Course Report AS5005 HT21

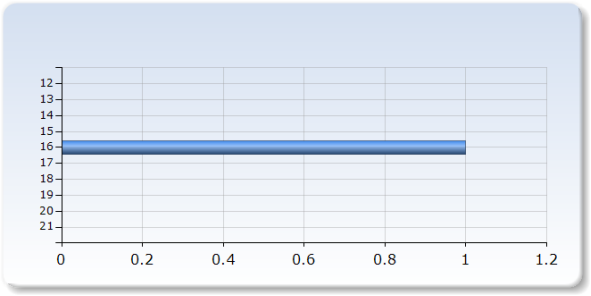
Respondents: 1
Answer Count: 1
Answer Frequency: 100.00%

. Teacher

Teacher
Angela Adamo

. Number of students who took the exam

Number of students who took the exam	Number of Responses
12	0 (0.0%)
13	0 (0.0%)
14	0 (0.0%)
15	0 (0.0%)
16	1 (100.0%)
17	0 (0.0%)
18	0 (0.0%)
19	0 (0.0%)
20	0 (0.0%)
21	0 (0.0%)
Total	1 (100.0%)



. Number of students who passed the course

Number of students who passed the course	Number of Responses
12	0 (0.0%)
13	0 (0.0%)
14	0 (0.0%)
15	0 (0.0%)
16	1 (100.0%)
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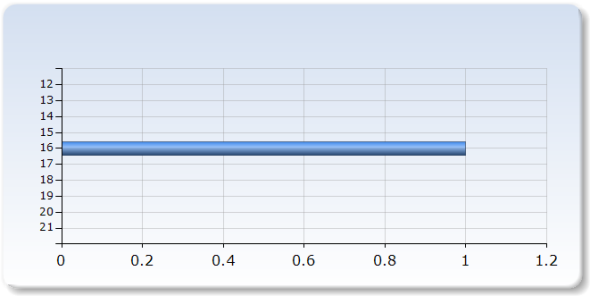

. Description of changes since the previous time the course was given.

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1. One of the major suggestions for improvement from last year regarded the feedback to the students. They would like to receive more feedback to assess their learning.
This year, both myself and the TA have given written feedback on each task the students submitted throughout the course. I often reminded the students that they can use the Athena option to check where their credit towards the final grade stood during the course. I give the students the possibility to reach out during two seminars (1 seminar the 5th and 1 the 6th week of the course) with questions regarding exercise solutions or concept that were not clear. Students could reach me both via zoom or in class. About half the students took advantage of these drop-in style sessions to come and ask me for help, clarification, etc. Overall, this strategy worked out well, 7 out of the 9 students (who answered the survey) replied 4 and 5 (on the scale from 1 to 5) that they received constructive feedback on their performances.

2. A difference of the last year, the course now includes two lectures on societal impact of astronomy.
These seminars have been motivated by the bachelor program evaluation received from the faculty. I divided them into two different topics. The first seminar consists of evaluating how astronomical research and development has helped the technological and societal advancement. The second seminar has focused more on controversies regarding the astronomical impact on society (e.g. light pollution, satellite constellation, and climate change affecting observations, high than average CO_2 footprint of astronomers due to supercomputing, and travel, constructions of large telescope in dark sites which are also area of cultural values to local populations). Overall, these seminars where well received by the students as suggested by all the comments left by the students! A suggestion for improvement is to make the seminars more into debates.

3. This year I tested a new learning activity (concept map) which the students worked on in the 3rd seminar.
To create the concept map the students were divided in 3 groups. Concept maps can be difficult to develop because it requires that the students have studied and actively learned the concepts they are supposed to synthesize in a map. Overall, 2 over the 3 groups performed very well. Feedback where given to all the groups with guidance on which concepts were not well developed or understood. It was a positive activity and it well deserve to be implemented in the course.

. What are the course's strong points according to the students (summary based on the numerical results as well as their free text answers)

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Multiple-choice questions [1(not at all)-5(completely)]:
Overall, 6 students felt almost or completely satisfied (4 and 5 in the grading scale) with the teaching method, the overall impression of the course, and with their own effort. Six out of the 9 students replied that it was almost or completed clear (4 and 5 in the grading scale) to them what it was expected to learn, that the course content and the teaching methods were relevant to the learning outcomes, that they were encouraged to reflect on their own learning, they were able to get support when need it. Seven (in some cases 8) out of the 9 students felt almost or completely satisfied (4 and 5 in the grading scale) with: 1. the seminars on societal impact of astronomy 2. the Athena platform in support of their study, 3. their own learning, 4. the examination tested their knowledge; 5. the course prerequisite were sufficient to follow the course; 6. They could understand what it was thought; 7. They have received constructive feedback; 8. The course material helped them to reach the learning outcome.9. they felt the course was well organized; 10. They have been able to find all the information to support their learning.

Free answers:
The topics covered are all very interesting. The course provides a very good overview of general knowledge of astrophysics. It was enjoyable and not too complicated to follow. A large amount of engaging activities that actively support learning and very good preparation for the exam, teachers always available for constructive discussions. The credit system towards the final grade is very good to encourage students to study and work during the course and takes out the pressure from the exam. The structure of the course and being introduced to astronomical concepts. The pre-reading helped a lot to follow the lecture. It shows how to use fundamental physics to solve astronomical problems.

. What are the course's weak points according to the students (summary based on the numerical results as well as their free text answers)

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The students provided suggestions for improvement.
1. Two to three students found the theory part of the lecture (with slides) too dense and would have appreciated more time to work independently on the exercises. I recognize that in some cases the lectures may be dense. It is unfortunately a problem with introductory courses that cover a large breath of topics. A possibility is to reduce the program from topics that will be taught in the following courses (e.g. cosmology, stellar structure), although this will risk that the course will reduce even more the content of astrophysical concepts and formulas (two other students said that they would actually have liked to have more derivations of astrophysics relations). So, it is tricky to find the right balance, but certainly it is a point that requires reflection and action for next year class. Regarding the lack of time to solve exercises, it is kind of meant to be like that. Exercises can be complex and it is impossible to solve them in 30 min. That is why we work together in class to start /setup the exercise but the student is meant to finish it on their own (solutions are made available immediately after the lecture). To monitor that the students actually work with the exercises started in class, they will have to solve similar exercises in the hand-in assignments which are graded to some extent and will be included in the final grade. The hand-in assignments are meant to monitor that the students are working with the material and information that is made to them available during the lecture.
2. One student suggested to give more credits to the hand-in exercise assignments because they require considerable amount of work. Indeed, working in solving exercises it is an important part of the course because more than 50% of the total credits of the final exam comes from solving exercises, so the student has to build up a considerable knowledge to actually successfully pass the exam. However, the hand-in can be solved in groups and with the help of the book and material made available during the lecture so it cannot have a large impact on the final grade, meant to reflect the student learning outcomes.
3. Two students found the final presentation day too long. I fully agree with this comment and I will recommend for the future that this final activity is scheduled proportionally to the number of students attending the course (45 min every 3 students).

. The teacher's analysis of the course

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Of the students who attended the course, only 60% provided feedback through the anonymous survey. The majority of the feedback were very positive and provide constructive suggestions for improvements.

Overall, the two new seminars on societal impact of astronomy have been a success. This year the method used to provide feedback has been working out and student are satisfied by the amount of feedback received, so it is good to continue in this way. Concept map can be difficult for students who are not constantly studying during the course, so it is important to remind them that they need to study after each lecture. My experience after this year experiment is that concept maps are a good tool for the students to evaluate their own knowledge and should be introduced more consistently in the course. A better evaluation of the course content should be done again and possibly reduce somewhat the number of topics covered to ensure that the students can follow in a more active way during the lecture.

. Conclusions as well as suggestions for improvements

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I have addressed these above.