| Unified<br>Other teaching and learning strategies used to deepen understanding and achieve the subject learning objectives. |
|---|
| -PRS is great |
| none |
| some professors are just bad (hollister).<br>Spearing is great but it would be better if he could put lecture stuff on the web like Waitz did for thermo, cuw the M&S isn't very clear. |
| I've really enjoyed the systems problems because they're actual applications of the concepts we've learned. I particularly liked the flight sim, the water rocket, and the crash analysis. I also like working with other people b/c I get other points of view. |
| some more hands on experience would be nice. for lectures and recitations, some were more effective than others |
| Multi-stage systems problems are difficult because they require the previous parts to be done correctly.<br>If the previous part is done badly,<br>the whole set suffers. |
| Office Hours!!! Office hours have been wonderful, not only for help from TA's and professors, but for helping each other and having some fun with TA's and profs. |
| no |
| Homework: very effective |
| This is a very poorly worded question. The effectivness, of text, lectures etc. vary greatly on the subject,text, and professor. |
| "teamwork" -- working together on problems and systems problems when we just hang out at the office is sometimes better than having groups for projects -- we don't have to worry about all doing "the same"... |
| Online Lecture Notes are absolutely invaluable. They certainly helped Thermo and Signals and Systems. It would be really great if you could have all subsets of Unified post lecture notes online (I realize it's more work, but it's worth it!) |

| Unified<br>Other sources of students' monitoring and evaluating their progress in achieving learning objectives. |
|---|
| I realy enjoy working by teams because that way we can see the different ways of solving a proble,. It also helps us learn how to explain our ideas on solving a problem and points out weaknesses in our reasonning. |
| the systems problems, though sometimes tedious and time consuming, helped me not only see the material in a physical example, but learn to consider many factors at once...start to think about real world problems, like unit conversion |
| PRS is good. |
| no |
| I find problem sets to be a good indication of my learning progress. |
| The homework is usually the best way to go through the material and make sure you have a good understanding of it. |

| Unified<br>The best parts of the course. |
|---|
| Personally, I liked the lectures the most. and the exams. |
| Donuts! The organized website was quite helpful. |

| Unified<br>**The best parts of the course.** |
| --- |
| The lectures are the best part. They stimulate interest and are easy to understand. The unified staff has the best teachers and TA's I have ever encountered. |
| I really feel like I'm learning a lot about aero/astro systems in this course. I see how what I'm learning in class applies to reality. The class is well run and the staff is very helpful. |
| The faculty is outstanding. I am not sure who is cooler, Eric and Chris, or Conan O'Brien and Pimpbot 5000. Sometimes I think the TA's live in the building 33, because they are always available to answer questions. |
| Usually that's the Systems Problems -- or, rather, the lectures for the Systems Problems, which integrate the five Unified categories into real, practical aerospace applications, and get the class really intrigued by one engineering concept or another. |
| System Problems and Friday doughnuts (of course the great professors make all this possible) |
| Thermo and Siganals and Systems though Fluids is pretty cool too. I really like the hands on stuff and the labs taht apply what we are learning. Building stuff is pretty cool too. I really like how almost all the professors care about how we are doing and want to make sure we do well. Though that Joe B guy might have an "accident". (lets see how well he does on tests with two broken legs) |
| I really like the systems problems. I think that I get a great deal out of applying this knowledge to a real, hands-on type of problem. I am also very impressed with the level of organization of the course as well. The professors and TA's always seem prepared and ready to help. Also, I much appreciate the low turn-around time in grading our homework and exams. At the speed in which we cover the material, it is very helpful to get our homeworks back as soon as possible so that we the students can try to correct any problems early |
| most of the system problems are fun |
| lectures, readings |
| I have enjoyed the teamwork involved in solving problem sets and system problems. Talking with other students about how they learned the material really helps. I also truly appreciate all of the time the professors put into the subject. This really makes a difference in my learning. |
| Lectures, and Chris's recitations!<br>In general all lectures except dynamics, and all recitations were helpfull in my learning. Thank you! |
| its the coolest stuff i have learned yet in 14 years of education |
| I think that the orginization of the course is the best aspect of it. Unified is the best-run class I've taken at MIT, even though it consumes an ungodly amount of my time. |
| same schedule every day, but subjects are varied<br>group of students kept together<br>prs answering system--instant feedback--discussion--etc. (see below)<br>bloody Brit'ish humor<br>Legace as guest lecturer (but not as main lecturer) |
| Waitz and Spearing.<br>Even though the SPs are long and hard i realy enjoy them, especially these last ones. |
| Lectures<br>PRS questions<br>Readings<br>Problem Sets |
| The systems problems and the group of people I do problem sets with. |
| |
| The end.<br>The teachers and TA's actually appear to care about the success of the students. |

| Unified<br>The best parts of the course. |
| --- |
| The course is very well organized. |
| The best thing about the course is its organization - manner of including all this knowledge from different areas and bringing it together. Also, it is very dynamic: all the hands-on projects and case studies kept my attention alert and my curiosity sharp. |
| Waitz's lectures, system problems, office hours, the ta's (chris, mark, and most of the undergrad ta's), prs questions, and DONUTS!! =) |
| Getting to know many new sophomores |
| I think it's great that it ends in like a a week. In all seriousness, though, I think the best part is the fact that it combines a little bit of everything into one giant class. |
| Problem sets are relevant and fair<br>The staff cares |
| systems problems<br>the homework is fun once in a while too<br>the level of interest of the professors<br>the level of interaction with peer ta's |
| The best part of the course was the series of thermo lectures by Prof. Waitz. He does a very good job of making the lectures interesting and interactive. |
| lectures and labs |
| Comeraderie among classmates. We're really gonna be close to each other when this is over, aren't we?<br><br>We learn cool stuff.<br><br>I feel like the professors are truly interested in us and how we're doing. I feel that they're all approachable by email and in office hours. and they're nice, funny guys. and they're SO smart and talented -- I was reading bios online... WOW we have some great people teaching us.<br><br>Survival training. If I survive this class, I will be able to handle any crisis situation I could ever possibly have to deal with.<br><br>Sense of humor. Most of the profs and TAs have one, and it makes the stress ease a bit. |
| The sytems problems, because they incorporate in one project many aspects of what we learn in lecture. |
| systems problems that don't take me a billion hours. |
| fluid dynamics. |
| systems problems |
| I like lectures, homework, and tests, I am serious. I really am not big into all this active learning stuff. I consider it to be irrelevant fluff. In my opinion, the class is supposed to be hard and the students are supposed to rise to the level of the material instead of the staff watering it down to us. |
| I really enjoyed the thermodynamics part of the course and the Systems Problems.<br>The Systems Problems are in particular valuable because they combine the empirical part with the theory learned in class. |
| PRS allows you to moniter your progress within each lecture to know whether or not you understand the material well enough to do the problem sets and tests |
| Multistage system problems that relate<br>the physics/math to the real work.<br>Water rocket is a good example. |

| Unified<br>The best parts of the course. |
| --- |
| the professors are great--they truly seem to care about our learning and how they can continually make it better. the mud cards are great! |
| It seems like the faculty really cares about our success, something you don't find in many other classes at MIT. Also, we get to do some pretty cool stuff! |
| The staff, professors and ta's alike, all are really enthusiastic, approachable, and cause the students to really like the course. |
| The system problems are very good.<br>Fluids<br>Thermo<br>Materials<br>Signals<br>Dynamics<br>In that order Dynamics far below the rest. |
| - Professor Spearing! Keep your lecture style; i learn so much. and you're funny, too!<br>- "show", "prove", and "derive" homework problems<br>- pictoral and physical explanations<br>- PRS questions that include the "i have no clue" choice :-)<br>- Murman's "purpose statements" at the beginning of each problem -- THANK YOU. Also his references to the text, so we remember where to look when confused... |
| I like the community atmosphere to it. |
| active learning, water rocket, glider |
| Systems Problems are certainly fun, and it's nice academically to bring all these separate parts of Unified together and, well, _unify_ them and actually apply what we learn.<br><br>The TA's rock.<br><br>The class organization is done very well. It's nice being a flagship course for a department. I think my course VI friends are envious. |
| I liked materials and structures and fluids the most. I liked the subjects but the textbooks for these classes were excellent. I highly recommend you use the same ones for next year. |
| Systems problems! actually seeing things in action! it's one thing to write down Bernoulli's equation, another thing to see it in action in the wind tunnel!<br>Systems problems keep me motivated. |
| Learning so much about so many different aspects of aero/astro in such a short time. The professors' and TAs' excitement about the subject and major. The way in which it feels that everyone is there to support you and help you out - they genuinely want you to succeed. The hands on bits are very cool as well : glider, rocket, wind tunnel, samples passed around in M&S. Also really useful/good/fun are when the professors take a real life problem or question, and apply the knowledge that you just absorbed and show you how you could use it in real life. |
| Prof. Waitz and Chris Gouldstone are awesome! Most of the TAs are very helpful. I like the hands on systems problems, because they give us some application of concepts that we use in class. Turn around time on all of the grading is excellent. The course is generally taught very well, and I think I am learning a lot. Donuts are good. It was good when the profs. gave us extra time for several systems problems and changed what exactly was due. That really helped ease the stress a little bit after they gave us way too much to do. |
| system problems |
| The extensive and relaxed interaction between students, faculty and TAs. Also the genuine interest which everyone seems to exhibit in one's development throughout the course as well as being willing to help when it is necessary. |

| Unified<br>**The best parts of the course.** |
|---|
| I love the way each and every teacher and TA (especially our two head ones) care about us and our progress. I have never been in a class that is this attentive to the students needs |
| I think it's awesome that Unified attempts to correlate and demonstrate all the interrelationships between the different fields of engineering relevant to Aerospace. It would be even better if we could develop a chart to visually tie everything together.<br><br>I also like the teamwork involved. I think it is very important to observe how other people approach a problem to expand ones own ability to do so. It also makes the problems more enjoyable when we work together to figure out all the little nuances involved. |
| water rockets<br>wind tunnel lab<br>signals and systems<br>chris gouldstone<br>having psets not due till 5 |
| Enthusiastic professors & TA's, PRS |
| The organization and relevence of the material are both excellent. The attitude of the faculty and TAs is very supportive. |
| System Problems that involve modelling. |
| Waitz, Chris, and my study group. |
| Recitations with Chris.<br>Shooting bottle rockets. :-) |

| Unified<br>**Ways to improve the course.** |
|---|
| I felt like I was rushing through a lot of different subjects in a very short time. It kept me worried throughout the whole term.<br>There were too many things due in one week and for the weeks with the exams it was the same. Everytime I handed in a pset there was an exam due a few days later or a lab report. This stressed me out a lot. |
| More donuts!!! I think posting the prepared lecture notes on the website for all the sections (as was done for thermodynamics) would be very helpful. |
| ? |
| Make it an hour later everyday. |
| I don't know, maybe less donuts and more orange juice.<br><br>Is there a better place to hold recitations? That room is pretty crowded. |
| Nothing, to my knowledge. |
| More doughnuts =) The only improvements concern the PRS system and I realize everyone is learning how to use it this year. |
| Get a clearer dynamics text book as well as a professor who can explain what is going on and who does give stupid multiple-guess tests for dynamics. Dynamics was poorly taught and very very muddy. |
| I really don't find the review sessions very helpful as a general rule. A great deal of material can be covered in a couple of weeks. It is hard to just walk into a review session on a Tuesday evening (when problem sets have occupied our minds the previous evening) -- and respond to the "Well, do you have any questions?" I think that there should be a small amount of lead-in by the instructor as to the topics recently covered to help generate some questions. Coming in and responding to simply "Do you have any questions" is hard to do --- and difficult to prepare for |

| Unified<br>Ways to improve the course. |
| --- |
| when problem sets are due at 5PM and the review is at 7 or 7:30. |
| more teamwork oriented projects |
| later lecture times |
| I think it would be nice if some of the subjects were not so spread apart. It seems as if materials is too spread out. |
| Well, I have been a student for a while already, and I can tell that I never learn in class when professor teaches directly from the book. Please, do not teach from the book! Prof. Waitz, Spearing and Hall are great in that sense, because they take material, they go through it themselves and then present it to us in class. In this way everything is easier for us to understand. Otherwise, I think sometimes is better not to go to class and stay at home reading that chapter in book and hope it is not to confusing... |
| The course could be improved by bringing in donuts next week. besides that, the course is great. |
| communication between staff and students<br>later starting time<br>maybe not having the same exact schedule every day<br>perhaps actually using the $100 textbooks in some cases<br>not having prs answering system as mandatory attendance checker |
| Some changes in terms of professors. |
| Improve grading on quizzes<br>Give more feedback on grades<br>More PRS questions in certain subjects |
| A different aerodynamics professor, less crazy office hours in terms of TA to student ratio |
| Making the end come sooner.<br>Sometimes the professors get bogged down by a mostly irrelevant question which then confuses or distracts the class and makes the entire lecture less clear. |
| Time management is very important both in teaching and in absorbing the taught material. I would revise the time spent on certain issues (theoretical notions) or labs to obtain a maximum achievement. I do not have particular suggestions about what should be emphasized or discarded, but in general, more time on theory (for the student to go deeper into it) would be really helpful, especially in the future. |
| extra dynamics help sessions (maybe taught in a different style from the usual lectures?), more time on the systems problems (or more help...now that we have computers in bldg 33, maybe we could use them to work on spredsheets and such during office hours...) |
| 35hour days |
| I'd like to learn more about how to actually do something (ala course 2) than how to do problem sets. |
| The dynamics and fluids lectures suffer because too much of the lecture is simply writing math on the board (i.e. deriving equations). It is very hard to stay awake when the lecturer is doing this for several minutes at a time. It would be better if, for these classes, the derivations were written on handouts and the lecture was spent in (a) getting a conceptual understanding of the material, and (b) seeing hwo to apply the equations to example problems. |
| If certain people in the class would quit whining and just do their work... (not that you can fix that, but hey)<br><br>no problem set due during dead week (the week before finals)... please? with sugar on top? if i beg on my knees?? (speaking of whining...)<br><br>I know we haven't had dynamics since the last time i filled this out, but I'm honestly afraid of having Hollister next semester. I didn't learn anything from him this term. How will I go on to |

| Unified<br>Ways to improve the course. |
| --- |
| upper level classes without the required basic knowledge? |
| The pace could be a little faster. |
| the only thing i have trouble with are the tests w/2 subjects in one. it's hard studying for 2 tests at the same time...takes a lot of time. please reconsider. |
| class beginnnig at 10am not at 9am,<br>no double subject quizzes (thermo-systems and signals and any other kind of combination) |
| Don't listen to the students when they whine. Treat it more like the real world where deadlines and requirements are set andnot changed. The staff changing course because of people whining only hurts us. |
| I think the worst part of the course was dynamics, not because of the subject (I love dynamics), but because of the way it was taught. I would suggest a change in the Dynamics Professor. |
| Better organization toward the end.<br>(I realize it might not have been possible) Seemed like the balance of<br>fluids/materials got off for a bit,<br>then some letcures got moved around...<br><br>Also more (read smaller) recitations where the recitation isn't really another form of a lecture but a free form ask questions and get what you didn't understand explained in more detail session. |
| The tests. I don't think many of the tests accurately reflected my understanding of the material. This could be because they were really long, poorly worded, etc. In a class that is graded on a curve, this wouldn't matter too much, but since Unified is not graded in this way, I think it was harmful to my grades. Also, I think a couple of the tests should have had a lower B mark, especially when it is evident that most of the class has done poorly. |
| not much, it's run really well |
| - every PRS question includes an "i have no clue" choice, because that is often the case.<br>- more time to do readings before class... i.e., shorter psets in weeks with harder reading, if possible... assign reading in pset handout?<br>- giving a little more warning for something like SP13... I think maybe this is a result of the overall organization of SP schedule/assignments? thank you for not grading the quality of these too much, since we had very little idea of the objectives of the assignment... |
| Sometimes it can be pretty tough to get such a strong dose of one area in such a short amount of time. For instance, it seems like the aerodynamics section feels very compressed time-wise, though this could possibly be due to it being at the end of the term when we all reach for more motivation... It may be better to distribute the different lectures over the semester. |
| all subjects have prepared lecture notes |
| Well, honestly if it wasn't at 9 in the morning every day of the week then I would enjoy (and attend) it a whole lot more. I guess scheduling is hard, but if it were in the afternoon, then honest to God it would be the best course at MIT :) |
| Suggestion: Despite what the class said about not liking the dimensional analysis, I though it was VERY useful. Yes, it was not the most enjoyable lab. However, it was probably one of the most useful and educational. Maybe do a two part lab in which you start with dimensional analysis and in the next lab do the wind tunnel. That would be a lot of fun and very educational. |
| fewer problem sets, more 'real world' examples. |
| My only major issue with this course is Professor Hollister, who I feel really understands the material and means well, but I don't think he conveys the knowledge well to the class, leading to mass confusion and frustration. |
| The tests haven't always measured my understanding of the material very well, especially the dynamics tests. I think I understand the material much better than my grades reflect. |

| Unified<br>Ways to improve the course. |
| --- |
| The systems problems should maybe be done in a different order, or tutorials should be given in how to use Excel or other programs that we might need. For example, the hot air balloon problem makes use of a spreadsheet, which is much simpler than the one for SP4. I had a lot of trouble doing SP4, expecially because I wasn't very comfortable with Excel at the time.<br><br>Unified usually leads to far more than 24 hours of total in class time and work. I usually spend at least 30 hours a week in class and on homework. That doesn't include studying for tests and doing reading. I know it would be hard to make it any less work, but it does get to be a lot sometimes.<br><br>There are often discrepencies in grading, especially of systems problems. I know of several times where I have worked with other people, and although we have basically the same final product we will get two different scores. It is a little disheartning to get a lower score than others on a regular basis, even though you did just as much work as they did. |
| everything's great |
| more case studies in the systems problems would be incredible (they were really fun) but I understand how you would not be able to add more. |
| I think the hardest part for me is to see the overall picture. I think I would feel more confident in the material (since I'm pretty sure I understand it) if I had someway to see the overall picture (to organize my thoughts). I feel overwhelmed by the volume of material, even though I know I don't need to be.<br><br>Also, I think there should be a bit more emphasis on conceptual understanding. I often feel like I can do the math, but I struggle when I first start a problem set because I'm uncomfortable and uncertain with the material conceptually. |
| more focus on the assigned readings--the y are never mentioned in class--it's hard to remember to look them up on the webpage and then do them when you have no time as it is...i think this would help my understanding if i did all of the reading |
| Post PRS questions and explanations to the answers online. I know that for the Thermo part of the course this was done, and I feel it really helped me a lot in understanding the concepts. |
| more hands-on labs,<br>more PRS in Murman & Hollister's lectures<br>less math in Murman & Hollister's lectures |
| Less direction in the specifics of systems problems. |
| More managable workload. I think it is possible ot give less time consuming work and still have the learning objectives met. |

| Unified<br>Other Comments |
| --- |
| There seemed to be an awful lot of exams. Perhaps is was because there wasn't much time in between each one...<br>Having websites with the materials on it would be VERY helpful. I found the Thermodynamics webpage and the Signals and Systems webpage very useful.<br>The materials webpage was not that helpful. |
| Unified is without a doubt, the most organized, well-run, and interesting class that I've had at MIT. It's not just because I happen to enjoy talking about airplanes -- it's also because of the obvious effort the instructors and TA's put into making this class interesting and a well-rounded learning experience. It is indeed the most work-intensive class I have taken, but I very rarely ever feel that I am wasting my time on any given item -- and I think that is a very good measure of quality of the class. Thanks to the staff for doing a great job. |

| Unified<br>Other Comments |
| --- |
| Exams, exams, exams...<br>They are too short sometimes, but I can live with it. The problem I'm asking you to address is grading!<br>I do understand that there are some set scales in grading, but, the class is not that big that you can't spend enough time on each paper so that the PROPER or DESERVED grade is given. I know for several examples this semester that people mess around with equations not knowing what to do, but kind of know what the answer should be - they write it out from nowhere and - full credit!?<br>On the other hand, completely written out theory behind the problem, with correctly followed math derivation, just to make a mistake in calculating final number - bunch of points are lost. That is wrong and not fair to people who actually know how to solve problems. I think in this class too many emphasise is given to numerical answers, not to derivation. Yes, on the cover of every paper is writen exactly opposite from what I am saying, but it seems that has not been followed the way it should. Please, try to understand what I am saying here. Exams are short, time pressure is enormous, the numbers just come out wrong... This does not show anybody's knowledge if 2+2=8 etc. What really should matter is the idea, process behind the answer. When I go to real world and start solving important questions, I will have time to make sure my calculations are correct, but not even the whole time of the world can help me solve that question if I don't know how to approach it. Should I guess and hope for the right answer? It seems that this has been encouraged in this class, at least to some extent.<br>Other than that, I consider this class as one of the best I have taken so far. |
| looking forward to next term<br>keep up the good work! |
| I've never had a class like this and even though I'm changing majors at the end of this term, I do not regret one second taking Unified Engineering I and II.<br>Thanks a lot for everything that the teaching staff put into this class. |
| I'm still alive and planning to major in 16 after this semester. Amazing. |
| I really enjoyed myself. I went to all lectures and I can say that there was not a single lecture that I felt particularly negative about. |
| The first exam of every new professor shouldn't be waited as heavily as the others. It's hard to switch between professors and I end up having trouble. |
| good job<br>keep up the good work |
| Unified Engineering is by far the best class I have ever taken, in terms of teaching and also organization. The active learning system is good, but is underused (or misused) in Fluids and Dynamics.<br><br>One small complaint is that several of my homework, test, and systems problems grades were not transcribed correctly into the computer. My grading reports both contained several errors, which could have made a big difference to my term grades if I didn't notice them. I don't know if there's anything that can be done, but it's definitely a good idea to hand out these grade reports every month or so! |
| I have no other helpful comments to make here. I could tell a joke, but it is widely acknowledged that I am not very funny. Sorry. :o) |
| no |
| What is bothering me is the grading policies in the exams. It seems to me that a good grade only depends whether one has the number right, instead of the conceptual aspect. I suggest you make the quizzes harder, but pay more attention to the conceptual approach, instead of looking on whether the right numbers were punched in the calculator. |

| Unified<br>Other Comments |
| --- |
| Extremely well strucutred course, one always has the feeling that one is taken care of. Keep up the good work. |
| Looking forward to next semester! |
| dude, it sucks to have the hardest problem set of the term due in the LAST THREE DAYS of class... oh well. life is not fair. real jobs are not fair. we can suck it up. :-) |
| Chris Gouldstone is the man. He always stays late to help everyone out, he's very kind when you simply don't understand something, and rather insightful. Maybe the best TA I've had. |
| waitz is great, so is sopps, spearing too for that matter. murman is good too, but his subject just sucks cuz it has so many integrals! |
| Thank you all for an enjoyable and educational semester. I actually almost look forward to next semester. Hopefully I'll really be in the Unified groove by then (y'know... starting problem sets early and fitting it all into a nice timeframe). |
| I'm really glad to be taking Unified and to be enrolled in course XVI, This course gets me excited about what is to come in the following years. |
| Unified is a good class. It is a lot of work, but I think if I leave unified with a good understanding of everything, I will be very well off in the future. |
| The scheduling of Materials and Fluids lectures towards the end of the semester was less than desireable. Starting around week 12 the Materials lecture schedule became too disjunct. A similar mishap occured in week 10. This fostered a lack of continuity and cohesiveness in learning and understanding the subject matter. Subsequently this had the adverse affect of covering the Fluids syllabus too quickly (ie too many lectures in too short a period). In 6 days we had NINE Fluids lectures (week 12 & 13). As a result one was not afforded the opportunity to absorb one concept properly before being bombarded with another. Of course this would be a problem if one did not understand a particular area and perhaps this may have lead to falling behind. As a result recitations became less effective, due to no fault of the professor, but rather in the sense that there was simply too much material to cover and so unfortunately some of it had to be ignored. Prof Murman himself commented to this fact in one of the recitations in recent weeks after he had listed all of the topics we had covered since the previous recitation. We actually were unable to cover HALF of the topics on that list in recitation.<br>Having said that we do appreciate the fact that the department makes an effort to enhance our learning experience, and its willingness to improve upon any problematic situations that may arise. I personally am looking forward to another semester of Unified and working together with the entire Unified staff and students, but of course not until after a long, and much needed, rest. :) |
| I have received very little help outside of class because I have class followed by work every day 9-5, so I couldn't make it to anything except quiz reviews.<br><br>Also, there should be a guaranteed place where we can turn in our homeworks early(even before it is due). I have forgotten to turn in stuff because of no boxes(remember from 9-5 I only have 10-minutes between classes to do this). |