FORMAT 1

Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500).

See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/ for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	**Physics**	**College/School**	**CNSM**
Prepared by	**Daniel Solie**	**Phone**	**474-2616**
Email Contact	**djsolie@alaska.edu**	**Faculty Contact**	**Channon Price**

1. ACTION DESIRED (CHECK ONE): Trial Course [X] New Course [ ]

2. COURSE IDENTIFICATION: Dept **PHYSICS** Course # **094** No. of Credits **6**

Justify upper/lower division status & number of credits:

This developmental distance-delivered physics course is designed for the underserved college and high school student population in rural regions of Alaska where a face-to-face physics course is rarely available.

This six-credit (5 credits lecture, 1 credit lab) course bridges the fall and spring semesters, allows increased content delivery as well as more adequately meeting the scheduling challenges of rural students across Alaska.

Lecture: (210 contact min./week)x(24 weeks) = 5040 min/ 800min/cr. >5cr.
Laboratory is broken into 3 components to meet needs of distance students:
(2820min)/ (2400min/Credit)) >1cr.

1) Hands-on experiments ((70 contact min./week) x (24 weeks) with an additional 9 hours off-line
2) Experiment Session (additional 4 hours to perform experiment)
3) Group Collaborative Experiment (additional 6 hours to collect data)

3. PROPOSED COURSE TITLE: **Bush Physics for the 21st Century**

4. To be CROSS LISTED? YES/NO NO If yes, Dept: [ ] Course # [ ]

(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. To be STACKED? YES/NO NO If yes, Dept. [ ] Course # [ ]

6. FREQUENCY OF OFFERING: Every Year

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (AY2011-12 if approved by 3/1/2012; otherwise AY2012-13) AY2011-12

8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply) [ ] *1* [ ] *2* [ ] *3* [ ] *4* [ ] *5* [ ] *6 weeks to full semester*

OTHER FORMAT (specify): The course is 24 weeks long Oct. - April covering fall and spring semesters. The course lectures will also be available on UAF content server.

Mode of delivery (specify lecture, field trips, labs, etc): Distance Delivery via Video Conference (4 days/week) and UAF Blackboard (eLive by appointment) 3 days lecture, 1 day lab /week In-depth experiment session conducted on location with instructor or TA
Group Collaborative Experiment (student take local data to determine latitude, and collaborate with students in other villages to determine circumference of the earth)

RECEIVED
FEB 2 2 2012
Dean's Office
College of Natural Science & Mathematics

Governance
3/1/12 KQ

9. CONTACT HOURS PER WEEK: 3.5 LECTURE hours/weeks | 1.16 LAB hours /week | 0 PRACTICUM hours /week

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/guidelines-for-computing-/ for more information on number of credits.

OTHER HOURS (specify type): **9 hrs off-line on weekly lab experiments; 4 hrs in-depth experiment; 6 hrs group collaborative experiment data collection**

10. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

Physics 094: Bush Physics for the 21st Century (BP21), 6 credits.
This is a distance-delivered introductory survey physics course, taught from October through April, with a lab component. The course is place-centered, and introduces physics through pertinent and culturally connected examples from traditional and modern high-latitude life in Alaska. Emphasizing problem solving, Bush Physics uses basic algebra extensively; the necessary trigonometric skills are developed in class. The course is delivered via videoconference, web-based UAF BlackBoard and e-live. Students complete a suite of simple hands-on lab experiments on their own. Students perform a more involved experimental study with instructor guidance. In addition, students participate in a group collaborative experiment where they make basic scientific measurements to precisely locate their village and then collaborate with others in the course to determine the size of our planet. A primary goal of the course is to prepare rural students for success in university science and engineering degree programs.

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities [ ] S = Social Sciences [ ]

Will this course be used to fulfill a requirement for the baccalaureate core? **If YES, attach form.** YES: [ ] NO: [X]

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, Format 6 [ ] W = Writing Intensive, Format 7 [ ] Natural Science, Format 8 [ ]

12. COURSE REPEATABILITY:

Is this course repeatable for credit? YES [ ] NO [X]

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit? [ ] TIMES

If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course? [ ] CREDITS

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course? [ ] CREDITS

13. GRADING SYSTEM: Specify only one. Note: Later changing the grading system for a course constitutes a Major Course Change.

LETTER: [X] PASS/FAIL: [ ]

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES

Placement in DEVM105 or satisfactory high school Algebra 1 with instructor permission. **Additional prerequisites for High School Students:** Must have passed the Alaska High School Exit Exam, and instructor permission based on school official/math teacher assessment of student's math preparation.

These will be *required* before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS none

16. PROPOSED COURSE FEES $200.00

Has a memo been submitted through your dean to the Provost for fee approval?
Yes/No — no

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously?
Yes/No — Yes

If yes, give semester, year, course #, etc.: DEVS F193 Spring 2008 (4cr.40767; 3cr.40839), DEVS F193; Spring 2009 (4cr. CRN 51111), SCIA 193 Spring 2010 (4cr. CRN 40549) and SCIA 193 (Fall 2010 - Spr. 2011 6cr. CRN 81090); Fall/Spring 2011/2012 (6cr. CRN 80262)

18. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

Faculty salary and other budgetary issues are grant funded for FY 2012/2013 and potentially longer. Newly available office space at the Interior-Aleutians Campus and video conference facilities support delivery. UAF Video Conferencing staff work closely with faculty to setup video conferencing as a normal service.

19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No [X] Yes [ ]

Use of library materials is not generally anticipated for this course , as materials and references are available on-line. However, we work closely with UAF OIT and Video Conferencing for the course delivery.

20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

Physics Department supports this course as a distance delivered developmental physics course, the developer is working with a physics dept. sub committee on this course, the physics department Chair, and the CNSM Dean.

21. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

Positive impacts - delivers an additional science course in hard to serve region, improved success of rural students in higher level STEM classes and ultimately STEM careers.

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

-This course is designed to meet both the spatial and scheduling challenges of distance-delivering a physics course to the under-served college and high school student population in the remote and often road-less villages of Alaska, where a face-to-face physics course is rarely available.

-This developmental course addresses the need for improved math and physical science preparation for many rural students before entering B.S. STEM degree programs at UAF. Students will receive 6 developmental science credits upon successful completion of the 24-week course.

-The three-part laboratory component gives students a more complete laboratory experience at a distance. This is potentially more cost effective than travel for a Lab-intensive week:

1) Simple concurrent exercises tie hands-on learning with lecture.

2) Instructor led introduction to experimentation and university lab courses with a more in-depth experiment and report. Lab instructor in the village school also is "scientist in residence" for school while there.
3) GCE- place based collaboration and presentation via distance.

-This course uses examples from traditional and modern life in rural Alaska, including 21st-century examples of high-latitude technology, and emphasizes problem-solving strategies to explain basic concepts in physics.

-For dual-credit HS students, satisfactory completion of the course will directly equate to one full year of HS lab science credit. (6 credits = 1 year HS lab science credit)

-This course allows rural high schools, with limited resources and few qualified science teachers, to offer a rigorous and mathematically challenging science course in physics taught by a qualified university instructor. The lab components are relatively low cost and highly portable (no chemicals to send through the mail, for example).

-This course strengthens workforce development by strengthening students' scientific training and understanding, leading to enhanced employment opportunities with government agencies and private sector.

APPROVALS: Add additional signature lines as needed.

Nazmul Q. Chowdhury	Date	2/22/2012
Signature, Chair, Program/Department of: PHYSICS		
Paul W. Layer, Dean	Date	2/29/12
Signature, Chair, College/School Curriculum Council for: CNSM		
	Date	2/29/2012
Signature, Dean, College/School of: NATURAL SCIENCE AND MATHEMATICS		
	Date	

Signature of Provost (if applicable)
Offerings above the level of approved programs must be approved in advance by the Provost.

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date	

Signature, Chair
Faculty Senate Review Committee: ___Curriculum Review ___GAAC

___Core Review ___SADAC

Draft Syllabus for Trial Course PHYS 094 Course: *Bush Physics in the 21st Century*
(6 credit, distance course including a Laboratory)

D. Solie
February 2012

BUSH PHYSICS FOR THE 21ST CENTURY

BUSH PHYSICS for the 21st Century

A Distance Delivery College/High School Physics Course Targeting:

- *Alaska Native and Rural Students*
- *Small Village Schools*
- *Native Cultures*

(Photo: M. Parsons)

1) Course Information:

Title: ***Bush Physics for the 21st Century (with Laboratory)***

Course Number: **PHYS 094 dual credit developmental physics course Late Start-Fall /Spring 2012/13,** CRN # (-------)

Credits: 6 (5 credits lecture + 1 credit Laboratory)

Prerequisites:

General Prerequisites: Basic high school Algebra 1 and permission of Instructor.

Additional Prerequisite for High School Students: Must have passed the Alaska High School Exit Exam.

Recommended: High school Geometry, Algebra 2 and Trigonometry or Math 105.

It is important that you talk with your math teacher and have them contact us, to assure that you have the necessary math preparation.

Course Dates:

Fall Late-Start Date: 1 October 2012 (Fall Segment: 1 October – 13 December)

Spring Early-End Date: 3 May 2013 (Spring Segment: 17 January – 2 May; 2 week spring break 11-22 March), A total of 24 weeks of instruction.

Class Times: 3:00 PM – 4:10 PM, Monday – Thursday (Live Video-conference Delivery)

Location: Delivery via Video-conference and UAF BlackBoard (BB) and *eLive!* Recorded lectures will also be available for download from the VCS content server. Course is delivered from the Science Lab, 101F Harper Building, UAF.

Note: We are also expecting will be delivering the course via the UATV cable channel –time for broadcast TBD, however, we expect will be a 1 day delay between video conference delivery and TV

delivery.)
Audio class connection: TBD
eFAX Number: 907-474-3176 (for assignment submission)

2) Instructor: Dr. Daniel Solie
Office: 101F Harper Bld. (Tel. 907-474-2616)
Email: djsolie@alaska.edu
Office Hours: (101F Harper Bld. /Tel./email /e-Live by arrangement): TBA
Laboratory Instructor: TBD
Email: TBD

3) Course Materials:
Required Text: ***Physics*** **A World View,** Kirkpatrick/Francis (7^{th} edition) Thompson, Brooks/Cole (Pub.)
UAF BlackBoard Site: course readings, instructor notes, class homework assignments, video clips, laboratory exercises and information and web links are available on the course Black Board site.

Calculators: **You will need a calculator for homework and lab,** (calculators will not in general be necessary in exams). A basic, simple scientific calculator with trigonometric, exponential, and logarithmic functions is all that you need.

Laboratory supplies: will be shipped to the student.

Computer with internet access and a printer (to connect to UAF Blackboard, E-live, view video-clips, do web searches, email, as well as write reports etc.)

Videoconference access, and capability to **download** and view recorded lectures, and means to FAX or **scan** and **transmit** homework and exams as **pdf files**.

In addition: a 3-ring binder, course notebook and bound laboratory notebook are strongly recommended.

4) Course Description:
Bush Physics for the 21^{st} Century (BP21) is a six-credit hour, late-start distance-delivered introductory survey physics course with a three distinct components to the laboratory experience. BP21, (after the Northern colloquial term "*Bush*" meaning wilderness) is designed for college and high school students in the remote and often road-less villages of Alaska. BP21 is place-centered, and introduces physics through pertinent and culturally connected examples from high-latitude wilderness life. This course is open to all students, however, its primary target are those in rural Alaska, where a face-to-face physics course is rarely available.
Bridging spring and fall semesters, this six-credit course allows increased content delivery over a 4

credit lab course, and more adequately meets the scheduling challenges of rural students across Alaska. The course is delivered via videoconference, and web-based UAF BlackBoard. Students complete a suite of simple hands-on lab experiments on their own. Students perform a much more involved experimental study with instructor guidance. In addition, students participate in a group collaborative experiment where they make basic scientific measurements to precisely locate their village and then collaborate with others in the course to determine the size of our planet.

Course Content: Emphasizing problem solving strategies in physical science, BP21 uses basic algebra extensively. The necessary trigonometric skills are developed in class. This course emphasizes examples from traditional and modern high-latitude life in the remote areas of Alaska.
Topics covered:

- Using observation, units, measurement and math to understand physical interactions and motions (or what is physics?).
- Describing and Explaining Motion and solving problems using Newton's Laws of Motion, Momentum and Energy.
- A brief introduction to Fluids and Thermodynamics.
- Vibrations, Waves, and an introduction to Sound, and Light
- Gravity
- An introduction to Electricity, Magnetism and Electromagnetic Interactions.
- In addition we will introduce selected topics atomic and nuclear physics, and Space.

- The text for the course is: *Physics: A World View* by Kirkpatrick/Francis (7^{th} edition). Chapters (topics) we will cover in the text are:
  - Chap.1-4 and 6-8 (Motion, Momentum, Newton's Laws, Work and Energy);
  - Chap. 5 (Gravity)
  - Chap. 11-13 (Matter and Thermodynamics);
  - Chap. 15-19 (Waves, Sound and Light);
  - Chap. 20-22 (Electricity, Magnetism and Electromagnetism);
  - Selected topics from chapters 23-26 (Modern Physics).

5) Academic Goals (general):
The goal is to develop and demonstrate proficiency in applying the concepts introduced, to quantitatively solve the range of physics problems covered in this course. Improve understanding and interpretation of scientific information and issues outside the classroom. Provide students with an introduction to science, technology, engineering and math (STEM) research and careers.

6) Student Learning Outcomes: (specific)
The specific learning outcomes of this course are:

1. Demonstrate a understanding of theoretical concepts (listed above) presented in lectures and text

and lab through written assignments and exams.
2. Demonstrate a scientific understanding of physical experiment using words, mathematical analysis, graphing and excel spreadsheets in lab reports.
3. Demonstrate an introductory understanding of the scientific method (design, data collection, analysis and interpretation of experiments)
4. Improve collaborative skills.
5. Improve presentation skills (orally and in writing).

7) Instructional Methods:
Lecture/Recitation sessions are delivered via video conference, recorded and then posted to the VCS content server. eLive will also be utilized to communicate with students during office hours, or special sessions. Course readings and additional online material are on UAF BlackBoard (BB).

Homework:

- Weekly homework assignments will average roughly 6-8 problems (17 homework sets total) and are due one week after assignment unless otherwise specified.
- Late homework, as a rule, will not be accepted (special exceptions: medical or technical problems beyond the student's control).
- The Bush Physics Homework Coversheet (downloadable from BBoard) should be the first page on all homework assignments with all information filled out. On subsequent pages, include your name, homework assignment and page number. If turning in homework as hardcopy, staple pages together.
- Neatness is important. Messy, difficult-to-read work will result in a lower score. I encourage you to start each problem on a fresh sheet of paper unless the problems are very short.
- Show all your steps in your homework solutions so the paper grader can give partial credit. No credit will be given if no work is shown.
- Your NAME is very important. If it is not included you will probably not get credit for the work.
- Note: doing and turning in homework is VERY important in a physics class – the final homework score is worth as much as an hour exam, and Final Grades are almost always proportional to homework scores: high homework means a high grade, poor homework means a poor grade.
- DISTANCE STUDENTS: It is expected that all students will be responsible for submitting homework: Homework is to be scanned, a PDF file generated and the PDF file uploaded/ to Blackboard/ or emailed to instructor/grader.

Bi-weekly QUICK Quizzes (10 quizzes): Short answer problems and conceptual questions from readings.

Exams: All exams are closed book (however, the BP21 formula sheet will be provided). Calculators will be allowed in exams but will probably not be needed. Exams will include mostly problems with

some short answer. They will cover concepts and examples from the text, lecture material, homework problems, and recitation problems. Solutions to exams will be posted on Black Board.

- DISTANCE STUDENTS: Exams must be taken with a qualified proctor (exams are to be FAXed or scanned & emailed to the instructor. If necessary a hard copy of exams can mailed the instructor.)

Exam Dates:

1. **Exam 1:** In Class Thursday 15 November (1 hr. covering Newton's Laws and Mechanics)
2. **Exam 2:** In Class Thursday 13 December (1½ hr. covering Fall Material—Mechanics and Thermodynamics.)
3. **Exam 3:** In Class Thursday 22 February. (1 hr. tentatively covering waves, sound and light)
4. **Final Exam:** In Class Thursday 2 May (2+ hours comprehensive: covers all fall and spring material,)

Laboratory: Laboratory skills are crucial to success in science and engineering at the university. To pass this course you must pass the laboratory portion of the course. The Laboratory portion of this course has three components:

1) Weekly Lab Component (12 short Hands-on Lab Experiment/Exercises): These shorter experiments will be introduced during the Thursday session. Equipment for labs will be mailed to the student or local school at the beginning of the course. Handouts for these experiments will be due one week after the lab is introduced in the videoconference session. It is expected that these short experiments are to be done on your own, and will require additional time beyond the weekly laboratory meeting time.

2) In Depth Experiment Session Component: (Timing for this is to be determined by each school) All students will be expected to complete one in-depth experiment. Students will work with a BP21 instructor. Writing up a science lab is a very important skill, therefore students will write a detailed lab report including a qualitative uncertainty analysis of the data and results for this experiment. Should logistics prevent students from completing the experiment session with a BP21 instructor, an alternative assignment will be provided. The data collection portion of the experiment may take 3-4 hours to perform, with significant additional time for analysis and report preparation.

3) Group Collaborative Experiment: "Determining your Place on Earth and The Size of Our Planet." Students in the class will participate in a group collaborative experiment to first determine the latitude and longitude of their village, and then collaborate with other teams from different villages to calculate the circumference of the earth. While students will use maps, GPS and Google Earth, they must determine their latitude and longitude from simple measurements of the sun's angle above the horizon, an accurate clock, and basic geometry and knowledge of the solar system. To determine the circumference of the earth, collaboration with teams in other villages, along with a distance measurement will be necessary. Students will do an in-class, web based presentation on a part of the experiment and their results. This experiment requires

significant out of class time. Data collection must be done during spring break and will require at least 6-8 hours, or more, spread over several days. Note: If weather or other factors beyond the students control preclude the student from making the necessary measurements, an alternative assignment will be provided.

8) Course Calendar:

Course Schedule (Daily):
MONDAY, TUESDAY &WEDNESDAY (3:00 PM – 4:10 PM), LECTURE SESSIONS:
Presentation of new concepts /examples/demonstrations

THURSDAY (3:00 PM – 4:10 PM), and WEEKLY LAB INTRODUCTION, Q&A SESSION and EXAMS NOTE: The lab experiments will not be completed during this time. Concepts and methods will be introduced, and students (individually or in groups) will complete the experiments during another time.

LAB Group e-Live Session (1hr Times to be determined)

WK	DATE	Readings	Lecture Topics (Monday – Wednesday)	LAB TOPIC (Thursday)
1	1-4 Oct. 2011	Brain Reading, Ch. 1 & Ch. 2	What is Physics? Units/Scale, Motion, Falling Bodies,	Lab 1: Lab Intro. & Safety; Angles, π, $S=R\theta$, Trig. relationships
2	8-10 Oct.	Ch. 3	Trig., Vectors Newton's Laws (3-2-1)	Lab 2: Vectors
3	15-18 Oct.	Ch. 4	Newton's Laws cont., Circ. Motion	Lab 3: Density
4	22-25 Oct.	Ch. 6	Momentum (Linear)	Lab 4: Power
5	29Oct-1 Nov.	Ch. 7	Work & Energy	Lab 5: Heat transfer
6	5-8 Nov.	Ch. 7	Work & Energy Applications (simple machines),	Exam Review
7	12-15 Nov.	Ch. 8	Torque & Angular Momentum	Exam 1
8	19-22 Nov.	Ch. 12	States of Matter, Fluids: static and flowing, aerodynamic Lift	Thanksgiving

9	26-29 Nov	Ch. 11 & 13	Intro Thermodynamics: Temperature, Ideal Gas Law and The First Law	Lab 6: Phase change
10	3-5 Dec.	Ch. 13	Thermodynamics Cont.	Exam Review
11	10-13 Dec.		Review for Exam2	Exam 2
	17Dec. – 16 Jan		HOLIDAY BREAK	Holiday Break
12	17 Jan.			GCE Introduction
13	21-24 Jan.	Ch. 5	Universal Gravity	Lab 7: Pendulums
14	28-31Jan.	Ch. 15	Harmonic Motion & Waves	Lab 8: waves 1
15	3-7 Feb.	Ch. 15 & 16	Waves & Sound	Lab 9: Waves 2 Refraction
16	11-14 Feb.	Ch. 16 & 17	Sound & Light	Exam Review
17	18-21 Feb.	Ch. 18. Ch. 19	Light topics: refraction, diffraction, interference	Exam 3
18	25-28Feb	Ch. 20	Electric Charge and Force	Take GCE data
19	4-7 Mar.	Ch. 21	Electric Current & Simple Circuits	Lab 10: Electricity 1
	11-14 Mar.		SPRING BREAK	Spring Break
	18-21 Mar.		SPRING BREAK	Spring Break
20	25-28 Mar.	Ch. 21 & 22	Circuits & Power cont. Magnetism	GCE discussion
21	1-4 Apr.	Ch. 22	Electromagnetic Induction	Lab 11: Electricity 2
22	8-11 Apr.	Ch. 23	Modern Physics: Atomic Introduction	Lab 12: Exponential Change
23	15-18 Apr.	Ch. 24 & 25	Modern Physics Cont., Nuc. Radiation	Lab 13: Survey, math post-test, GCE Web Presentations,
24	22-25		Special Topics in Modern	Exam Review

	Apr.		Physics and Space	
25	29Apr.-2 May		Final Exam Week: Comprehensive Review (Fall & Spring)	Final Exam

9) Course Policies:

Attendance, while not explicitly required, is necessary and expected. The student is responsible for all material covered in classes missed. Tardiness is disruptive to the class and even more so for a distance class where verification that the student is connected is important. If video-conference connection difficulties occur or attendance/tardiness becomes a problem attendance may be taken.

Note: If you miss an exam, homework, lab, or a report deadline for a legitimate reason (illness, sports, extracurricular event or travel, communication difficulties, etc.), and a note is provided to the instructor (from school official, doctor or parent), arrangements will be made to make up the exam, assignment, or lab. However, it is the student's responsibility to both provide the documentation, and do the expected work in the time agreed upon between the instructor and the student.

Plagiarism and Cheating: Plagiarism is using what another person has written as if it was your own, without proper recognition of the other person. Plagiarism and cheating are matters of serious concern for students and academic institutions. Plagiarism is grounds for failure. The UAF Honor Code (Student Code of Conduct) defines the academic standards expected at UAF and is adhered to in this class.

10) Evaluation/Grading:

Grades given will be on an A-F scale (no +/- will be assigned). The final, cumulative scores will be curved and final grades assigned on that basis. However, a final percentage score of 92% or above will always earn an A, 85%-up to 92% will be a B or higher, 70%- up to 85% will be a C or higher, 60% up to 70% will be a D or higher, and below 60% an F. (In some cases, due to the class curve, cut-off percentages for a letter grade may be lower.) Note: To pass this course you must complete and pass the laboratory portion.

EXAM 1	(fall)	10%
EXAM 2	(end fall)	15%
EXAM 3	(spring)	10%
FINAL EXAM	(end course)	20%
QUIZZES (10 –lowest (1) dropped)		10%
HOMEWORK (17 sets –lowest (2) dropped)		15%

LABORTORY:		20%
a)	Weekly Labs (12 (lowest 1 dropped) (10%)	
b)	Experiment Session: (5 %)	
c)	Group Collaborative Experiment (5%)	
TOTAL:		100%

11) Support Services: Instructors will work with the student to help them obtain additional tutoring if necessary (either local one-on-one, or via distance communication).

12) Special Needs: The office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. We work with the Office of Disabilities Services (203 WHIT, to 474-7043) to provide reasonable accommodation to students with disabilities.