I’m writing with a long description of details about courses, syllabi, etc. to help you in your planning for your course for the upcoming semester. Also some general thoughts on teaching and learning, which by no means are comprehensive and instead are just meant to get you to think about these details as you begin to plan out your semester. Our mutual goal is that you will each teach any given class several times, so that upfront planning is rewarded over the long term.

Take some time to digest this email, and know as faculty you have a great deal of freedom in how you offer the course. The following are my suggestions, best practices, and only a few rigid requirements.

I. Syllabi and course content

Just to give you a feel of where to start, I have attached [from my own collection] a link (*) that connects you to example syllabi, a lecture, an assignment (with answers), and an exam (with answers) for 1 ugrad and 1 grad course. For most of you, I know you are already perfectly familiar with how to plan and teach a class, so perhaps the most important detail is the example syllabus especially in terms of its format. This follows a relatively uniform outline that we use in the department, especially for our ugrad classes where engineering accreditation encourages/enforces some commonality across the faculty. Feel free to use these as actual templates (esp. the syllabus, and maybe exam formats), or at least just general guidelines.

(*) Note that this service, uconn’s own version of dropbox, is an easy way to push big files around so long as the sender or receiver is on campus or VPN’d onto campus. There are other more secure campus versions as well, but this is easiest. The files live for ~2 weeks, so whether or not you pour through this email right away, please download the attached before the link dies.

https://dropbox.uconn.edu/dropbox?n=BDHsyllabiandsuch.zip&p=WUXfyuGmP65IU0BCm

1. MSE 4241 is a primarily undergrad elective course, about nanomaterials characterization and application.
   a. Practically, this often includes both ugrad and a few interested grad students, which is common for our Jr. and especially Sr. electives. Conversely we typically have a few advanced ugrads who will ask instructors of grad electives for permission to take their class. As instructors you always have the final say in such special circumstances, and I hope you will seek guidance from your more established colleagues in MSE when these cases arise.
   b. For all ugrad core courses, and for purposes of best practices in any ugrad syllabus or indeed even grad syllabi, there is some language in the syllabus related to ugrad engineering accreditation. We are rigorous about this (need to be to retain accreditation during the every 6 year evaluation cycle organized by a national organization). Prof. Hebert is overseeing this process for MSE, so may contact you with a little more guidance on what to incorporate into your class. This is especially a question for Yuanyuan and Stefan this Fall. In any case, specific language along these lines ought to be in any syllabus. We can reasonably be lax about this in the Fall since you are all new. It is important to keep the general goals in mind, though, as they are essentially principles for quality teaching/instruction/engagement.
   c. The lecture slides I attached are for about 1 and ½ typical (50 minute) lecture periods.
   d. Courses are usually structures in 3 ways:
      i. 3 times a week, 50 min each.
      ii. Twice a week, 75 min each.
      iii. Once a week (usually just certain labs, and some typically-evening grad classes). 150 min, though 180 is assigned allowing for a [I think necessary] break.

2. 5322 is a pure grad core course in MSE. Therefore it is a more rigorous/packed than ugrad classes.
   a. The lecture slides I included are for a typical 75min class period.
Online course materials are managed by the instructor (uploading for sharing most assignments, maybe some or all class notes, sometimes HW or exam answer keys—depends on the instructor, updated syllabi, etc). HuskyCT is the main website, which is entirely protected by student or faculty ID’s. It has an ability for students to create a wiki (I use that for some classes), they can even upload assignments directly, you can communicate with them as individuals or groups, and there are many other functions. I’m sure on arrival you will be inculcated in the huskyCT options. For now, Kaitlyn, can you please help our new faculty be sure they will have a HuskyCT site available to them for each of their classes (this has to be ‘requested’ before each term in peolesoft, the university’s online system for student administration, advising, and final-course-grades).

More generally in terms of teaching/learning, note that in each of these courses, for each class I have 1-2 students give a brief presentation about journal articles they or the whole class have read. This is just something I do to try to get students more personally interested in the course material. It is a little rare, and does not translate well to all class levels/sizes/topics. Many of us instead have students do individual or team projects late in the term. To me, for classes where it works, the advantage of doing it one-at-a-time throughout the semester is that, conveniently, I have less lecture material to prepare in any given week (the students take ~15 minutes/class period on this). Of course project presentations in the last 2 days of the semester also let you coast a bit at the end of the term instead, so that’s a tradeoff. If you like my model, we can speak further—the keys are to set a good example early for what’s expected, reinforce class-wide preparation/participation (I use occasional quizzes to keep them paying attention), and include the material which students present/discuss in study guides and exams so that they know this material is just as important as what I’m teaching. If you don’t reinforce this, some/many will just tune out, which isn’t productive for anyone.

For textbooks, if there are some textbooks which you feel may be appropriate but cannot easily get a copy, we can borrow them from our wider library network for you to inspect. Also/Or, we can get copies from the publisher (they tend to provide desk copies of a few books knowing they’ll make future sales if a book gets accepted). I like books which have meaningful homework questions included per chapter, though at the grad level for specialized topics that is hard to find. Personally I seldom use those questions directly, but I do use them for inspiration and occasionally throw a few into assignments mostly just to reinforce that students should be reading the textbook... It is ok to use multiple books, or 1 and have parts of others, we can create coursepacks from multiple sources, etc. But please check with Kaitlyn/Lorri/me so that we can be sure we’re ok in terms of copyright issues, overall cost to students (a legitimate general concern), etc.

In the coming semester each of you is picking up a course that was taught previously, so I recommend contacting the prior instructor and I’m sure they will assist you in many ways (Kaitlyn can help connect you). Perhaps they will share notes/slides/etc. with you, but of course that is a personal decision. Perhaps the book publisher has tremendous online content already available. Or, perhaps, you want to switch to a new textbook. That is your prerogative, but if you want to use a new book we need to decide very soon so the bookstore can order it (again, contact Kaitlyn asap if so).

One thing that’s helpful in terms of selecting a textbook is if the publisher provides figures or even slides with the figures. Speaking from experience, that can consume a lot of prep time before lectures when we do it ourselves. It also makes copyright issues cleaner—we can legitimately teach from the figures from the book our students must buy without much worry, whereas ethically we should be careful with
other content, use complete referencing, not directly circulate publications (provide links so the publisher gets appropriately paid by the university library system), etc.

For your course calendar, you will note in my example syllabi that there are a few travel days. These are unavoidable and understandable. It is reasonable to consider that you will be gone for 1 week worth of classes in any given term (so 3 50 min lectures, 1 150 min lecture, or 2 75 min lectures). Students highly prefer when you plan these in advance if at all possible. Of course sometimes things come up, but keep in mind that as professors our number 1 responsibility, at least to students, and to Dean’s, is to fulfill our teaching obligations. If it will be more than a few missed days, then it is up to you to figure out how to make it work…prerecorded content for students, meaningful group work in your absence, trade with your colleagues to cover for you for a lecture, invite guest speakers, invite your TA to give a ½ lecture (I encourage all of my TA’s to do this but do not mandate it...about half take me up on it), plan an exam and be sure you have someone to proctor it, etc. Plugging in a makeup day is sometimes possible, but generally unadvisable especially for realistic class sizes, since there will inevitably be conflicts for some students no matter when you suggest a makeup day. Also note that the final date/location gets fixed by the university about ½ way through the semester, so we all have to be patient on that front in terms of nailing down the day/time.

II. Pedagogical issues:
Think carefully, and soon, about how you want to deliver the class. There are 4 typical models in general. Lots of details follow for you to think about pertaining to any given class. And the university has excellent resources to help you if you wish (the ‘CETL’ has staff with extensive experience in pedagogy, technical details about different ways to teach, etc.). UGrad classes typically only employ options a or d. Options b or c are more applicable to grad classes (where we often have onsite ‘customers’ [students] who want to take the class, and which coincidentally earns money for the department).

a) Traditional course. How most of us learned. Professor lecturing to a room full of students. Usually 2x75 minutes or 3x50 minutes per week. Typically not so practical for classes targeting (or taught by) those in industry. If a grad class with anticipated interest by part time students (those in industry), probably twice a week late in the afternoon or evening or once a week also late are best to maximize possible registration.

b) Hybrid class. Basically a traditional class with professor lecturing to a room full of students. But, there are also some students (usually those in industry earning a part-time degree) participating from afar, either from a centralized location like UConn-Avery Point, a classroom at CCAT, etc., OR through a skype-like interface. As an instructor, you get a video-monitor with a Brady-Bunch like display of who’s participating from outside the classroom, and there is 2-way communication. If your teaching style involves writing out notes/equations on a ‘transparency’ like display, this works really well as the notes can be directly shared along with your audio. If you teach from slides, again, those can be directly shared so this works well. If you write on the board with small characters, or walk around a lot while you talk with lots of hand gestures (that’s what I do), then this can be difficult as the off-site students have a hard time following you and camera resolution may not catch all of the action. Despite these caveats, though, we tend to teach 1-2 grad classes this way each term in MSE, because it is the most practical for our part-time degree students and for us as professors—converting from option (a) to (b) is relatively easy. These are often taught once a week, in a 3 hour block either late in the afternoon, or even more commonly 5-8pm (there’s usually 30 minutes of total breaks, because nobody keeps learning well, or for that matter teaching well, for 3 straight hours).

c) Purely online course. Lectures offered as recorded videos and links to related content, for students to learn essentially at their own pace. Student assessment can still follow set deadlines,
but the class periods are really just guidelines for time to be spent working on the material, since students practically can log in to review the material at any time. To make it worthwhile for students and faculty, I think at least some specific hours would need to be made directly available to students for q/a. But even so, personally and pedagogically this doesn’t sound like a great model for education. Then again, Khan academy and Coursera essentially follow this pattern and are reasonably successful. I note that extra funds may even be available from the university to the instructor for the 1st time such a class is developed as there is a push for more online offerings. We have a few instructors diving into this, and esp. for undergrad electives and some grad classes (so not this semester, but for future semesters for each of you), I suggest that you consider this as a possibility. There are longer term benefits for you which make it worthwhile when developing a totally new class (specifically, in future years you can have students watch the content you recorded during the first year, saving you time/effort in the long run). Again, though, I stress that this is a hard way for many students to learn, so takes work on your part for it to be effective.

d) Flipped class. Highly effective with motivated students. Somewhat bridges the above options. More work up front but then easier in future years. Basically, assemble lots of mini-lectures and related content online (so videos of you teaching/describing/pontificating)—i.e. pretty much like the purely online option (c). Students watch this content during out-of-class hours. But unlike (b) above, during ‘in class’ time (150 minutes/week), you directly guide students in problem solving, team project development, q/a sessions, etc., and offer very little additional lecturing (<20% of the time in a normal class period). You basically turn class periods into problem solving sessions. This can be in a shared classroom, or with users distributed online, but the key is that everyone is there to participate. Which leads to another big chunk of up-front work…preparing these problems and solutions to share with the class. Super-regular quizzes or some kind of assessment is also necessary to reinforce the importance of students coming to class fully prepared by having reviewed the material you prepared in advance. Otherwise flipped classes quickly devolve into a waste (professor makes video/online lecture, student doesn’t watch it, in class professor assigns problems, in class students can’t solve them because they are behind, professor reteaches the same content in class, students no longer pay attention to online material because it gets repeated anyway, etc…). Then again, there are major benefits here if it is managed well: Once you’ve done this for one or two semesters, most of the content is already in place and you get to relatively ‘coast’ when teaching the course in the future. It’s also more compatible with faculty and students with busy lives, since nobody needs to participate in the out of class prep according to a fixed schedule—log in and watch the relevant content of the week whenever you want. It makes your life easier too when you travel, since the class can just tune into content you already prepared/recorded. Finally, so long as the instructor is well prepared, and repeatedly reinforces that students must come to class prepared or their grade will suffer, then professor and student tend to really like this scheme because they spend their time together working on real world problems, not covering content we can all try to read directly in a textbook somewhere. Again, extra funds may even be available from the university to the instructor for the 1st time such a class is developed as there is also a push for more flipped course offerings. At present several of us have tried some variation of this, though none of us are teaching a pure flipped class right now. ENGR offers a few though.

NOTE: I recommend that everybody try (d) for a few days in each semester, at least as a special component of their class—it’s a good way to get a feel for whether you like this style. I often do something like it as exam prep, or to introduce a special topic that’s in the news lately to liven up the course content, etc. You’ll probably discover that students are very responsive to it (if done with care).
III (of III)—Logistical Hurdles:
If an entirely new course, there is a bunch of paperwork that needs to be proposed, approved by the faculty, and then approved by the university, all with a lead time longer than you probably expect (6-18 months). Technically this is all mandatory to the overall university before the second time one teaches a class (to establish it with a permanent course number into the future), but the department requires the initial paperwork and faculty approval before the 1st offering. And, the lead time at the university level is sufficiently long that we basically need to propose the class for the 2nd time while it’s being taught the 1st time. Necessary bureaucracy...

The specific timeline is established by 2 factors—when students sign up for classes in the following term, and when the university requires official paperwork to be submitted for sufficient review. For a Fall class, we would work with you to assemble the initial content, ideally by the end of February of the prior year, though possibly this could extend until the end of March. The faculty would vote on this, and perhaps seek some clarifying details, within a month (ideally in March, possibly in April if absolutely necessary). Students sign up for classes in April for the following Fall, forcing this timeline. It’s a little more flexible for grad classes as they habitually sign up late. But the later it gets (March, April, or worse), rooms get harder to find at times compatible with your life.