Course Survey Essay Question Responses

16.010/020 Unified Engineering I & II

Other teaching and learning strategies used to deepen understanding and achieve the subject learning objectives.

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21	It would be really nice if notes could be published at the beginning of the semester and available through Copy Tech. That way, we'd all have all the notes in a nice, neat place, and it would make paper reference much easier.
23	The TAs and professor office hours are some of the best things about this course. It's nice to have such a huge support system for help.
43	The Computers sections is very rough. The material is taught to quickly and too much is expected of us. We are all supposed to be first time programers, but are not treated that way. The problems are very hard and take an exhorbent amount of time to complete and are often graded very stictly and harshly. Something must be done to correct this before the 2nd semmester.
63	TA Office Hours in the Unified Lounge are extremely effective.
65	Active Learning is effective for me
67	I loved the class! Its time consuming, and I am not sure if someone who is uncertain about course 16 should take it or not. The professors were awesome! Carl was awesome!!

Other sources of students' monitoring and evaluating their progress in achieving learning objectives.

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8	About quizzes and exams - only somewhat effective because of time limit and unclear wording (signals test and materials test, specifically).
26	na
43	Often times, the quizes are far too long to be completed correctly. I am constantly rushing through every single unified test just to get it done in 50 minutes. This leads to small errors that seriously effect my grade and cause the test to inaccurately reflect my knowledge of the subject material. The tests must be shortened for the 2nd semmester.
65	Concept Questions in class I find to be very helpful
67	The systems labs were a lot of fun!
68	I feel that the grades acquired in the Computers class (Ada programming) are not reflective at all of how much I learnt or how much work I put into the class. Partial credit was very little and the simplest mistakes attracted the heaviest penalties. May be, an oral evaluation might be better at evaluating how much I learnt.

The best parts of the subject.

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1	exciting subjects, like thermodynamics, and structures to some degree.
2	I really like the personalized feeling. I love the fact that the professors and TA's know (or at least try to

The best parts of the subject.

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remember) my name. I love the way students work together and help each other learn the material. It's particularly nice that the class is not graded on a curve, so people don't become overly competitive.

3 Thermo!

I like the close-knit atmosphere, the fact that the staff cares about our progress, and the hammock.

4 Thermodynamics, Materials and Structures, and Signals and Systems

7 The muddy cards and the in class PRS questions are great because it allows you to see right away if you've misunderstood a concept. The professors are also very good about designing concept questions to maximize utility of the PRS. Also, Professor Drela's recitations are terrific.

8 Labs and working together with everyone in the class.

9 Everyone instructing this course is always there if you need a question and most do an excellent job of presenting the material. The course is also always interesting, which is a tremendous plus. Subjects that I have traditionally found not very stimulating have been presented in a fashion that makes me want to understand them and even 'play' with them in my mind, which increases comprehension and appreciation. The class is well worth any problems experienced and simply makes me sure that aero/astro is the place for me at MIT.

10 I enjoy recitations as well as doing the problem sets. I find that I learn a lot through peer teaching while collaborating with people to work on the problem set.

11 the donuts.
waking up before most other MIT students have gone to bed

14 Learn lots of new material related to aerospace engineering

15 p-sets. and the cool material

16 Lectures and the reading assignments.

17 learn a lot in a short amount of time

18 muddy cards

20 thermo, materials, pset fun

21 The systems problems/labs are the most enjoyable part of the subject. I particularly liked the water rocket lab.

23 -TAs/Office hours
-Lectures
-Student enthusiasm/helping each other out

24 The professors and TA's are absolutely wonderful. The concept questions are great (especially at keeping the class semi-awake).They really help to explaina concept and clear up any questions that might remain. It's also really great when the Profs. ask the students to explain things. It helps sometimes to hear how other people think about a problem, and it helps me to understand the topic from a slightly different perspective. It also helps me to indentify any questions of my own I may have.

The donuts are also killer. Thanks again!

26 na

29 how working with others on p-sets is encourged, so we can learn from each other
labs help to solidify my understanding
professors are more fun and more interesting and light hearted than most professors in other subjects

The best parts of the subject.

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30 The labs are tedious, but fun, and I learn from them

31 Narrowing down a sigle best part of this subect would not do it any justice. It is by far the most rewarding educational experience of my life. Everything fits together well; the lectures are relevent and engaging, the psets are challenging but not impossible, the hands on experience in labs is vital and finally the suppoert is excellent.

32 The assistance of the TAs and the group learning enviroment.

33 I think that overall the quality of teaching has been very good. All of the people involved are obviously very commited to making sure all of the students gain a clear understanding of the material.

34 Seeing how the theory we learn is applied in the real world.

35 Actually learning about how aeronautical systems work.

36 The labs rock.

Also, the multiple segments makes the class interesting and varied, plus everyone is bound to excell at something...

37 I like how the subject is really organized and well-prepared. I can really tell that alot of effort goes into preparing for Unified lectures, recitations, labs, assignments, and quizzes.

38 Some of the system problems

39 i really like thermo and materials, as well as the first half of fluids

40 PRS questions

41 Definitely labs. But more emphasis should be put on them. The grading is sometimes good, but other times it is lax. That means students get away with poor answers that do not show critical thinking or full understanding. Essentially, labs are great, just make the assignments a bit more stringent so that it's not just mindless number-crunching

42 Breadth of subjects presented, general organization of course, lectures, graduate TA availability

43 Working with other students in the Unified lounge with TAs and Proffessors willing to render assistance. Most of the Professors lecture very well.

44 How much time and effort is put into the subject. Overall it is amazingly impressive.

45 Everything taught as the smaller parts of the whole picture. The PRS questions allow the professor to immediately correct the thinking of the students.

46 The amount of effort taken in to helping students learn the material, especially from other students themselves--this is, I think, one of the greatest strengths of Unified-the ability for the class to work together for a common goal.

47 The labs that work

48 Some of the professors have been outstanding. The graduate TA's have also been very helpful and always seem to be around and willing to help. The subjet website was very helpful. Other than the occasional delay in posting lecture notes, it was very helpful and was very reliable in finding pset solutions.

49 Learning how aero/astro engineering occurrs in the real world.

50 hands on activities, design problems

51 The subject matter is very interesting. I really enjoyed learning about the different disciplines in aerospace engineering and trying to get a feel for which ones I would like to pursue in more depth. Also,

The best parts of the subject.

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the teamwork aspects, on labs and collaboration on problem sets, was exciting.

52 The professors are very interested in the well being of all of their students. They encourage learning and are readily willing to explain difficult concepts. Many times they have stayed longer than they needed to in office hours to explain things to us that we did not understand. Also, the TA's were very helpful as well in explaining things during office hours.

53 dunno

54 The way everything fit together so that we could make sense of all the different things we were learning.

55 The shear amount of material we cover is the best part of this class. Also the Unified concepts where the disciplines come together.

56 I enjoy the system's labs a lot where we get hands-on experience. Even though at time it may seem like tedious work, I feel as if I am actually getting something done.

57 The labs were one of the best parts of the subject because we got to apply what we had learned and actually built or tested something. The wind tunnel lab was one of the best because I had the misconception that only someone with a UROP would get the opportunity to use the Wright Brothers Wind Tunnel.

58 The professors and TA's are all fantastic; they obviously make a big effort to teach us this stuff.

The Seaman's lab is my home on campus: it's a great place to work on p-sets with other students.

Howie and Carl rule.

59 The professors are very knowledgeable and are obviously very passionate about their respective fields; this passion is contagious. They also seem to genuinely care that we learn everything thoroughly. A smile comes to my face everytime I remember that they are some of the greatest minds in the world, and they have chosen to teach us. Also, the TA's, mainly Howie and Carl, are incredibly helpful. No matter how basic or complicated the question is, they give thorough, easy to understand explanations. I believe that the attention given to the individual Unified student from such great minds as these separates MIT's program from any other.

60 I think it is extremely well-organized. The instructors really do their best to "play by the rules" of MIT and be fair with the students grades and time. Other instructors are not so kind.

61 the building of the bottle rocket...

62 learning things I have never seen before

63 The most interesting parts of the subject occurred when the lecturer related our coursework to real-time situations in the aeronautics industry. Having guest speakers come in and speak to us contributed greatly to our interest in the subject.

64 Using the material learned in lecture on the problem sets and in the labs.

65 the labs where we designed and built things (ie water bottle rocket and hand-launched glider). Guest lecturers were good. Integrating different areas of the subjects in the systems problems was good to see.

66 Rapport and relationships developed between students, GTAs and profs - it's great. Especially on Mondays when profs and GTAs and TAs are (supposed to be) all in the lab working with us as colleagues.

67 I really enjoyed working with people. It was great to learn a whole variety of topics and not get bored by any one particular topic.

68 The organisation of unified is amazing. There's a clear effort by the department to give us a good

The best parts of the subject.

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education. The professors know their stuff and generally want to have us learn (whether they succeed in doing so or not). I hope other classes in the department will be as well organised.

73 The best part about this subject is the community is creates amoung the Unified Students.

Ways to improve the subject.

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2 Make it more clear where the A/B, A/A, B/C lines are in terms of overall average. Also make it more clear how it was determined how much "Joe B" would know on exams/problem sets/labs.

3 It's a good class, but there is just too much work. I spend so much time just doing unified stuff, sometimes at the expense of my other classes. I wouldn't mind this, because I like the subject, but I do have other things that I need to take care of as well.

I know this class is infamous for being a lot of work-- I knew that going in. I do the work that is given and I try my best not to complain, but when you are in the lounge from 11am till 2 am (yes, 15 hours) working a systems lab (and I'd been working on it all weekend, this wasn't a leave it to the last minute thing), you find it hard not to whine. So while it is the Unified tradition to have us work all the time, it would be nice if we had less work so that we wouldn't all become reclusive.

Oh, also, we should get a soda machine in the lounge.

4 The computer lectures could be catered more towards people who have never seen programming before. I know that the lecturer is trying to find a happy medium, but programming I think is a little more overwhelming the first time you are exposed to it more than any other subject matter taught at this institute because it really doesn't build off of anything learned in the past.

8 Lectures not starting at 9 am.

9 It would be nice if recitations focused more on actually applying the stuff we're taught. Too often a problem will be presented in recitation, but details of the solution will still be left out, with simple verbal explanations of "and then it follows what we showed in class." That's great, and it even works most of the time, but it'd still be nice sometimes to just see the theory used. On the flip side, it's good not to present too much of chugging in recitations so that we can work out minor kinks on our own to solidify problem solving methods for ourselves (sorry if that makes no sense).

10 I believe that the labs in the subject could be revamped to more clearly demonstrate the objectives we are supposed to learn while performing them. Also, the lectures could start an hour later. I believe that more people would come on time to class if lectures started at 10am.

15 slower pace maybe? and not having a pset, a systems problem, and quiz in one week, let alone one week

16 Three main things would improve the subject:
1. A better assessment of the time required to solve the CP problem set problems. All of them took far above the stipulated time of one hour.
2. A little more carefulness on the part of the professors to verify that problem set problem statements are error-free. Too many emails were submitted indicating errors in the problem statements once the problems were already online.
3. A better use of information technology in order to reduce time in performing tasks.

17 1. a course reader that is available to buy instead of taking so much time to print out everything
2. shorter computer problem sets

Ways to improve the subject.

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20	stevo not being a total pita
23	-Make recitations smaller -Make labs less busy work (I appreciate the fact that I can now use excel in my sleep but I don't feel as though I'm learning much from doing a zillion and one unit conversions and spreadsheet work)
24	Recitations seem to cover several lectures, sometimes four lectures per recitation. It seems like a lot of material to go over, and we generally are not able to cover it all. While the Profs. and TA's do a good job of covering the material in detail that is most confusing and/or relevent, instead of just glazing over everything, it might be nice to be able to review some of the other stuff too.
26	na
29	make class start later make class start later make class start later shorten homeworks just a bit
30	Filming the lectures and placing them online for the students to review before exams
31	The math in fluids lectures gets overwhelming quickly, and often is not directly relevent. Typos.... We didn't seem to make much progress in systems lectures, the circuits we started with were pretty much the same as those we finished with, but I guess they did get us into that systems mindset. On that note what was with that fugoid motion pset question, I felt very much under prepared for it, and the graphs.
32	Matlab teaching sessions
33	I think the recitations could be vastly improved. For some reason (and I'm not quite sure why) the recitations for Unified have not been as helpful as the recitations for other classes I have taken at MIT. Perhaps if more example problems were done in recitation, as opposed to pure explanation (since that is given in lecture) that would be more helpful, because I feel like example problems aren't presented that often (or with great effectiveness) in lectures.
34	More hands on learning. Less theory, more practical.
35	I dont know that it's possible to improve one area without hurting another.
36	More labs. Seriously, that's what I learned from the most. Also, more computers in the lab...
37	I would like to see more examples of problems worked out because I would be able to connect the theory and conceptual parts of lecture to the actual problems we encounter. I don't think that this should take up any part of class time - it's more of an outside-of-class aid to help us seek if truly understand the applications of concepts.
38	-
41	Lectures one hour later! But seriously, I would have enjoyed the term *a lot more* if expectations matched reality. It did not help that on the first day we were told that we were in the toughest and best engineering department in the best engineering school in the world, and unified this term ended up being quite a normal (relatively easy) class. Hyping the class up, and then letting me down, killed my enthusiasm to even continue with the major. I'm currently debating whether I should altogether change because I don't like an environment that brags unduly about itself. I've met many unified graduates that laugh at our psets and labs this year, saying that they had it so much worse. Two alternatives: let the students know next year that unified no longer tries to kill you, or then make unified hard again to regain its lost fame.
42	More in depth treatment of each subject, seems too shallow. Problem sets are often confusing and contain errors (seem to be copy and pasted from previous years).

Ways to improve the subject.

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	Grading is not always consistent.
43	If a "Unified Reader" could be published that would contain all of the lecture notes from every professor in every subject. I know that I aswell as many other students constantly print them out for both compelting homework and studying. If you could make a reader and sell it at the Copy Tech, it would greatly improve the entire classes unified performances.
44	Making the problem sets less lengthy. Also, especially in fluids, less focus on integrals and more on conceptual understanding.
45	Deemphasize tests and put more focus on written reports. Give more guidance on the structure of lab reports.
46	Again, I can only complain about time; I know that everyone will be upset at me saying, but because of my schedule, I must frequently sleep late hours, usually 4-8. This isn't enough; I often find I unintentionally oversleep lectures and sections. I just wish that there could be some way of shifting unified's hours up, even if it is just an hour later everyday of the week than it is now.
48	I found many of the topics in the fluids section to be inherently intangible, simply because of the nature of the subject. I think interactive learning applets like those used frequently in 18.02 would be extremely helpful to visualize exactly what is going on. Adding more 'archive' material to the website would help. There was 1 past quiz for all the present quizzes, but I would have been more prepared if there were more available.
49	More engaging lectures; more interesting labs; less work
50	More engineering/design problems, competitions etc.
51	A stricter grading algorithim for the computers problems would have really reduced my stress during that block of lectures. That subject had the most time consuming homework, not necessarily a bad thing, but it was frustrating to have work that took such a long time be graded in a way that I could not understand, and did not seem uniform across all students.
52	The only suggestion that I would have would be to put the lecture notes online earlier so that for each topic they can be printed out all at once. I realize that this will be happening for future years.
53	more example problems
54	The computers part of this subject needs major improvement. This mostly refers to the length and the relevance of the problem sets. Also, the pace of the course picked up too quickly, thus making it very difficult for the students who did not have programming experience to keep up.
55	A textbook for each subject, or in dpeth course notes that includes notes and different sample problems worked out. Lecture notes are good, but I do believe every professor should have some sort of book or lecture notes the students can refer to which directly correlates to the material in class. The main subjects where this is lacking is Thermodynamics and Signals and Systems. Also an all in one reference for Computer Prograamming would be helpful. Another element of this class i find kind of distasteful is the huge emphasis that HW and labs have on out grades. I think that if a student is beating Joe B on the tests and he's going to class, but because of other classes he doesn't get to do all the HW's he shouldn't be slammed with that affect for 30% of his grade. I can see the value in practicing the material in HW's and labs, but as far as seeing wether or not a student learned something i feel HW's and Lab scores can be misleading. After all the point is to measure how much we learned, not how much work we did. Just because a student comes up with answers on a P-Set after working with a study group, it doesn't mean the student has any clue what to do the next time something a little different comes along and his study group isn't there to help him. And this class is taking those scores and counting it for 30% of a students grade. I believe a more reasonable weight might be something like 20% or 25%. Honestly a class like 6.002 where 95% of my grade comes from exams will require me to learn the material more thoroughly.

Ways to improve the subject.

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56	Definitely have more hands-on based experiments and work.
57	Putting together a copy of the notes that we could obtain at Copytech.
58	Even though I know it won't happen: lectures later in the day.
59	I know it would be very costly, but every Unified student should be given a laptop (or at least given a subsidy for one). I do not have one, and as a result I am at a disadvantage to those who do. It is very convenient to have one in the Unified lounge, where one can access the computer and ask questions without having to travel a long way. The lectures can be improved by having demonstrations done, much like Prof. Spearing's demonstration with liquid nitrogen (what a great lecture that was). Also, grade updates should be given more frequently.
60	I think it is fine the way it is, I am only sorry that I did not take better advantage of all the resources that are put at my disposal for assistance.
61	computer psets too long, the computer psets, do not effectively measure our information for the computer exam...also fluids pset do not question concepts as in depth as would be required for the exam....
62	I know a change in rooms would be nice. Two hours in one room is not much fun. Also, try not to have 2 hours of the same thing in one day.
63	The subject could be improved with more hands-on lab presentations to aquaint the students with much of the machine lab equipment.
64	Nothing
65	Learning more hands-on skills, such as machine shop certification and use. Using Computer programming for simple controls, or building useful circuits for Signals.
66	Have more food available - necessary for those long nights.
67	Taking exams in another class room! I really believe that that affected my performance. Putting concept questions online along with answers and having more recitations.
69	Lecture notes that more clearly explain concepts to be learned. Lecture notes that show clear coding examples, instead of pseudocode.

General comments on the subject.

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9	Great class!
14	I feel like even though there is a lot of work, the material itself is not so difficult. The balance is not terrible, but make sure not to turn unified in a class with way too much busy work.
20	howie and carl are AWESOME TAs and are always available. Plus Howie is an excellent hockey goalie
23	-I really like how all the professors are truly enthusiastic about the subject. It makes the learning atmosphere really awesome. -Sometimes it's a little muddy what we're supposed to be getting out of the labs. I liked the list of deliverables on the last lab because at least I knew what to hand in.
24	I'm not really sure how this could be done, but is there any way you could advise freshman considering course 16 to take 18.03 their freshman year?? My freshman advisor was no help at all when it came to course selection and planning, but I think it would have been really helpful to have already taken 18.03, instead of taking it this fall with unified. This was definately a disadvantage, especially when it came to the Systems and Signals portion of Unified.

General comments on the subject.

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26	na
33	Thanks for all the donuts.
36	Professor Coleman should work on being a little less foofy.
37	Keep up the good work! Unified has been a great experience!
42	Generally this is an excellent course and it seems that the majority of the professors and staff care about a student's progress.
51	I really enjoy unified; I have a great time learning about this material and really appreciate the effort that goes into constructing this class.
52	I have really learned a lot this semester and have been encouraged to continue learning!
54	Overall the course was great.
57	Howie and Carl were awesome TA's. They would even help us hours after office hours were over. The Course 16 lounge was perfect for working in groups.
63	I'm happy to tell all of my friends that I'm enjoying my coursework in Unified while they are miserable in their courses.
65	The scheduling of the class made it difficult to find any HASS that could fit in with Unified. The fact that we have that one extra lecture at 1pm reduced the amount of available extra classes I could take by almost a half, simply because of lecture conflicts.
66	Make sure there is a hammock every year!
67	Please get JK to help out with the computing portion , he did an awesome job!
69	Note that these responses are only for the 16.071 portion of the class.
73	I would make the systems problems clearer. I would also add another recitation. . Tuesday at 1 maybe?