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Astronomy Department
University of Washington

January 28, 2010

Excellence in Teaching Award Committee
Undergraduate Academic Affairs
220 Mary Gates Hall
Box 352800

Dear Award Committee,

This is the chair letter in support of the nomination of Philip Rosenfield for a Excellence in Teaching Award for his service as a Teaching Assistant in the Astronomy Department at the University of Washington. Phil is a third year graduate student and has already been a TA in Astronomy for several quarters. His work is exemplary in every way, giving class lectures, teaching recitation sections, making extra time for students during office hours, and going out of his way to provide as much help as possible to students to understand the material and do well in the class. His evaluations have consistently been in the upper 4 to 5 range. We take considerable pride in the teaching skills of our graduate students, and Phil is among the very best we have had in the past decade.

In addition to Phil's excellent record as a TA in our normal (large, non-major) introductory courses, during Fall 2009 he took on the task of being the TA for our freshmen diversity initiative, Pre-MAP. Pre-MAP stands for the Pre-Major in Astronomy Program, and it is designed to introduce incoming freshmen to astronomy research during their first quarter at the University. Our goal is to attract students from underrepresented groups, who were not originally considering a major in a Science, Technology, Engineering or Mathematics (STEM) discipline, and show them how interesting and rewarding scientific research can be. During the five years of this program, we have nearly doubled our major population and have attracted more than 50% women (an underrepresented group in the physical sciences) to join the department as undergraduate majors. The success of this program rests on the TA who runs the research seminar class. It is a huge undertaking, as there are usually 12-15 students in the class, and each one requires significant individual attention. The TA teaches them basic computer skills and matches them with faculty and postdoc mentors to carry out a research project and then to present their work to the department at the end of the quarter. The burden is significantly higher than for a normal TA.

We always have dedicated students in this TA position, but Phil's performance clearly exceeded those in the past. He spent nearly 40 hours a week on this class, developing several new curriculum components (which was presented at the American Astronomical Society Meeting in January 2010) and aids for teaching and learning assessment. In addition, on his own initiative, he contacted the Center for Instructional Development and

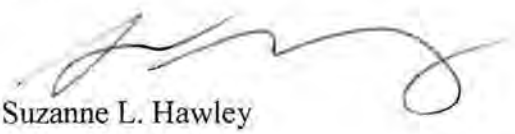
Research (CIDR) and had them come to do a class evaluation focus group. As shown on the included group evaluation summary, Phil was phenomenally popular with the students, including a 4.9 out of 5 score on question (10): How much has working with your Pre-MAP instructor contributed to your experience so far at UW? This year has been the most successful Pre-MAP class in its five year history. I am quite certain that the nomination for the Excellence in Teaching Award came from one (or several) of the students in that fall course.

Although this award is for Phil's teaching successes, I would be remiss not to mention the numerous other ways he contributes to the department. Last year he took over the operational responsibility of our on-campus planetarium, and organized a series of shows to highlight the International Year of Astronomy. He designed a website so that members of the general public could obtain (free) tickets and come to the shows. This venture was so overwhelmingly successful that Phil had to add several additional weeks of shows to accommodate the demand. Phil has also taken the lead on working with Microsoft to reconfigure the planetarium with a digital projection system that will run their World Wide Telescope software, enabling us to present new, state-of-the-art shows (several of which he is designing). Encouraged by the success of the public outreach effort, Phil is now organizing a series of graduate student lectures for the general public during winter quarter, 2010. These are designed to give graduate students from across the natural sciences experience with speaking in a non-scientific venue.

Finally, let me say that Phil is also a top-notch astronomer, with excellent grades in his coursework, and an exemplary performance in his qualifying exam. He is making good progress on his PhD research on the stellar populations in nearby galaxies. I fully expect that Phil will be one of the best students to graduate from our program, which is one of the leading graduate programs in the country.

It should be clear that I give Phil my very strongest support for a Distinguished Teaching Award. He exemplifies everything the UW could wish for in a graduate Teaching Assistant.

Sincerely,



Suzanne L. Hawley

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Astronomy Department
University of Washington

Jan. 21, 2010

Dear Committee,

As the faculty advisor of the Pre-Major in Astronomy Program (Pre-MAP), I am writing to strongly endorse Phil Rosenfield for an Excellence in Teaching Award, for which he was nominated by his students from the Pre-MAP seminar (ASTR 192) in Autumn 2009. Pre-MAP aims to increase diversity in the sciences, and at its core is ASTR 192 which introduces *first-quarter freshmen* to real Astronomy research; it is the only course like it in the country. Phil went well beyond his job description in teaching the seminar, and did a superb job.

Phil organized the course efficiently to maximize the impact of his teaching on the students. For example, rather than simply setting an office hour for the quarter, he chose a couple of hours that straddled course time slots to allow more students to be able attend. He told students in advance what topics would be covered in office hours, which encouraged them to attend, and he made clear that office hours were not remedial, but a way for students to enhance their learning experience by one-on-one interaction with the instructor.

Phil is an educational innovator. He developed a "jigsaw" exercise that gave the students an opportunity to understand a scientific paper by first breaking into several groups that each studied and discussed one section of the paper; he had them draw comic strips to explain what was going on in the section; and then he rearranged the groups so that each group had members that studied a different portion of the paper so that they could share with one another to build a full understanding of the paper. This experiment was very successful, and will be useful for future Pre-MAP instructors. He had students interview a faculty member to give them more confidence in approaching faculty, and then write about their experience. He regularly used ice-breakers (e.g. introducing oneself to a partner without speaking or writing words, and then explain that partner to the rest of the class) to help the students get to know one another, as well as calming their nerves before presentations.

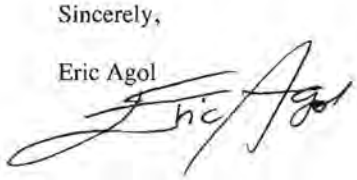
Phil has a broad skill set. He is a patient teacher, using the Socratic method; he challenges the students, but at the same time is a constant encourager to help them meet the challenges and build confidence in their abilities. Phil makes it very clear to the students the learning goals for each class session, his expectations for what they should accomplish, and how they will be graded. Phil, who is also a talented writer, put enormous effort into recording everything he did for the seminar, creating a complete curriculum that can be adopted by other Astronomy departments, and can be translated to other departments at UW. He presented this at the American Astronomical Society meeting in January 2010, where he received lots of interest from educators, including the University of Virginia and Cornell. I am encouraging him to publish this work.

Phil is humble about his accomplishments, and is always looking to improve what he does. He wrote an email log about his teaching experience sent out to the Pre-MAP staff throughout the quarter, which he used to reflect on what went well and what he would improve in the future – this, of course, will prove valuable for the next time he teaches, and will help future teachers of the course. He gave students a tour of the Astronomy department, and set up laboratory tours around campus to show the students the breadth of science opportunities. He organized three evening events for students to help build friendships – a night at the campus observatory, a movie night in the planetarium, and an observing trip; even the fliers for these events (which he "threw together") looked professionally done.

In conclusion, Phil is an outstanding teacher in every aspect I can think of. He cares deeply about the students, he uses his broad skill set to maximize their learning experience, and he has created a detailed curriculum that will have an impact here at UW and around the country. I strongly urge that you consider Phil for an award.

Sincerely,

Eric Agol



UNIVERSITY OF WASHINGTON

Department of Astronomy

Excellence in Teaching Awards Nominating Committee,

I am writing this letter in support of the nomination of **Phil Rosenfield** for the Excellence in Teaching Award. Phil was my teaching assistant for my Astronomy 150 The Planets class during the 2008-2009 school year.

While his teaching for me was exemplary, and certainly award worthy, it is not for being a TA for my class, that Phil has been nominated. Phil's nominations is due to the extraordinary work he did in a class he redesigned and ran on his own, Astronomy 192, the PRE-MAP Seminar. In many ways being a teaching assistant for a large lecture class is a thankless task. Being a extraordinary TA is often the result of being an extraordinary contrast to the person giving the lectures. Phil demonstrated his skills as a teacher do not in any way depend on being a contrast to someone else.

But why should Phil be recognized by the University community as a graduate TA? This university is filled with graduate TAs who go above and beyond the call of duty for a class every day of every quarter.

What I think set Phil apart from this group is that, unlike a lot of graduate TAs work in classes, Phil's work in Astro 192 has an influence in Astronomy education nationwide. His presentation at the 2010 meeting of the American Astronomical Society entitled "Tools for Increasing Undergraduate Diversity in Your Department" has generated much interest in using his class as a model for classes at other Universities. This is a result far beyond the typical duties of a graduate teaching assistant.

Phil's influence is also very local. Talking to the students in Phil's class, the most common trait I hear is about his accessibility. And by this, I do not just mean their ability to talk to him about class. For many of his students, Phil is their main interface to the University at large. He has managed to create a very comfortable space for his students within what is often a large impersonal University.

Finally, I believe Phil should get some sort of award for the additional burden of needing convince and coordinate faculty members, post docs, and graduate students to work with his students in Astro 192.

Sincerely,

Dr. Toby R. Smith
Department of Astronomy
smith@astro.washington.edu
(206) 616-2959

Teaching Evaluations

Summary

San Diego State University

Semester/Year	Course	Enrollment	Mean*/TA Mean
Autumn 2005	Primary Instructor: Astronomy Lab.	24	4.3 / 4.2
Spring 2006	Primary Instructor: Astronomy Lab.	2 x 24	4.1 / 3.8
Autumn 2006	Primary Instructor: Astronomy Lab.	2 x 24	4.5 / 4.0
Spring 2007	Primary Instructor: Astronomy Lab.	24	4.7 / 4.0
Summer 2007	Lecturer: Intro. Astronomy	16	(Not available)
		Average	**4.4 / 4.0**

*Score is the mean of items 4-8 on evaluation form (in-class presentations, testing processes, instructor is responsive and helpful, instructor stimulated interest)
"TA Mean" includes mine as well as the 6-7 other Astronomy Laboratory section TA evaluations.

University of Washington

Quarter/Year	Course	Enrollment	Median*
Autumn 2007	Teaching Associate: The Planets		
	Section AB	25	4.0
	Section AH	23	4.5
Winter 2008	Teaching Associate: The Planets		
	Section AA	24	3.7
	Section AC	26	4.4
Spring 2008	Teaching Associate: Introductory Astronomy		
	Section AB	24	4.3
	Section AD	23	4.4
Autumn 2008	Teaching Associate: The Planets		
	Section AF	25	4.6
	Section AI	26	4.5
Autumn 2009	Primary Instructor: Pre-Major in Astronomy Research Seminar		
		12	4.3
		Average	**4.3**

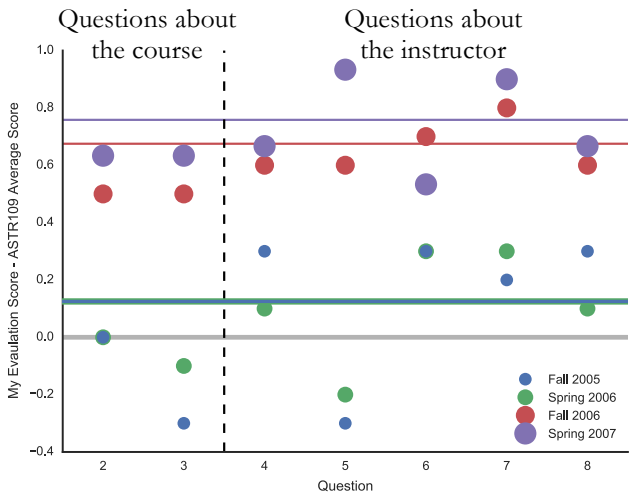
*****Score is based on the adjusted median of the combined items 1-4 on the student evaluation form (course as whole was; course content was; instructor's contribution to the course was; instructor's effectiveness in teaching the subject matter was).

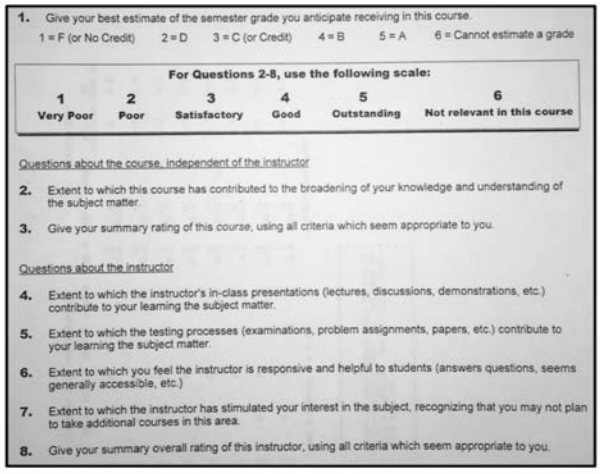
Detail: SDSU Teaching Evaluations

I taught the Introductory Astronomy laboratory course for two years and changed content over time. On average, my evaluations rose each year, with each change (with respect to the other teaching associates teaching other sections).

- Fall 2005: I used inherited exercises from the lead teaching associate.
- Spring 2006: I added summative questions and changed the grading scheme.
- Fall 2006: I used my new manual (see T.4), had students turn in lab journals for grading rather than worksheets.
- Spring 2007: I shifted to weekly lab report write-ups and a final portfolio reflecting on their reports.

(Question 6 is lower in Spring 2007 than Fall 2006 in part due to missing classes to visit potential PhD programs.)





1. Give your best estimate of the semester grade you anticipate receiving in this course.
1 = F (or No Credit) 2 = D 3 = C (or Credit) 4 = B 5 = A 6 = Cannot estimate a grade

For Questions 2-8, use the following scale:

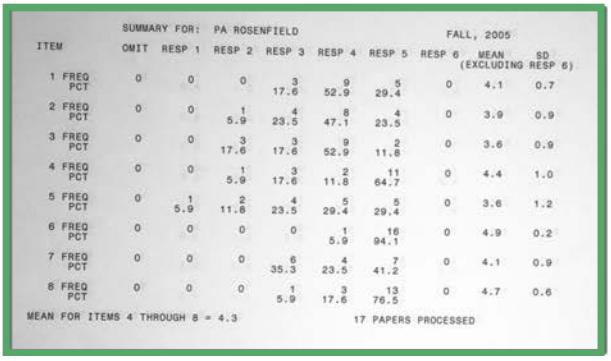
1	2	3	4	5	6
Very Poor	Poor	Satisfactory	Good	Outstanding	Not relevant in this course

Questions about the course, independent of the instructor

2. Extent to which this course has contributed to the broadening of your knowledge and understanding of the subject matter.
3. Give your summary rating of this course, using all criteria which seem appropriate to you.

Questions about the instructor

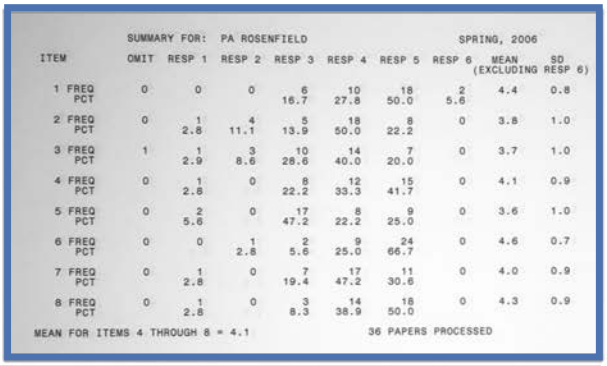
4. Extent to which the instructor's in-class presentations (lectures, discussions, demonstrations, etc.) contribute to your learning the subject matter.
5. Extent to which the testing processes (examinations, problem assignments, papers, etc.) contribute to your learning the subject matter.
6. Extent to which you feel the instructor is responsive and helpful to students (answers questions, seems generally accessible, etc.)
7. Extent to which the instructor has stimulated your interest in the subject, recognizing that you may not plan to take additional courses in this area.
8. Give your summary overall rating of this instructor, using all criteria which seem appropriate to you.



SUMMARY FOR: PA ROSENFIELD — FALL, 2005

ITEM		OMIT	RESP 1	RESP 2	RESP 3	RESP 4	RESP 5	RESP 6	MEAN (EXCLUDING RESP 6)	SD
1	FREQ	0	0	0	3	9	5	0	4.1	0.7
	PCT				17.6	52.9	29.4			
2	FREQ	0	0	1	4	8	4	0	3.9	0.9
	PCT			5.9	23.5	47.1	23.5			
3	FREQ	0	0	3	3	9	2	0	3.6	0.9
	PCT			17.6	17.6	52.9	11.8			
4	FREQ	0	0	1	3	2	11	0	4.4	1.0
	PCT			5.9	17.6	11.8	64.7			
5	FREQ	0	1	2	4	5	5	0	3.6	1.2
	PCT		5.9	11.8	23.5	29.4	29.4			
6	FREQ	0	0	0	0	1	16	0	4.9	0.2
	PCT					5.9	94.1			
7	FREQ	0	0	0	6	4	7	0	4.1	0.9
	PCT				35.3	23.5	41.2			
8	FREQ	0	0	0	1	3	13	0	4.7	0.6
	PCT				5.9	17.6	76.5			

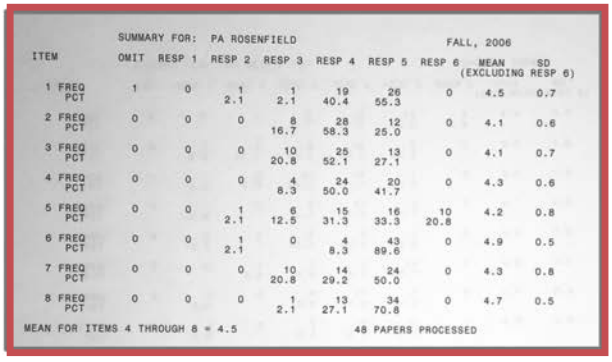
MEAN FOR ITEMS 4 THROUGH 8 = 4.3 — 17 PAPERS PROCESSED



SUMMARY FOR: PA ROSENFIELD — SPRING, 2006

ITEM		OMIT	RESP 1	RESP 2	RESP 3	RESP 4	RESP 5	RESP 6	MEAN (EXCLUDING RESP 6)	SD
1	FREQ	0	0	0	6	10	18	2	4.4	0.8
	PCT				16.7	27.8	50.0	5.6		
2	FREQ	0	1	4	5	18	8	0	3.8	1.0
	PCT		2.8	11.1	13.9	50.0	22.2			
3	FREQ	1	1	3	10	14	7	0	3.7	1.0
	PCT		2.9	8.6	28.6	40.0	20.0			
4	FREQ	0	1	0	8	12	15	0	4.1	0.9
	PCT		2.8		22.2	33.3	41.7			
5	FREQ	0	2	0	17	8	9	0	3.6	1.0
	PCT		5.6		47.2	22.2	25.0			
6	FREQ	0	0	1	2	9	24	0	4.6	0.7
	PCT			2.8	5.6	25.0	66.7			
7	FREQ	0	1	0	7	17	11	0	4.0	0.9
	PCT		2.8		19.4	47.2	30.6			
8	FREQ	0	1	0	3	14	18	0	4.3	0.9
	PCT		2.8		8.3	38.9	50.0			

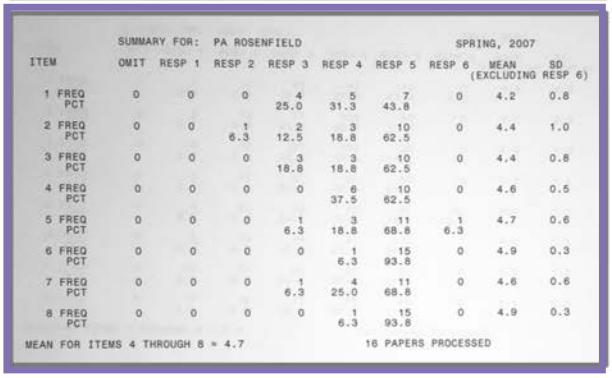
MEAN FOR ITEMS 4 THROUGH 8 = 4.1 — 36 PAPERS PROCESSED



SUMMARY FOR: PA ROSENFIELD — FALL, 2006

ITEM		OMIT	RESP 1	RESP 2	RESP 3	RESP 4	RESP 5	RESP 6	MEAN (EXCLUDING RESP 6)	SD
1	FREQ	1	0	1	1	19	26	0	4.5	0.7
	PCT			2.1	2.1	40.4	55.3			
2	FREQ	0	0	0	8	28	12	0	4.1	0.6
	PCT				16.7	58.3	25.0			
3	FREQ	0	0	0	10	25	13	0	4.1	0.7
	PCT				20.8	52.1	27.1			
4	FREQ	0	0	0	4	24	20	0	4.3	0.6
	PCT				8.3	50.0	41.7			
5	FREQ	0	0	1	6	15	16	10	4.2	0.8
	PCT			2.1	12.5	31.3	33.3	20.8		
6	FREQ	0	0	1	0	4	43	0	4.9	0.5
	PCT			2.1		8.3	89.6			
7	FREQ	0	0	0	10	14	24	0	4.3	0.8
	PCT				20.8	29.2	50.0			
8	FREQ	0	0	0	1	13	34	0	4.7	0.5
	PCT				2.1	27.1	70.8			

MEAN FOR ITEMS 4 THROUGH 8 = 4.5 — 48 PAPERS PROCESSED



SUMMARY FOR: PA ROSENFIELD — SPRING, 2007

ITEM		OMIT	RESP 1	RESP 2	RESP 3	RESP 4	RESP 5	RESP 6	MEAN (EXCLUDING RESP 6)	SD
1	FREQ	0	0	0	4	5	7	0	4.2	0.8
	PCT				25.0	31.3	43.8			
2	FREQ	0	0	1	2	3	10	0	4.4	1.0
	PCT			6.3	12.5	18.8	62.5			
3	FREQ	0	0	0	3	3	10	0	4.4	0.8
	PCT				18.8	18.8	62.5			
4	FREQ	0	0	0	0	6	10	0	4.6	0.5
	PCT					37.5	62.5			
5	FREQ	0	0	0	1	3	11	1	4.7	0.6
	PCT				6.3	18.8	68.8	6.3		
6	FREQ	0	0	0	0	1	15	0	4.9	0.3
	PCT					6.3	93.8			
7	FREQ	0	0	0	1	4	11	0	4.6	0.6
	PCT				6.3	25.0	68.8			
8	FREQ	0	0	0	0	1	15	0	4.9	0.3
	PCT					6.3	93.8			

MEAN FOR ITEMS 4 THROUGH 8 = 4.7 — 16 PAPERS PROCESSED

Instructional Assessment System

ASTR 150A B
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Teaching Assistant
Autumn 2007

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	16	19	62	12	6			4.0	4.0
2. The content of the quiz section was:	16	12	62	25				3.9	3.9
3. The quiz section instr's (QSI's) contribution to the course was:	16	31	56	12				4.2	4.1
4. The QSI's effectiveness in teaching the subj. matter was:	16	19	62	6	12			4.0	4.0
COMBINED ITEMS 1-4	64	20	61	14	5			4.0	4.0
									Relative Rank
5. Explanations by the QSI were:	16	38	38	19		6		4.2	12
6. QSI's use of examples and illustrations was:	16	25	56	12	6			4.1	17
7. Quality of questions or problems raised by QSI was:	16	19	56	19	6			3.9	18
8. QSI's enthusiasm was:	16	50	44	6				4.5	11
9. Student confidence in QSI's knowledge was:	16	56	31	12				4.6	8
10. Encouragement given students to express themselves was:	16	50	25	12	12			4.5	6
11. Answers to student questions were:	16	38	50	6	6			4.3	10
12. Interest level of quiz sections was:	16	31	50	19				4.1	5
13. QSI's openness to student views was:	16	56	31	6	6			4.6	7
14. QSI's ability to deal with student difficulties was:	15	53	33	13				4.6	1
15. Availability of extra help when needed was:	16	56	25	19				4.6	2
16. Use of quiz section time was:	16	31	44	12	12			4.1	13
17. QSI's interest in whether students learned was:	16	50	38	12				4.5	4
18. Amount you learned in the quiz sections was:	16	31	31	31	6			3.9	15
19. Relevance and usefulness of quiz section content were:	16	31	50	19				4.1	16
20. Coordination between lectures and quiz sections was:	16	38	38	19	6			4.2	14
21. Reasonableness of assigned work for quiz section was:	15	47	40	7	7			4.4	9
22. Clarity of student responsibilities and requirements was:	16	50	44	6				4.5	3

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	Much Lower (2)	(1)	MEDIAN
23. Do you expect your grade in this course to be:	16	12	31	12	19	19	6		5.0
24. The intellectual challenge presented was:	16		19	25	50	6			4.4
25. The amount of effort you put into this course was:	15		27	7	33	20	7	7	4.0
26. The amount of effort to succeed in this course was:	16	6	31	19	31	6	6		4.8
27. Your involvement in course (assignments, attendance, etc.) was:	16	25	19	19	31	6			5.2

28. On average, how many hours per week have you spent on this course?

Percent	
6	Under 2
44	2-3
6	4-5
19	6-7
12	8-9
	10-11
6	12-13
6	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 16
Class median: 3.5
Hours per credit: 0.70

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent	
19	Under 2
31	2-3
19	4-5
19	6-7
6	8-9
	10-11
6	12-13
	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 16
Class median: 3.5
Hours per credit: 0.70

30. What grade do you expect in this course?

Percent	
	A (3.9-4.0)
31	A- (3.5-3.8)
19	B+ (3.2-3.4)
25	B (2.9-3.1)
6	B- (2.5-2.8)
	C+ (2.2-2.4)
6	C (1.9-2.1)
	C- (1.5-2.1)
6	D+ (1.2-1.4)
6	D (0.9-1.1)
	D- (0.7-0.8)
	E (0.0)
	Pass
	Credit
	No Credit

Respondents: 16
Class median: 3.1

31. In regard to your academic program, is this course best described as:

Percent	
	In your major
38	A distribution requirement
31	An elective
	In your minor
12	A program requirement
19	Other

Challenge and Engagement Index

CEI = 0 (decile rank)

1. *Percentages are based on the number of students who rated each item.*

AU07:01215
SURVEY ID

Respondents: 16
Enrollment: 25
Classes: 1

F
Form Type

Mailbox: 351580
ChairCopy? Yes
printed: 1/22/2008

Batch UW 289-000404

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil Rosenfield Course Astro 150 Section AB Date 12/3/07

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

It helped clarify some of the questions I had about lecture.

What aspects of this class contributed most to your learning?

Going over lecture, study guides for final / midterm

What aspects of this class detracted from your learning?

labs were very difficult if you aren't a Science / math person and that was never enough time to finish.

What suggestions do you have for improving the class? Phil did an excellent job helping me with labs and going over them outside of class. He also helped if I had problems! Thanks

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

nana:\ias\document\comments.doc
rev. 10/24/96

Instructional Assessment System

ASTR 150AH
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Teaching Assistant
Autumn 2007

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	17	59	24	12	6			4.7	4.5
2. The content of the quiz section was:	17	47	35	6	12			4.4	4.3
3. The quiz section instr's (QSI's) contribution to the course was:	17	65	18	12	6			4.7	4.6
4. The QSI's effectiveness in teaching the subj. matter was:	17	53	29	6	12			4.6	4.4
COMBINED ITEMS 1-4	68	56	26	9	9			4.6	4.5
									Relative Rank
5. Explanations by the QSI were:	17	65	12	12	6	6		4.7	6
6. QSI's use of examples and illustrations was:	17	53	24	12	12			4.6	15
7. Quality of questions or problems raised by QSI was:	17	53	24	12	6	6		4.6	8
8. QSI's enthusiasm was:	17	88	12					4.9	11
9. Student confidence in QSI's knowledge was:	17	76	6	12	6			4.8	10
10. Encouragement given students to express themselves was:	17	59	24	18				4.7	13
11. Answers to student questions were:	17	71	6	12	12			4.8	2
12. Interest level of quiz sections was:	17	59	6	35				4.7	1
13. QSI's openness to student views was:	17	65	24	12				4.7	14
14. QSI's ability to deal with student difficulties was:	17	59	18	24				4.7	4
15. Availability of extra help when needed was:	17	65	12	24				4.7	7
16. Use of quiz section time was:	17	59	12	29				4.7	5
17. QSI's interest in whether students learned was:	17	59	24	18				4.7	12
18. Amount you learned in the quiz sections was:	17	41	29	18	12			4.2	16
19. Relevance and usefulness of quiz section content were:	17	41	35	12	6		6	4.3	17
20. Coordination between lectures and quiz sections was:	17	41	12	24	18		6	3.8	18
21. Reasonableness of assigned work for quiz section was:	17	71	12	18				4.8	3
22. Clarity of student responsibilities and requirements was:	17	59	18	12	6	6		4.7	9

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	(2)	Much Lower (1)	
23. Do you expect your grade in this course to be:	17	18	24	29	18	6		6	5.2
24. The intellectual challenge presented was:	17		24	29	24	18		6	4.6
25. The amount of effort you put into this course was:	17		18	29	41	6		6	4.4
26. The amount of effort to succeed in this course was:	17		29	41	12	12		6	5.0
27. Your involvement in course (assignments, attendance, etc.) was:	17	6	24	35	24	6	6		4.9

28. On average, how many hours per week have you spent on this course?

Percent	
6	Under 2
24	2-3
18	4-5
24	6-7
6	8-9
12	10-11
12	12-13
	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 17
Class median: 5.8
Hours per credit: 1.15

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent	
18	Under 2
18	2-3
29	4-5
24	6-7
6	8-9
6	10-11
	12-13
	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 17
Class median: 4.5
Hours per credit: 0.90

30. What grade do you expect in this course?

Percent	
12	A (3.9-4.0)
24	A- (3.5-3.8)
18	B+ (3.2-3.4)
18	B (2.9-3.1)
12	B- (2.5-2.8)
12	C+ (2.2-2.4)
	C (1.9-2.1)
	C- (1.5-2.1)
	D+ (1.2-1.4)
6	D (0.9-1.1)
	D- (0.7-0.8)
	E (0.0)
	Pass
	Credit
	No Credit

Respondents: 17
Class median: 3.2

31. In regard to your academic program, is this course best described as:

Percent	
	In your major
35	A distribution requirement
53	An elective
	In your minor
	A program requirement
12	Other

Challenge and Engagement Index

CEI = 2 •• (decile rank)

1. *Percentages are based on the number of students who rated each item.*

AU07:01221
SURVEY ID

Respondents: 17
Enrollment: 25
Classes: 1

F
Form Type

Mailbox: 351580
ChairCopy? Yes
printed: 1/22/2008

Batch UW 307-001074

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil R. Course AST 150 Section 001 Date 12/2

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

Phil - best T.A ever.

What aspects of this class contributed most to your learning?

Phil's office hours helped me so much! He is very patient & took the time to listen to my (mostly) stupid questions!

What aspects of this class detracted from your learning?

The labs were sometimes hard for me to understand w/o explanation from lecture or a text.

What suggestions do you have for improving the class?

Maybe make the labs easier to finish in 50 min.

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

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rev. 10/24/96

Instructional Assessment System

ASTR 150 AA
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip Rosenfield
Teaching Assistant
Winter 2008

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	11	18	45	36				3.8	3.6
2. The content of the quiz section was:	11	36	27	27	9			4.0	3.8
3. The quiz section instr's (QSI's) contribution to the course was:	11	36	27	27	9			4.0	3.9
4. The QSI's effectiveness in teaching the subj. matter was:	11	27	36	36				3.9	3.7
COMBINED ITEMS 1-4	44	30	34	32	5			3.9	3.7
									Relative Rank
5. Explanations by the QSI were:	11	36	45	9	9			4.2	7
6. QSI's use of examples and illustrations was:	11	36	45	9	9			4.2	8
7. Quality of questions or problems raised by QSI was:	11	36	36	18	9			4.1	5
8. QSI's enthusiasm was:	11	36	45	9	9			4.2	16
9. Student confidence in QSI's knowledge was:	11	45	27	18	9			4.3	11
10. Encouragement given students to express themselves was:	11	27	45	18	9			4.0	18
11. Answers to student questions were:	11	27	45	18	9			4.0	13
12. Interest level of quiz sections was:	11	9	45	27	9	9		3.6	14
13. QSI's openness to student views was:	11	45	45	9				4.4	6
14. QSI's ability to deal with student difficulties was:	11	45	45		9			4.4	1
15. Availability of extra help when needed was:	11	36	55		9			4.3	9
16. Use of quiz section time was:	11	45	27	9	18			4.3	2
17. QSI's interest in whether students learned was:	11	45	45		9			4.4	3
18. Amount you learned in the quiz sections was:	11	9	73		9	9		3.9	10
19. Relevance and usefulness of quiz section content were:	11	45	36		18			4.4	4
20. Coordination between lectures and quiz sections was:	11	27	45	27				4.0	17
21. Reasonableness of assigned work for quiz section was:	11	27	55	18				4.1	15
22. Clarity of student responsibilities and requirements was:	11	27	64		9			4.1	12

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5) Average	(4)	(3)	(2)	Much Lower (1)	MEDIAN
23. Do you expect your grade in this course to be:	11	9	36	36	18				5.4
24. The intellectual challenge presented was:	11	9	27	27	18	9		9	5.0
25. The amount of effort you put into this course was:	11		36	36	9	18			5.1
26. The amount of effort to succeed in this course was:	11		36	36	18		9		5.1
27. Your involvement in course (assignments, attendance, etc.) was:	11	18	55		18	9			5.9

28. On average, how many hours per week have you spent on this course?

Percent

	Under 2
	2-3
18	4-5
27	6-7
27	8-9
	10-11
	12-13
	14-15
18	16-17
	18-19
9	20-21
	22 or more

Respondents: 11
Class median: 7.8
Hours per credit: 1.57

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent

	Under 2
18	2-3
9	4-5
27	6-7
18	8-9
	10-11
	12-13
9	14-15
9	16-17
	18-19
9	20-21
	22 or more

Respondents: 11
Class median: 7.2
Hours per credit: 1.43

30. What grade do you expect in this course?

Percent

9	A (3.9-4.0)
27	A- (3.5-3.8)
45	B+ (3.2-3.4)
18	B (2.9-3.1)
	B- (2.5-2.8)
	C+ (2.2-2.4)
	C (1.9-2.1)
	C- (1.5-2.1)
	D+ (1.2-1.4)
	D (0.9-1.1)
	D- (0.7-0.8)
	E (0.0)
	Pass
	Credit
	No Credit

Respondents: 11
Class median: 3.4

31. In regard to your academic program, is this course best described as:

Percent

9	In your major
18	A distribution requirement
64	An elective
	In your minor
	A program requirement
9	Other

Challenge and Engagement Index

CEI = 4 •••• (decile rank)

1. *Percentages are based on the number of students who rated each item.*

Batch UW 341-001085

WI08:01419
SURVEY ID

Respondents: **11**
Enrollment: **23**
Classes: 1

F
Form Type

Mailbox: **351580**
ChairCopy? **Yes**
printed: 4/18/2008

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Dr. Barnfield Course ASTR 150 Section AA Date 3/12/3

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in*. We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

I thought this class was simply going to be about the stars but I learned a whole lot more than expected.

What aspects of this class contributed most to your learning?

Quiz section and the homework helps in testing us on the [illegible]

What aspects of this class detracted from your learning?

Too many graphs and pictures in lecture. Yes, I see were too many and sometimes seemed irrelevant

What suggestions do you have for improving the class?

Nothing.

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

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rev. 10/24/96

Instructional Assessment System

ASTR 150 AC
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Teaching Assistant
Winter 2008

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	25	40	44	16				4.3	4.2
2. The content of the quiz section was:	25	40	32	24	4			4.2	4.1
3. The quiz section instr's (QSI's) contribution to the course was:	25	64	28	8				4.7	4.6
4. The QSI's effectiveness in teaching the subj. matter was:	25	56	28	16				4.6	4.5
COMBINED ITEMS 1-4	100	50	33	16	1			4.5	4.4
									Relative Rank
5. Explanations by the QSI were:	25	56	36	8				4.6	4
6. QSI's use of examples and illustrations was:	25	48	44	8				4.5	8
7. Quality of questions or problems raised by QSI was:	25	28	52	20				4.1	16
8. QSI's enthusiasm was:	25	56	40	4				4.6	15
9. Student confidence in QSI's knowledge was:	25	60	36	4				4.7	10
10. Encouragement given students to express themselves was:	25	56	28	16				4.6	6
11. Answers to student questions were:	25	52	40	8				4.5	3
12. Interest level of quiz sections was:	25	36	48	16				4.2	7
13. QSI's openness to student views was:	25	52	40	8				4.5	13
14. QSI's ability to deal with student difficulties was:	23	52	48					4.5	2
15. Availability of extra help when needed was:	25	56	40	4				4.6	5
16. Use of quiz section time was:	25	40	48	12				4.3	12
17. QSI's interest in whether students learned was:	25	60	20	20				4.7	1
18. Amount you learned in the quiz sections was:	25	36	44	20				4.2	14
19. Relevance and usefulness of quiz section content were:	25	48	32	16	4			4.4	11
20. Coordination between lectures and quiz sections was:	25	36	44	16	4			4.2	17
21. Reasonableness of assigned work for quiz section was:	25	36	44	16	4			4.2	18
22. Clarity of student responsibilities and requirements was:	25	48	44	8				4.5	9

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	Much Lower (2)	(1)	MEDIAN
23. Do you expect your grade in this course to be:	25	16	28	20	32	4			5.2
24. The intellectual challenge presented was:	25	8	24	16	24	20	4	4	4.4
25. The amount of effort you put into this course was:	25	8	32	12	44	4			4.7
26. The amount of effort to succeed in this course was:	25		36	20	20	24			4.8
27. Your involvement in course (assignments, attendance, etc.) was:	25	8	36	16	36	4			5.1

28. On average, how many hours per week have you spent on this course?

Percent	
	Under 2
4	2-3
20	4-5
40	6-7
28	8-9
8	10-11
	12-13
	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 25
Class median: 6.8
Hours per credit: 1.36

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent	
4	Under 2
12	2-3
44	4-5
12	6-7
28	8-9
	10-11
	12-13
	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 25
Class median: 5.0
Hours per credit: 1.01

30. What grade do you expect in this course?

Percent	
12	A (3.9-4.0)
36	A- (3.5-3.8)
40	B+ (3.2-3.4)
4	B (2.9-3.1)
4	B- (2.5-2.8)
4	C+ (2.2-2.4)
	C (1.9-2.1)
	C- (1.5-2.1)
	D+ (1.2-1.4)
	D (0.9-1.1)
	D- (0.7-0.8)
	E (0.0)
	Pass
	Credit
	No Credit

Respondents: 25
Class median: 3.4

31. In regard to your academic program, is this course best described as:

Percent	
4	In your major
28	A distribution requirement
44	An elective
	In your minor
8	A program requirement
16	Other

Challenge and Engagement Index

CEI = 2 •• (decile rank)

1. *Percentages are based on the number of students who rated each item.*

Batch UW 343-001686

WI08:01421
SURVEY ID

Respondents: 25
Enrollment: 26
Classes: 1

F
Form Type

Mailbox: 351580
ChairCopy? Yes
printed: 4/18/2008

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil Rosenfield Course Planets 150 Section AC Date 3/10/08

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

Phil always did a great job in making the sections very relevant and important to the information from class. However Phil was better organized and more clear than the Prof. so he was able to explain complicated issues, ~~with ease~~ in a way everyone would understand.

What aspects of this class contributed most to your learning?

His mini-lectures! I do believe Phil was one of the best prepared T.A.'s I have ever had. He came to class everyday with a plan.

What aspects of this class detracted from your learning?

NONE!

What suggestions do you have for improving the class?

None! He should keep doing exactly what he was doing and he will make a great prof. one day!

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

Instructional Assessment System

ASTR 101 AB
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Teaching Assistant
Spring 2008

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	20	35	50	15				4.2	4.3
2. The content of the quiz section was:	19	32	47	16	5			4.1	4.2
3. The quiz section instr's (QSI's) contribution to the course was:	19	47	42	11				4.4	4.5
4. The QSI's effectiveness in teaching the subj. matter was:	20	35	45	20				4.2	4.3
COMBINED ITEMS 1-4	78	37	46	15	1			4.2	4.3
									Relative Rank
5. Explanations by the QSI were:	19	42	32	26				4.3	13
6. QSI's use of examples and illustrations was:	19	42	32	26				4.3	12
7. Quality of questions or problems raised by QSI was:	19	53	26	21				4.6	1
8. QSI's enthusiasm was:	18	61	33	6				4.7	6
9. Student confidence in QSI's knowledge was:	19	63	32	5				4.7	3
10. Encouragement given students to express themselves was:	18	50	28	22				4.5	4
11. Answers to student questions were:	18	44	33	22				4.3	7
12. Interest level of quiz sections was:	19	26	42	21	5		5	3.9	9
13. QSI's openness to student views was:	19	47	47	5				4.4	10
14. QSI's ability to deal with student difficulties was:	19	42	21	37				4.1	14
15. Availability of extra help when needed was:	20	45	30	25				4.3	11
16. Use of quiz section time was:	19	21	63	11	5			4.0	15
17. QSI's interest in whether students learned was:	18	44	39	17				4.4	8
18. Amount you learned in the quiz sections was:	19	21	32	42	5			3.6	18
19. Relevance and usefulness of quiz section content were:	19	32	37	32				4.0	17
20. Coordination between lectures and quiz sections was:	19	26	53	21				4.1	16
21. Reasonableness of assigned work for quiz section was:	19	53	21	26				4.6	2
22. Clarity of student responsibilities and requirements was:	19	47	32	21				4.4	5

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	Much Lower (2)	(1)	
23. Do you expect your grade in this course to be:	18	6	22	22	39	6	6		4.5
24. The intellectual challenge presented was:	18	6	17	39	33	6			4.8
25. The amount of effort you put into this course was:	18		28	22	28	11	11		4.5
26. The amount of effort to succeed in this course was:	17		18	47	29	6			4.8
27. Your involvement in course (assignments, attendance, etc.) was:	19	16	16	26	21	16	5		4.8

28. On average, how many hours per week have you spent on this course?

Percent	
	Under 2
5	2-3
32	4-5
26	6-7
16	8-9
11	10-11
5	12-13
	14-15
5	16-17
	18-19
	20-21
	22 or more

Respondents: 19
Class median: 6.5
Hours per credit: 1.30

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent	
10	Under 2
20	2-3
25	4-5
20	6-7
10	8-9
5	10-11
5	12-13
	14-15
5	16-17
	18-19
	20-21
	22 or more

Respondents: 20
Class median: 5.1
Hours per credit: 1.02

30. What grade do you expect in this course?

Percent	
	A (3.9-4.0)
42	A- (3.5-3.8)
26	B+ (3.2-3.4)
11	B (2.9-3.1)
16	B- (2.5-2.8)
	C+ (2.2-2.4)
5	C (1.9-2.1)
	C- (1.5-2.1)
	D+ (1.2-1.4)
	D (0.9-1.1)
	D- (0.7-0.8)
	E (0.0)
	Pass
	Credit
	No Credit

Respondents: 19
Class median: 3.4

31. In regard to your academic program, is this course best described as:

Percent	
5	In your major
21	A distribution requirement
42	An elective
	In your minor
5	A program requirement
26	Other

Challenge and Engagement Index

CEI = 2 •• (decile rank)

1. *Percentages are based on the number of students who rated each item.*

Batch UW 390-002646

SP08:01406
SURVEY ID

Respondents: **20**
Enrollment: **25**
Classes: **1**

F
Form Type

Mailbox: **351580**
ChairCopy? **Yes**
printed: 7/17/2008

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil Rosenfeld Course Astr. 101 Section AB Date 5-27-08

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

The topics were always interesting, and you usually throw in more than you should sometimes and that stuff really gets me thinking.

What aspects of this class contributed most to your learning?

The discussions were always on difficult and/or important topics from the book, and that really helped me grasp the material. Also, you seem to be extremely knowledgeable about Astronomy, and that helped as well. Oh, and your personality is a nice contrast from the professor's (humor too).

What aspects of this class detracted from your learning?

I kind of feel more could be done on the quiz days. Unless it's a difficult one, I think maybe we could have moved on to another topic, rather than just do the quiz.

What suggestions do you have for improving the class?

Other than taking less time on the answers to the quizzes, unless we're having trouble understanding it, is really my only complaint. Everything else was great.

Well, I know the quizzes are randomly on Tuesday or Thursday, but we had too many quizzes on Tuesday.

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

Instructional Assessment System

ASTR 101 AD
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Teaching Assistant
Spring 2008

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	19	26	58	11	5			4.1	4.3
2. The content of the quiz section was:	19	26	42	32				3.9	4.2
3. The quiz section instr's (QSI's) contribution to the course was:	19	47	53					4.5	4.6
4. The QSI's effectiveness in teaching the subj. matter was:	19	42	47	11				4.3	4.5
COMBINED ITEMS 1-4	76	36	50	13	1			4.2	4.4
									Relative Rank
5. Explanations by the QSI were:	19	37	47	16				4.2	12
6. QSI's use of examples and illustrations was:	19	53	26	21				4.6	1
7. Quality of questions or problems raised by QSI was:	19	37	47	16				4.2	9
8. QSI's enthusiasm was:	19	53	32	16				4.6	11
9. Student confidence in QSI's knowledge was:	19	58	37		5			4.6	7
10. Encouragement given students to express themselves was:	19	53	16	21	11			4.6	6
11. Answers to student questions were:	19	37	53	11				4.3	10
12. Interest level of quiz sections was:	19	32	26	37		5		3.8	14
13. QSI's openness to student views was:	19	53	42	5				4.6	8
14. QSI's ability to deal with student difficulties was:	19	47	37	16				4.4	2
15. Availability of extra help when needed was:	19	53	32	16				4.6	5
16. Use of quiz section time was:	19	32	42	16	11			4.1	16
17. QSI's interest in whether students learned was:	19	53	37	11				4.6	3
18. Amount you learned in the quiz sections was:	19	26	42	26		5		3.9	18
19. Relevance and usefulness of quiz section content were:	19	53	26	11	11			4.6	4
20. Coordination between lectures and quiz sections was:	19	37	42	16	5			4.2	15
21. Reasonableness of assigned work for quiz section was:	19	37	53	11				4.3	13
22. Clarity of student responsibilities and requirements was:	19	32	58	5	5			4.2	17

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	Much Lower (2)	(1)	MEDIAN
23. Do you expect your grade in this course to be:	19		21	21	42	5	5	5	4.3
24. The intellectual challenge presented was:	19		32	37	21	11			5.0
25. The amount of effort you put into this course was:	19		37	32	21	11			5.1
26. The amount of effort to succeed in this course was:	19		47	32	16	5			5.4
27. Your involvement in course (assignments, attendance, etc.) was:	19	11	26	26	32	5			5.0

28. On average, how many hours per week have you spent on this course?

Percent
- 5 Under 2
- 2-3
- 21 4-5
- 32 6-7
- 16 8-9
- 11 10-11
- 16 12-13
- 14-15
- 16-17
- 18-19
- 20-21
- 22 or more

Respondents: 19
Class median: 7.0
Hours per credit: 1.40

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent
- 11 Under 2
- 2-3
- 37 4-5
- 21 6-7
- 11 8-9
- 16 10-11
- 5 12-13
- 14-15
- 16-17
- 18-19
- 20-21
- 22 or more

Respondents: 19
Class median: 5.8
Hours per credit: 1.15

30. What grade do you expect in this course?

Percent
- A (3.9-4.0)
- 22 A- (3.5-3.8)
- 44 B+ (3.2-3.4)
- 17 B (2.9-3.1)
- 11 B- (2.5-2.8)
- 6 C+ (2.2-2.4)
- C (1.9-2.1)
- C- (1.5-2.1)
- D+ (1.2-1.4)
- D (0.9-1.1)
- D- (0.7-0.8)
- E (0.0)
- Pass
- Credit
- No Credit

Respondents: 18
Class median: 3.3

31. In regard to your academic program, is this course best described as:

Percent
- 6 In your major
- 29 A distribution requirement
- 24 An elective
- In your minor
- 24 A program requirement
- 18 Other

Challenge and Engagement Index

CEI = 4 •••• (decile rank)

1. Percentages are based on the number of students who rated each item.

Batch UW 382-000192

SP08:01408
SURVEY ID

Respondents: **19**
Enrollment: **25**
Classes: **1**

F
Form Type

Mailbox: **351580**
ChairCopy? **Yes**
printed: 7/17/2008

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil Rosenfeld Course Astr 101 Section AD Date 5/27/08

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

Great powerpoints, explanations, + examples. In depth, extra explanations were helpful.

What aspects of this class contributed most to your learning?

Good enthusiasm. Know that you know your stuff. You are good at explaining difficult concepts. Extra clarifications were helpful

What aspects of this class detracted from your learning?

N/A

What suggestions do you have for improving the class?

N/A keep doing what you are doing

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

nana:\ias\document\comments.doc
rev. 10/24/96

Instructional Assessment System

ASTR 150 AF
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Pre-Doctoral Associate
Autumn 2008

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	18	61	33	6				4.7	4.6
2. The content of the quiz section was:	18	56	17	28				4.6	4.6
3. The quiz section instr's (QSI's) contribution to the course was:	18	72	28					4.8	4.8
4. The QSI's effectiveness in teaching the subj. matter was:	18	50	50					4.5	4.5
COMBINED ITEMS 1-4	72	60	32	8				4.7	4.6
									Relative Rank
5. Explanations by the QSI were:	18	50	39	11				4.5	18
6. QSI's use of examples and illustrations was:	18	50	39	11				4.5	16
7. Quality of questions or problems raised by QSI was:	18	44	44	11				4.4	17
8. QSI's enthusiasm was:	18	72	22	6				4.8	15
9. Student confidence in QSI's knowledge was:	18	67	22	11				4.8	14
10. Encouragement given students to express themselves was:	18	72	22	6				4.8	11
11. Answers to student questions were:	18	72	17	11				4.8	3
12. Interest level of quiz sections was:	18	67	22	11				4.8	1
13. QSI's openness to student views was:	18	89	6	6				4.9	7
14. QSI's ability to deal with student difficulties was:	18	78	17	6				4.9	2
15. Availability of extra help when needed was:	18	72	28					4.8	8
16. Use of quiz section time was:	18	61	33	6				4.7	10
17. QSI's interest in whether students learned was:	18	67	33					4.8	12
18. Amount you learned in the quiz sections was:	18	61	33	6				4.7	5
19. Relevance and usefulness of quiz section content were:	18	67	22	11				4.8	13
20. Coordination between lectures and quiz sections was:	18	72	17	11				4.8	9
21. Reasonableness of assigned work for quiz section was:	18	72	22	6				4.8	4
22. Clarity of student responsibilities and requirements was:	18	67	22	11				4.8	6

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	Much Lower (2)	(1)	MEDIAN
23. Do you expect your grade in this course to be:	17	12	12	41	29		6		4.9
24. The intellectual challenge presented was:	17		12	53	29			6	4.8
25. The amount of effort you put into this course was:	17	6		29	59		6		4.3
26. The amount of effort to succeed in this course was:	17	6		41	47	6			4.4
27. Your involvement in course (assignments, attendance, etc.) was:	17	12	24	41	24				5.1

28. On average, how many hours per week have you spent on this course?

Percent	
	Under 2
24	2-3
18	4-5
29	6-7
6	8-9
18	10-11
	12-13
	14-15
6	16-17
	18-19
	20-21
	22 or more

Respondents: 17
Class median: 6.1
Hours per credit: 1.22

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent	
	Under 2
24	2-3
41	4-5
12	6-7
12	8-9
6	10-11
	12-13
6	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 17
Class median: 4.8
Hours per credit: 0.96

30. What grade do you expect in this course?

Percent	
	A (3.9-4.0)
41	A- (3.5-3.8)
18	B+ (3.2-3.4)
12	B (2.9-3.1)
18	B- (2.5-2.8)
6	C+ (2.2-2.4)
	C (1.9-2.1)
	C- (1.5-2.1)
	D+ (1.2-1.4)
	D (0.9-1.1)
	D- (0.7-0.8)
	E (0.0)
	Pass
6	Credit
	No Credit

Respondents: 17
Class median: 3.4

31. In regard to your academic program, is this course best described as:

Percent	
	In your major
18	A distribution requirement
65	An elective
	In your minor
	A program requirement
18	Other

Challenge and Engagement Index

CEI = 1 • (decile rank)

1. *Percentages are based on the number of students who rated each item.*

Batch UW 440-002068

AU08:01285
SURVEY ID

Respondents: **18**
Enrollment: **25**
Classes: **1**

F
Form Type

Mailbox: **351580**
ChairCopy? **Yes**
printed: 1/21/2009

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil R Course Astro 10 Section AE Date 12/1/98

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? Yes No Why or why not?

Cool Discussion. Lots of Info. Very Interesting → kept me focused and engaged

What aspects of this class contributed most to your learning?

Phil's personality Always open, down to earth and made all of Astro fun and easy to learn.

What aspects of this class detracted from your learning?

Nothing Really.

What suggestions do you have for improving the class?

Sometimes I felt like there was too much time spent on one topic

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

Instructional Assessment System

ASTR 150 AI
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Pre-Doctoral Associate
Autumn 2008

Department Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The quiz section as a whole was:	24	62	29	4	4			4.7	4.5
2. The content of the quiz section was:	24	50	33	12	4			4.5	4.3
3. The quiz section instr's (QSI's) contribution to the course was:	24	79	17		4			4.9	4.7
4. The QSI's effectiveness in teaching the subj. matter was:	24	67	25	4		4		4.8	4.6
COMBINED ITEMS 1-4	96	65	26	5	3	1		4.7	4.5
									Relative Rank
5. Explanations by the QSI were:	24	54	33	8		4		4.6	17
6. QSI's use of examples and illustrations was:	24	54	29	17				4.6	16
7. Quality of questions or problems raised by QSI was:	24	62	21	8	8			4.7	4
8. QSI's enthusiasm was:	24	88	8	4				4.9	14
9. Student confidence in QSI's knowledge was:	24	92	4		4			5.0	8
10. Encouragement given students to express themselves was:	24	67	21	12				4.8	11
11. Answers to student questions were:	24	67	29	4				4.8	6
12. Interest level of quiz sections was:	24	62	29	4	4			4.7	1
13. QSI's openness to student views was:	24	79	12	8				4.9	10
14. QSI's ability to deal with student difficulties was:	24	75	21	4				4.8	2
15. Availability of extra help when needed was:	24	71	12	17				4.8	7
16. Use of quiz section time was:	24	54	42	4				4.6	12
17. QSI's interest in whether students learned was:	24	79	12	8				4.9	3
18. Amount you learned in the quiz sections was:	24	46	42	8	4			4.4	18
19. Relevance and usefulness of quiz section content were:	24	62	25	4	8			4.7	13
20. Coordination between lectures and quiz sections was:	24	58	25	8	8			4.6	15
21. Reasonableness of assigned work for quiz section was:	23	74	17	9				4.8	5
22. Clarity of student responsibilities and requirements was:	24	62	38					4.7	9

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	Much Lower (2)	(1)	
23. Do you expect your grade in this course to be:	24	12	38	12	25	12			5.5
24. The intellectual challenge presented was:	24	4	33	29	29	4			5.1
25. The amount of effort you put into this course was:	24		29	33	29	8			4.9
26. The amount of effort to succeed in this course was:	24	8	42	25	17	8			5.5
27. Your involvement in course (assignments, attendance, etc.) was:	23	13	35	26	26				5.4

28. On average, how many hours per week have you spent on this course?

Percent	
10	Under 2
10	2-3
29	4-5
24	6-7
19	8-9
5	10-11
5	12-13
	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 21
Class median: 5.7
Hours per credit: 1.14

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent	
8	Under 2
21	2-3
29	4-5
25	6-7
12	8-9
	10-11
4	12-13
	14-15
	16-17
	18-19
	20-21
	22 or more

Respondents: 24
Class median: 4.9
Hours per credit: 0.99

30. What grade do you expect in this course?

Percent	
13	A (3.9-4.0)
48	A- (3.5-3.8)
26	B+ (3.2-3.4)
9	B (2.9-3.1)
	B- (2.5-2.8)
	C+ (2.2-2.4)
4	C (1.9-2.1)
	C- (1.5-2.1)
	D+ (1.2-1.4)
	D (0.9-1.1)
	D- (0.7-0.8)
	E (0.0)
	Pass
	Credit
	No Credit

Respondents: 23
Class median: 3.5

31. In regard to your academic program, is this course best described as:

Percent	
	In your major
25	A distribution requirement
71	An elective
	In your minor
4	A program requirement
	Other

Challenge and Engagement Index

CEI = 4 •••• (decile rank)

1. *Percentages are based on the number of students who rated each item.*

Batch UW 453-000731

AU08:01288
SURVEY ID

Respondents: **24**
Enrollment: **26**
Classes: **1**

F
Form Type

Mailbox: **351580**
ChairCopy? **Yes**
printed: 1/21/2009

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil Rosenfeild Course ~~Astronomy~~ 150 Section AI Date 12/01/98

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

Because I didn't know about many of the objects we studied, and it boggles the mind to think about objects that are that big or far away from us.

What aspects of this class contributed most to your learning?

Phil, and his explinations, going to different explinations when some one doesn't understand and asking questions for us when we don't want to say anything.

What aspects of this class detracted from your learning?

Nothing that I can think of

What suggestions do you have for improving the class?

Drawings?

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

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rev. 10/24/96

Instructional Assessment System

ASTR 192 A
ASTRONOMY
ARTS & SCIENCES
University of Washington

Philip A Rosenfield
Instructor
Autumn 2009

Instructor Copy

STUDENT EVALUATION OF INSTRUCTION

E=Excellent; VG=Very Good; G=Good; F=Fair; P=Poor; VP=Very Poor

	Respondents	PERCENTAGES [1] E (5)	VG (4)	G (3)	F (2)	P (1)	VP (0)	MEDIAN	Adjusted Median
1. The course as a whole was:	11	91	9					5.0	4.3
2. The course content was:	11	73	27					4.8	4.2
3. The instructor's contribution to the course was:	11	82	9		9			4.9	4.4
4. The instructor's effectiveness in teaching the subj. matter was:	11	73	18		9			4.8	4.2
COMBINED ITEMS 1-4	44	80	16		5			4.9	4.3
									Relative Rank
5. Course organization was:	11	64	27		9			4.7	9
6. Clarity of instructor's voice was:	11	91				9		5.0	13
7. Explanations by instructor were:	11	64	27	9				4.7	14
8. Instr's ability to present alternative explan. when needed was:	11	73	9	9	9			4.8	12
9. Instructor's use of examples and illustrations was:	11	64	27	9				4.7	16
10. Quality of questions or problems raised by instructor was:	11	55	36	9				4.6	17
11. Student confidence in instructor's knowledge was:	11	91	9					5.0	15
12. Instructor's enthusiasm was:	11	82	18					4.9	18
13. Encouragement given students to express themselves was:	11	100						5.0	10
14. Answers to student questions were:	11	91		9				5.0	4
15. Availability of extra help when needed was:	11	91		9				5.0	6
16. Use of class time was:	11	91		9				5.0	3
17. Instructor's interest in whether students learned was:	11	100						5.0	8
18. Amount you learned in the course was:	11	64	36					4.7	11
19. Relevance and usefulness of course content were:	11	91	9					5.0	7
20. Evaluative and grading techniques (tests, papers, etc.) were:	11	91	9					5.0	2
21. Reasonableness of assigned work was:	11	100						5.0	1
22. Clarity of student responsibilities and requirements was:	11	82	18					4.9	5

Relative to other college courses you have taken:		Much Higher (7)	(6)	(5)	Average (4)	(3)	Much Lower (2)	(1)	MEDIAN
23. Do you expect your grade in this course to be:	9	44	56						6.4
24. The intellectual challenge presented was:	9	33	56			11			6.2
25. The amount of effort you put into this course was:	9	33	22	22	22				5.8
26. The amount of effort to succeed in this course was:	9	33	22	22	22				5.8
27. Your involvement in course (assignments, attendance, etc.) was:	9	44	11	22	22				6.0

28. On average, how many hours per week have you spent on this course?

Percent
- 11 Under 2
- 2-3
- 33 4-5
- 33 6-7
- 8-9
- 10-11
- 11 12-13
- 11 14-15
- 16-17
- 18-19
- 20-21
- 22 or more

Respondents: 9
Class median: 5.8
Hours per credit: 1.94

29. From the total average hours spent, how many do you consider were valuable in advancing your education?

Percent
- 11 Under 2
- 2-3
- 56 4-5
- 11 6-7
- 8-9
- 10-11
- 11 12-13
- 11 14-15
- 16-17
- 18-19
- 20-21
- 22 or more

Respondents: 9
Class median: 4.9
Hours per credit: 1.63

30. What grade do you expect in this course?

Percent
- 44 A (3.9-4.0)
- 33 A- (3.5-3.8)
- 11 B+ (3.2-3.4)
- 11 B (2.9-3.1)
- B- (2.5-2.8)
- C+ (2.2-2.4)
- C (1.9-2.1)
- C- (1.5-2.1)
- D+ (1.2-1.4)
- D (0.9-1.1)
- D- (0.7-0.8)
- E (0.0)
- Pass
- Credit
- No Credit

Respondents: 9
Class median: 3.7

31. In regard to your academic program, is this course best described as:

Percent
- 78 In your major
- A distribution requirement
- An elective
- 11 In your minor
- A program requirement
- 11 Other

Challenge and Engagement Index

CEI = 7 •••••••• (decile rank)

1. *Percentages are based on the number of students who rated each item.*

Batch UW 598-001222

AU09:01150
SURVEY ID

Respondents: 11
Enrollment: 12
Classes: 1

A
Form Type

Mailbox: 351580
ChairCopy? Yes
printed: 12/22/2009

Instructional Assessment System

rev. 10/96

Student Comments

Instructor Phil Rosenfield Course ASTR 192 Section A Date 12/7/09

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

I got a very different experience with this course, getting a look into the actual industry instead of problem-set classes for background knowledge. I learned things I had no experience with but will undoubtedly use in the future.

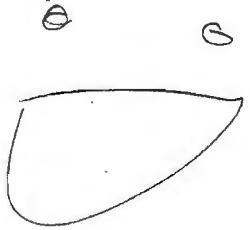
What aspects of this class contributed most to your learning? Phil then met out of class ions: helped more anyone I've met in school! Meeting working professionals in the industry who have great advice on how to succeed in the sciences. Lab tours and faculty interviews gave great perspective on the options in sciences. Working with programming was also greatly beneficial?

What aspects of this class detracted from your learning?

Nothing! Discussion board maybe isn't very useful, but it didn't detract.

What suggestions do you have for improving the class?

None! I love Pre-Map!!!



Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

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rev. 10/24/96

Student Comments

Instructor PHILIP ROSENFIED Course ASTR 192 Section A Date 7DEC 09

Your handwritten comments in response to the following questions will be returned to the instructor *after grades are turned in.* We encourage you to respond to all questions as thoughtfully and constructively as possible. Your comments will be used by the instructor to improve the course. However, you are not required to answer any questions.

Was this class intellectually stimulating? Did it stretch your thinking? (Yes) No Why or why not?

Yes - I think the writing assignments helped with that - even if I did not like them
- the python (& IDL) assignments were a good first step into python (& IDL)

What aspects of this class contributed most to your learning?

learning some python was helpful for research

even though some of the writings were hard to do - I know it is beneficial for me to do and I saw the good that comes out of it (the reason behind it)

What aspects of this class detracted from your learning?

not that I can think of

- class is a good environment

What suggestions do you have for improving the class?

I think that this class was overall really good. I do wish that we had more time with research.

Please use the back of this sheet for any additional comments or to respond to additional questions. Thank you!

nana:\ias\document\comments.doc
rev. 10/24/96

3. Sample Teaching Materials

Annotated sample homework assignment as lecturer of Introductory Astronomy at SDSU

Astronomy 101: Principles of Astronomy **Summer 2007**

Homework 2: Due 10:00 am Thursday, May 31

12 points possible

To get the most out of the homework:
1. Do the work in the order I have presented it.
2. On scrap paper, try to answer the questions without looking back at the text, when you rewrite the answers to turn in, go back to the text/notes to make sure you haven't left anything out.
3. Try to complete as much of the homework as you can before my office hour before the homework is due (pretend the due date is my office hour before the deadline).

General metacognitive strategies for getting the most out of homework

From Chapter 2:

1. Watch the Sun set before Thursday. Notice where the moon is (or isn't). What phase is the moon in? Do this once more in the next 5 days, does the moon rise before or after the sun sets?
[*not graded*]

Not graded: Attempting to access internal motivation to learn

2. Look at questions 4-7 on page 51. Pretend I was about to give you a test consisting solely of those questions. If you can't answer them as well as you would like to be able to on an exam, read section 2.1. If you can answer some, read the subsections of 2.1 where they discuss the ones you have trouble with.
(For "A" understanding, I suggest answering those questions out loud to someone else or taking the time to actually write the answers down on paper)
Answer questions 28 and 29 (*don't forget to explain your reasoning)*
[2 points, 1 pt each]

Specific metacognitive strategies for getting the most out of these problems

3. Read section 2.2, make sure you fully understand and can explain each figure (except Fig 2.14), then answer questions 10, 11, 24, and 32
[4 points, 1 pt each]

4. Instead of reading all of section 2.3, just focus on the subsections about eclipses. To fully understand the phases of the Moon, you should be able to recreate Fig 2.19 without a textbook near you. Answer questions 14 and 26
[2 points, 1 pt each]

Explicitly stating learning objectives.

5. Read section 2.4 carefully, answer questions 22 and 36
[2 points, 1 pt each]

6. Do problem 39
[2 points]

Homework Policy

Collegiate quality: All work must be neat and easy to read, well organized, and demonstrate mastery of the subject. Submitted work must be on clean white (or lined) paper without torn edges, must be stapled, and preferably, all text typed. If you don't type the text, be sure you write as neatly as possible.

All answers and other writing should be self-contained: Imagine that a friend is reading your work and ask yourself whether the friend would understand exactly what you are trying to say.

Other Notes: Clearly show your work. Word problems should have word answers.
Express numbers in a way that is meaningful to most people, for example 168 hours should be expressed as 1 week. And 9,964,543.2353 years should be expressed as "nearly ten million years" or 10^7 yr.
Messy work won't be graded.

(strong focus on time management as this introductory course met during the summer, 3 hours a day, 4 days a week.)

Example updates to the SDSU Astronomy Lab. Manual as Lead Teaching Associate

From my experiences as a TA, the feedback and help of my fellow TAs, I rewrote the SDSU Astronomy 109 Lab Manual. I transferred or updated existing labs to LaTeX and incorporated many edits and changes that put the content of the lesson at the forefront and increased active learning activities. Below is an example of part of a lab exercise that I rewrote.

I added derivations of stellar luminosity and distance modulus, sections to explicitly understand the HR diagram, many open ended questions and extended the exercise by using their new knowledge to analyze the HR diagrams of stellar clusters.

Original (complete) Exercise

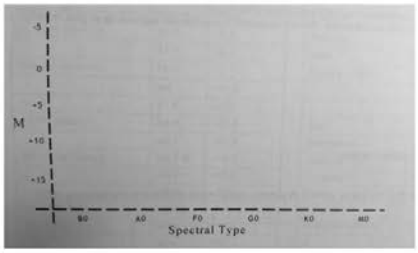
The Hertzsprung-Russell Diagram (the H-R Diagram) arose from roughly concurrent work done by two astronomers, Hertzsprung and Russell. They worked independently, comparing the absolute magnitudes and spectral classes of stars with well-determined distances. In other words, they used nearby stars that are close enough for their distances to be determined by trigonometric parallax. By comparing the magnitude of the star with its spectral class, it was discovered that there exists a relationship between the luminosities (luminosity is related to magnitude) and the surface temperatures (the surface temperature of a star is indicated either by its color or its spectral type) of main sequence stars! This was of critical importance because it provided a way to determine much greater distances than was possible with the trigonometric parallax method. Using an H-R diagram, astronomers can easily determine the distance to stars with the knowledge of only ONE PARAMETER: the spectral type (the apparent magnitude is always known).

In this lab you will construct your own H-R diagram using the data supplied. Using your diagram you will then determine the distances to four stars about which you only know the spectral type and apparent magnitude. This is precisely how professional astronomers determine distances to stars. Remember that the absolute magnitude of a star is defined as the *apparent magnitude of a star if it were only 10 parsecs away.*

Most in-class time was spent plotting 68 stars

Instructions

Construct a graph of absolute stellar magnitude vs. spectral type using the list of stars provided. Divide the spectral classifications into decimal units (run from B0 through B1, B2, etc. to B9, A0, A1, and so on), and place the numerically lower magnitudes above the higher magnitudes. Make the graph as large as possible on a separate sheet of graph paper. Here's an example, showing how to label your graph:



First, plot all the stars on the list which are members of luminosity class V in pencil (their spectral type is followed by a Roman numeral V). Luminosity class V denotes a main-sequence star. Note that many stars are in binary or multiple systems. Plot the #2 and #3 components if they are luminosity class V. Now draw a *thin, smooth* curve though the distribution of points. You have just created your own main sequence curve of the H-R diagram.

Next, in colored pencil, plot the other stars on the lists (including components 2 and 3), placing next to their data points the luminosity class (I, II, III, IV, or wd). Assume white dwarfs (wd) are all of spectral type A5.

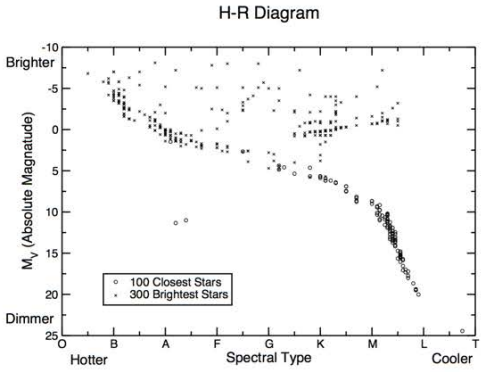
Questions

1) What do you notice about the distribution of Luminosity Class V Stars? Can you explain it?
2) Using your graph, what absolute visual magnitudes would you expect main sequence stars of types B0, A0, F0, G0, K0, and M0 to have?
3) What would you expect the absolute visual magnitude of the Sun (type G2 V) to have?
4) What general spectral type of star appears to be most numerous in the Solar Neighborhood?
5) What is the absolute magnitude of the KB V component of 61 Cygni?
6) Compare this to the K5 III component of Aldebaran. Which is brighter? Why?
7) Using the magnitude/distance relation $m_v - M_v = 5 (\log D) - 5$ where m_v is given, M_v is found from the graph, and D is in parsecs, calculate the distances to the following stars:

Several questions test graph reading, not astronomy content knowledge or its application.

Star	Spectral type	m_v	M_v	D
Cygni	B8 V	5.11		
Tauri	A7 V	4.22		
61 Virginis	G6 V	4.75		
22 Tauris	B9 V	5.75		

Sample Changes



Students receive a plot of 400 stars

12.2.1 Understanding the Diagram

Your first task is to understand the H-R Diagram. There are roughly 400 stars plotted. The vertical (y) axis represents the absolute magnitude. This is related to how much light is actually coming out of the star. To make astronomy more difficult, notice that $M_V = 25$ is dimmer than $M_V = -10$. This plot, and almost all HR diagrams have the y-axis inverted so we can see bright on top and dim on the bottom.

The horizontal (x) axis, is the spectral type of the star. This is directly related to how hot the surface of the star is, O is hottest, T is coolest, there are even more letters past T, but at some point you get something like a big Jupiter (no fusion in the core) and its no longer a star. Between each letter astronomers gave in and used numbers, 1-10. So halfway between O and B would be O5, and just before G would be F9. Basically, the H-R diagram is a plot of the amount of light leaving the star vs. how hot the star's surface is.

To test your understanding, answer these questions: Use hotter, colder, brighter, dimmer in your descriptions

1. What type of star would be in the bottom left corner of the plot?
2. What type of star would be in the upper left corner of the plot?
3. What type of star would be in the bottom right corner of the plot?
4. What type of star would be in the upper right corner of the plot?
5. Why do you think we don't see stars scattered everywhere on the diagram?

Now you should understand how to read the HR diagram, meaning ask some questions if it's not clear.

In-class time shifted from plotting to understanding the plot

$$L \propto R^2 T^4 \tag{12.2}$$

When the HR diagram was first published, astronomers realized there were giant and supergiant stars. How is it that a cool M star can be as bright as a hot O star? *Hint: it has nothing to do with distance, absolute magnitude took care of that. Reason this with equation 12.2.*

1. What general spectral type of star appears to be most numerous in the Solar Neighborhood? Describe this type of star dim, bright, hot, cold, large, small. Explain this as best you can. *Hint: it has to do with how long a star can "live"*
2. Why is there such a discrepancy between the nearest 100 and the 300 brightest?

Added open ended questions