communication’s Speaking Center (907-474-5470, speak@uaf.edu) and the UAF English’s Department’s Writing Center (907-474-5314, Gruening 8th floor), and/or CTC’s Learning Center (604 Barnette Street, 907-455- 2860).

ADDITIONAL INFORMATION

The University of Alaska has detailed and ever-changing requirements for courses and course syllabi. The purpose of this statement is to indicate that, in addition to requirements explicitly stated here, all other current overarching UAF policies also apply to this course – whatever the heck they may be this time around….