

## Minutes of the Regular Meeting of the Academic Council

Thursday, November 20, 2014

**Joshua Socolar (Physics/ chair, Academic Council):** Hello everybody, and welcome to the faculty version of pregame entertainment. Today, after voting on the proposal to establish a Department of Neurosurgery, we're going to hear two presentations on proposals for new Master's degrees. I'll remind you that this is actually serious business that requires our full attention for the next hour, even though it is tempting to let the mind drift toward today's main event. I am speaking, of course, of the massive traffic jam (laughter). Rest assured that Tallman (Trask) and Kyle (Cavanaugh) have everything under control. I am told that the traffic monitors have been trained to recognize all Duke Faculty and their vehicles and have been instructed to let us do whatever we want. No matter how frustrating the traffic may be, we do recognize the benefits to Duke of the national attention the game will bring, and I want to say, in the words that our Board Chair David Rubenstein claims to have written at the very top of the exterior of the newly refurbished Washington Monument: "Go Duke." You can ask him about that at our December 4 meeting. I heard him claim to have done this and I searched for some evidence and I did find this picture (refers to slide). David at the very top of the Washington Monument. So, whether he wrote the words or not, I cannot say for sure, but he

did have the chance to do it. And I do want to take this moment to advertise that he will be here at our next council meeting. It will be a great chance for council members to meet him, ask him questions about his various visions for Duke- I guarantee it will be interesting.

I also want to mention two recent news items: First, the official grand opening of DKU was held on Monday. Students and faculty at DKU moved into the Conference Center on campus a couple of weeks ago. Everything seems to be going well. I liken the delays in construction to flight delays for airplane maintenance; everyone is annoyed for a while, but, upon reflection, quite happy that the quality controls actually work. So the DKU campus is up and running. Dick is just back from there.

**Dick Brodhead (President):** Part of me is probably still there (laughter).

**Socolar:** Congratulations to everyone at Duke, Wuhan, and the city of Kunshan who have brought this project this far along.

The second news item is that Laurie Patton, our dean of Arts and Sciences, will be leaving Duke in June to become the President of Middlebury College. I learned from an article on the Middlebury website that Laurie will be the first

woman president of the college. I also learned that the daytime temperature at Middlebury on November 18 was 28 degrees. We wish her well (laughter).

### ***APPROVAL OF OCTOBER 23 MEETING MINUTES***

**Socolar:** Let's now approve the minutes from the October 23<sup>rd</sup> meeting. Are there any corrections or edits?

May I have a motion to approve? A second?

(Approved by voice vote with no dissent)

### ***VOTE: NEUROSURGERY DIVISION TO DEPARTMENT PROPOSAL***

**Socolar:** I'm doing a quick count here and I do think we have a quorum. So our next item of business is a vote on the transition of the Neurosurgery unit from a division to a department. Last month we heard from Dr. Ted Pappas, Vice Dean for Medical Affairs, about the proposal. The relevant materials were posted again with today's agenda, and Dr. Pappas is here in the back to answer any questions before we proceed to our vote, which is the last step before the proposal goes to the Board for approval. Are there any questions for Ted? Ready to vote? All in favor? Any abstentions or objections?

(Approved by voice vote with no dissent)

Congratulations and good luck with the presentation to the Trustees next month.

### ***PROPOSAL FOR A MASTER'S DEGREE IN QUANTITATIVE FINANCE***

**Socolar:** We are now going to hear two

proposals for new master's degree programs. I'll remind you that last year we had six new degree proposals to consider in October and November, and there was much concern about the trend. Since then, Dean Paula McClain and others have paid close attention to this issue, and it appears that the pace has slowed a bit. We are still awaiting a full report on the impacts of the trend toward more master's level programming at Duke. For today, though, we should concentrate on the merits of the proposals at hand. We'll vote on both of these at our December 4<sup>th</sup> meeting.

I would now like to call Professors Tim Bollerslev and Emma Rasiel to present the proposal for a master's degree in quantitative finance.

**Emma Rasiel (Economics):** We'd like to introduce the proposal for a Master of Science in Quantitative Finance. And we think we have a strong rationale on the need for a program of this type. As you see over the last 8-10 years, the markets have become increasingly complex. There's also an increased global interaction between financial markets which has implications in the market. Along with this increased complexity and this increased societal impact, there is a need for more, very thoroughly informed and educated students who can go on to either do further research on these types of products or to work for financial firms that build these kind of products or to work for regulators and policy makers who address these kinds of products. We're very fortunate that we have in our department already considerable expertise in quantitative financial products. Among my colleagues and myself there are seven professors

currently in economics focused on financial research and teaching. We also have three new endowed chairs who have been approved for the department and those professors will be coming online in the next two to three years. We also believe that, because of our existing and quite successful masters of arts in economics that we have the expertise in house to learn this type of new program. In some ways, it's not quite an extension of the existing program, but many of the resources will be new in terms of staff and set up are already in place in terms of financing this to bring this new program online. A final reason to produce this program is to differentiate ourselves. And one of the ways we plan to do this is the reason we've been thinking a lot about this. This idea was brought to us during a review process - is that along with teaching these students how to think about very complex financial products, we also want actively to help them think about their responsibilities as they address these types of products and build them and think about using them in a more complex way. Being willing to stand up and say, "Well, you see, risks in bringing these products or disseminating these products, perhaps to use this word, "not sufficiently sophisticated." That's a differentiating tool for this master's program. So we have the degree requirements here. We have some of the courses already in house. Importantly there are three new ones that we need for the core and that's one of the reasons why we're excited to have new professors coming in the next couple of years as they will be able to help us teach and add to these courses that we have available to the program. We also plan, in reference to what I was just saying, to introduce a seminar series on ethical considerations

in finance and with that, we may be talking to the Kenan Ethics Center about that and how to get that embedded in the program. In terms of the program duration, as with our current economics master's, some students complete it in three semesters, some in four semesters, usually it's those students who plan to go into a professional career track who are able to finish in three, whereas the students who are preparing to move on to a PhD program will often take a fourth semester, especially so they can take some of the introductory PhD courses, which sets them up very well for the next step in their academic career. So, having said that, I'll make a point that we have two tracks in place in this program. One of which being the professional track, working in the financial markets, working with regulators and policy makers, while the other track is to prepare thoroughly quantitative students who didn't quite have the background to go into a finance PhD but would like to do so and we've already demonstrated in our economics masters programs that we have some expertise in preparing them for that next step. So again, thinking about these two tracks, how well placed are we to help these students make that next step in that career? Within the economics department, as I mentioned earlier, we have some incredible research faculty who work with current master's students and help them get academic placement. On the professional side we have a number of us in house who work with undergrads and some of the master's students and connect them to jobs on Wall Street and beyond and, in fact, we even have a staff member, part time, who's particularly focused on working with masters students who want a career rather than an academic track and

obviously her role will become increasingly valuable as we bring in this program that focuses on quantitative master's. Assessment, of course, is important. We have a very thorough assessment process in place for our existing master's program and with what I've provided here, it runs along similar characteristics to that one. This is the sort of standard process of assessment throughout the program and then after they've graduated, staying in contact with them, finding out how they're doing on those stages of their career, learning from them and from what we see, how we can continue to improve and refine the program. Finally, finances -- this is a program that is expected to be self-sustaining (translation: profitable) from year one.

**Socolar:** Any questions for Tim or Emma?

**Dan Gauthier (Physics):** You already have an existing master's program in economics. Why don't you just make two separate tracks- the professional and the academic track in finance? I think you could still advertise that to students as being important tracks within the existing master's program.

**Tim Bollerslev (Economics):** I think the thing that's effective about having it as a master's of science is I think it's important that these are distinctive differences coming from a different background. They are going to be different than the current master's degree.

**Gauthier:** But I can still see advertising to students that we have these tracks within the existing master's program. Why create the additional administrative

overhead?

**Bollerslev:** It's not going to be that much; we're obviously going to piggyback off what we currently have.

**Gauthier:** Why isn't this just part of that?

**Bollerslev:** The signaling effect is important.

**Rasiel:** Having it be a master's of science rather than a master's of arts is quite important. And then another reason is that many of our peer schools have separate quantitative finance master's programs and if we're to attract the very best students, we need to provide that signal that this is a very focused program with specialists.

**Bollerslev:** Which it will be. It will be a succinctly different group of students and different classes and different requirements that most of our master's students would be up to the task.

**Gauthier:** Isn't there already an MS that's joint with computer science? My real concern is that 20 years down the road, if you have all these different flavors of master's degrees, it would be much easier to let some drop and new ones come in, if they are still under the same umbrella.

**Rasiel:** There is. You need a different curriculum and attracting a different...

**Gauthier:** If you have a generic MS program, that would still work. You'd just have to advertise properly the different tracks.

**Rasiel:** Harder to really catch people's eyes when our peers have these distinctly

different programs.

**Bollerslev:** We're competing against, potentially, other programs that have that tie to that, and I think we're going to lose out potentially.

**Carlos Rojas (Asian and Middle Eastern Studies):** Under the new required courses you have a seminar, but that's not the current, right?

**Rasiel:** Right. So we're still thinking about exactly how to incorporate that. You're talking about the ethical consideration seminar?

**Rojas:** Right.

**Rasiel:** We're in the early stages of discussing it. We're not absolutely certain yet how it's going to fit within the entire curriculum because we only started talking about it two months ago. For now we're thinking it's a non-credit required seminar.

**Rojas:** When you say non-credit, wouldn't that convey the impression that it's less important than the financial parts that are required?

**Rasiel:** I think a way to think about that is it won't just be seminars every second week or whatever it is. They're getting some basics from that. But then the courses themselves we'll think about and use what they're learning in those seminars in the coursework that is graded. So it's a way of kick starting embedding those considerations.

**Bollerslev:** It is going to be incorporated into the evaluation process. We don't quite have our head around how exactly

we're going to do that but it will be part of that.

**Julie Edell (Fuqua School):** Can you tell us how you see this as being different than the finance concentration within the Fuqua School?

**Bollerslev:** The MBA Program?

**Edell:** Within the MBA program.

**Bollerslev:** Again, this is a different cohort of students. These are going to be more technically-oriented rather than the typical MBA student. The typical MBA student would not be capable of these classes would be my guess. I've taught MBA students many times and I'm quite confident they would not be capable of it.

**Edell:** But within our concentration in finance, they have lots of courses that have similar sorts of...

**Bollerslev:** The language of these classes, they have mathematical techniques that we're going to be using that will not be in your typical MBA classes.

**Nan Jokerst (Electrical and Computer Engineering):** What we're seeing in some of the master's programs is that graduate courses are falling into three categories now. One is really geared toward master's students only, one is geared toward professional master's students only, and one is a sort of PhD-master's mix for all graduate students. Where would these courses fit, especially the new courses that you're developing? Which of those categories would you characterize as falling into?

**Rasiel:** Primarily they're going to fall into

the focus of master's students in particular because the master's students in this program who are interested in going on to a PhD program will almost be expected in their second year to then move up and take some of the department's PhD courses to ready them for that. So those will sit firmly within master's level courses but we have that already in the department.

**Bollerslev:** By the same token, you also expect to have our current PhD students interested in these topics to take these classes.

**Jokerst:** That is my question. Would it be appropriate for your PhD students, or are these more remedial courses that PhD students should have?

**Bollerslev:** Obviously, if you're going to be specializing in finance or economics, you're going to benefit from these. And that's part of the motivation, too. To strengthen the other courses.

**Roxanne Springer (Physics):** Will you tell me a little bit about who your audience is? Where you think these students will come from and if you have any ideas about how economics, which is one of those departments that struggles to include underrepresented people, will address that? Do you have any ideas on how to address this pipeline problem through the program?

**Rasiel:** Absolutely. So some of the students who are going to be interested in this program are some of the more quantitative students that we already have entering our MA program. So that's a big pool. Obviously there's a big international interest in these types of

programs in general. We would expect to continue to attract those and even stronger members of those cohorts. I think that there will be undergraduates from a lot of different top US schools including Duke itself who want that extra training in sophisticated financial modeling that it's unusual to be able to get on the undergraduate level who would be interested in taking those courses. In terms of the underrepresented groups, within the master's program, the way it's been going on for many years is that we do actively look to bring underrepresented minorities into the program. The percentage by absolute standards is relatively low at 10 or 15%. Relative to our peers in terms of economics master's programs that's actually quite high and we plan to continue to be able to bring those students in and one of the ways we'll do that is by continuing with the 25% financial aid designation we've been using in the existing master's program and when necessary take advantage of that to help bring in underrepresented minorities.

**Peter Feaver (Political Science):** I think I support this, but, as you can tell, there's concern that, in aggregate, too many master's programs, even though each individual one seems to be a strong case. As the most recent one to come up, can you help us think about how we should think about the individual in light of the concern about the aggregate. Why this one, and what is the decision-making power that have us pass this one but somehow put that brakes on others?

**Bollerslev:** I'd like to say, we're building on existing and expanding faculty strengths in this particular area and help

Duke later along those lines so I think that's something that speaks for this program. We are very good in this area and have three endowed chairs coming along. So I think this speaks directly to the initiative we have called the Duke Finance Economics Center which is part of a fundraising initiative this program fits as an important part of that. Some of the extra courses we're going to develop are going to be used more generally to our PhD students, so I think it's just a natural program, what we're doing right now just helps expand and build upon those things.

**Feaver:** The reason I ask is that this could run afoul of one principle rule which is, where we already have a professional program that's strong, we'll be more hesitant to add in the Arts and Sciences something that's a two-step move towards the professional school. That would be one principle rule. I take it you think that's a bad one?

**Rasiel:** When you say professional, I take it you're talking about the MBA program?

**Feaver:** Right. To the outsider, to the unwashed, it looks like, well this is a way the economics department poached some off the professional school. As the Political Science department, we're constantly thinking about that from Public Policy (laughter).

**Rasiel:** When we first initiated discussions about this program, we went over to Fuqua and we spoke with the most senior people at Fuqua about our interest in introducing this program and how the level of academic rigor was going to separate it in specific ways from the MBA program and we've been keeping in contact the whole time and they are

comfortable that this is not a cannibalization.

**Feaver:** Okay, thank you.

**Mike Munger (Political Science):** Full disclosure, I have a joint appointment with economics, but I don't think it's a conflict of interest as much as it's inside information. Professor Bollerslev is being modest, he was very considerate. And we actually have the chance here to be able to claim some credit that would increase Duke's academic rather than professional status. So I think that offering this as an academic MS is entirely justified. And I don't think it's a question so much of rigor but of expectation of an econometrics and time series background that would make the students qualified to take these classes. So one of the things that the MA program in economics has done successfully is to deflect upward the careers of a lot of people who might not otherwise have gotten in to the top PhD programs. And so I think that this will be a pipeline for truly top people in academic programs as a result of having access to econometric methods. Duke is really specializing it better than anywhere else and this is a chance for us to claim credit. So I have not so much a question as I have a comment in response to the other questions.

**Bollerslev:** Thank you very much.

**Pat Wolf (Biomedical Engineering):** We actually hear a lot about why we should -- we heard about why we should create a new neurosurgery because we're competing with other people, other institutions that have this designation and people want this designation. So, my first question is: Do you have evidence, this is

quantitative, right? (laughter). And then I would like to encourage the thoughts of Dan Gauthier that your faculty is really suited to this right now. But as we know, faculty change, especially when they get good. So, five years from now you might not have the same distribution of faculty and you may want to offer a different master's degree. And so I think this idea that you have tracks within a single master's program- Master of Science track maybe and a Master of Arts track, but a Master of Arts degree and a Master of Science degree with different tracks- that's definitely worth considering. And the only reason not to do that is because other institutions are doing it- I mean, to me, if they're driving off a cliff, you're not going to follow them off a cliff.

**Rasiel:** The fundamental interest in studying highly quantitative finance is a secular trend- it's been around a long time and it's gotten increasingly popular. I don't think it's cyclical and I don't think our department's interest in having and keeping some of the best financial econometricians globally within the department is in any way cyclical either.

**Wolf:** So the quantitative part- you have evidence that students have not come to your program because you don't have this degree?

**Bollerslev:** It's hard evidence to come by concretely, I think.

**Wolf:** I don't think it is.

**Rasiel:** We see enormous demand for equivalent types of programs at peer institutions which suggests to us that there is considerable and ongoing demand for this type of program.

**Wolf:** I mean, you could survey people that didn't come and they would tell you, we didn't come because you didn't call your degree this.

**Bollerslev:** Well then we would never be on the radar because they wouldn't be searching the econ program. We would never come up.

**Wolf:** I think it could be done.

**Garnett Kelsoe (Immunology):** So this is certainly a naïve question catered towards the different scope of questions that proceeded. The name implies that there must be non-quantitative finance (laughter). To me, with the exception of possibly national governments, this seems rather off-putting. Is this the standard name for this sort of program?

**Rasiel:** You will see in this marketplace names that include words like "quantitative," or "engineering." It's something that people are looking for.

**Bollerslev:** It's a different gradient. I mean, it's clearly different from an MBA and it's part of that setting it apart. It's what this is intended to do.

**Earl Dowell (Engineering):** You're splitting the net income with the graduate school. Is that true of your other master's programs?

**Rasiel:** Same mold.

**Laurie Patton (Dean, Arts and Sciences):** I also think that both Emma and Tim are being slightly modest in the following way. The master's program has really taken on as one of its major

priorities to increase diversity within the field of economics and has done an extraordinary job doing that. And I think one of the things we considered as we sent it on to the graduate school for review was, we have great faith in Arts and Sciences that both Tim and Emma and their colleagues, in collaboration with the very large alumni support that the Center for Financial Economics also has, who have named diversity as one of their interests and foci, that this would be a really great field to continue that record of increasing diversity. This is a field where Duke could have very much a leadership role in creating diversity in the subfield of economics that right now doesn't have a lot of diversity. So I see this as a tremendous opportunity for Duke. In addition to its intellectual signature for its diversity signature, particularly in the MA and MS areas in economics.

**Karla Holloway (English):** I appreciate your attention to diversity of students, but to link this to a department whose own commitment to faculty diversity is nearly invisible can't be ignored. Economics consistently falls below the standard in terms of diversity, so using them as a model, and especially commending them is as puzzling as it is problematic.

**Rasiel:** I struggled to hear that question.

**Holloway:** It was more of an observation that I think that we have to think about diversity broadly.

**Bollerslev:** I agree completely. Compared to other economics departments in the programs, I don't say that's an ideal comparison by any means. I think we are actually quite okay. But I'm holding that

up as a standard that we should be aiming for obviously.

**Thomas Pfau (English):** I certainly have no problem with this proposition in principle, and taking in this conversation has been quite interesting. One analogy that comes to mind is that when undergraduate students propose a Program II major, they need to clear a very high threshold of showing that there is no department or program (or a combination thereof) that would allow them to pursue the course of study that they are proposing. Here, then, the course of study must in no way duplicate existing structures but, instead, must be a distinctive and intellectually meaningful new creation. Now, "specialization" is an integral feature of all graduate study, and for me it is increasingly hard to tell where student specialization reaches its limits and where the need for a new Master's Program begins. We need clearer guidelines here, such as allow us to determine -- not just in this or that special case but in principle -- when there is a clear institutional rationale for creating a new master's program. At present, we are making these decisions in what is a conceptual grey area. I for one think that the administration should provide clearer and principled guidance for future deliberations of this kind.

**Kerry Haynie (Political Science):** What is the position of the graduate school?

**Bollerslev:** Not that we were privy to that discussion, it might have happened behind closed doors but we didn't hear it.

**Socular:** Okay. We will vote on this proposal next time. I would encourage anyone who has any further questions or

wants any further clarification to contact me and/or Emma and Tim or even Dean McClain so that we can feel comfortable when it comes time to vote.

**Gauthier:** Are the materials for this proposal on the website?

**Socolar:** Yes.

**Haynie:** Josh, might we invite Dean McClain to be present to answer questions?

**Socolar:** I'm sure she would be happy to answer questions and I'll remind everybody also that it's always possible to submit a question for the president or the provost anonymously if you'd like and we'll arrange for them to be heard at the council meeting. I'm sure Paula would agree to do the same.

If that wasn't intimidating enough (laughter), we are ready to hear another proposal for a master's degree, this one in biomedical science. Dr. Kathy Andolsek, who is also a member of this Council, is here, along with Dr. Ed Buckley.

**Ed Buckley (Vice Dean, Education, School of Medicine):** Thank you. We're pleased to present to this group a Master's in Biomedical Sciences degree proposal. So what's the setting for this? About two and a half years ago we took a deep dive into the school of medicine education programs to see what the offerings we had were for folks who were interested in the health sciences. And what we learned, basically, was that there was a gap between folks who were coming out of undergraduate school and folks who were going straight into the professional school. There was no

intermediate place for individuals to go to learn about the health sciences, to gain some expertise in that area, and potentially further a career going forward. This was coupled at the same time with a change and changes which are ongoing with the delivery of healthcare in the United States and the aging population and moving from individual health to population health, et cetera. And so we are perceiving that there already is, and will continue to be, an increasing need to have individuals who are trained in some aspect of biomedical science who don't necessarily go on and get a professional degree but have the background which allows them to facilitate efforts and careers in healthcare. Lastly, we've been inundated with individuals who have been looking for other educational opportunities that are in addition to what they received in the undergraduate realm. To potentially prepare them a little better to pursue a career in the health professions. And so with this as a background, we have created an educational program which we think will meet the needs of this very group of individuals.

**Kathryn Andolsek (Assistant Dean, Premedical Education, School of Medicine):** So this has really been a journey over two and a half years and it was partly informed by a wide advising committee that really has been meeting to try to inform the development of the proposal. A Fuqua consulting group that really looked at the landscape of programs that were maybe similar in the space externally and brought us some good advice that has again helped us move forward. And then finally some of our own faculty and conversations with a lot of students, some of whom had gone

through similar programs and some of whom are just our own Duke undergraduate students who elect to go into these programs following their graduation from Trinity or Pratt. So I'm going to try to give you a few specifics and the first is our target student pool. I think there's a large number of students who have not yet applied to a health profession school but who desire to apply and that's a potential group. Unlike when I went to medical school a million years ago, students are now more commonly taking a gap period of time following college graduation and about 57% are taking a year or more between college graduation to medical school matriculation and that's similar to some of the other health professions that we're targeting too, like the physician assistant community and physical therapy. So that's a group. The second is students who are very interested in a health professions career but they're really unclear about which discipline. It's increasingly difficult for them to really get acquainted to a lot of health professions degrees during a four year college education and attempting to connect with mentors in other fields or shadow mentors in other fields. So sometimes there are students who know they want to do something within health care but are really unsure what. And before they make that commitment, they really would like to spend a bit more time trying to discern what the opportunities are there. There's a third group which are the near misses. These are the 13,000 students at least within the MD applicant pool who have applied to medical school and have the same GPAs and standardized test scores which are the same as those of students accepted but they weren't accepted because there are not sufficient

spaces. So the near misses are another group. The fourth group we think are those who are really wishing some career with a strong health or biomedical component but who really don't want to be frontline clinicians. And these are perhaps our eventual colleagues in teaching or policy, business, regulatory affairs, but they really feel like they would benefit from an opportunity to delve more deeply into some of these components. And then finally, this is a new area for me, but I've really been convinced that there's a group of our doctoral students in basic sciences who feel that they really would be enriched by having an opportunity to have some clinical context for their research and really know some of the compelling questions that are being asked for delivering some of the information we most need to identify in the labs and in our clinical research and applying it to the next patient we see this afternoon or tomorrow. So this is our program of study. It's going to be about 11 months, so three terms. There are going to be 11 required courses that would constitute 33 credits. There would be five credits devoted to electives so I'm going to talk a little bit about each of those. So for each of those three semesters, there's going to be a graduate level human biological science course, which is going to be an opportunity to have sciences really developed and designed in unique ways and a similar model to what we currently have in the school of medicine for our health professions students there. It will include gross anatomy with cadavers and dissection and we think there are a lot of important teaching reasons for that as well as content reasons. Our students are going to go through an emergency medicine technician training course and

they'll be certified as EMTs. After they have their certification complete, they're then going to be required to do at least one 12-hour shift a month and really function as a functioning EMT. The advantage for them is they'll actually in this role be a true member of a healthcare team delivering frontline care to patients and families and this will be a hands-on experience, not just a shadowing experience or an observership, which is what the rest of our students typically have in an undergraduate or a Pratt setting and they're just following us around. So we think this is very beneficial to them and it seems very attractive to some of the students we've spoken with. The third piece we're going to have is a required seminar with credit that is going to span each of the three semesters. And this is going to be a small group opportunity so there are going to be six or seven students and they're going to be assigned to two faculty. The two faculty will be in different disciplines so they may be a physician and a physician's assistant or a physician and a physical therapist. But these two faculty will guide this group of six or seven students on a weekly basis throughout the duration of the program and this will be an opportunity to discuss concepts such as communication, teamwork, ethics, and really develop some professional identity and opportunities for reflection on their EMT experience and really bringing in some cohesive education opportunities. And finally we are going to have an opportunity for some electives, five credits worth of electives. Each student will have at least one advisor in this program and the student and their assigned advisor will have to come up with an individualized action plan which will really try to optimize their own

educational needs and individualize their curriculum a little bit for them. So the students will be able to take approved courses to try to meet these five extra credits and electives if they want to go the course route or we suspect more of our students will either want to take a research opportunity in either a basic science lab or clinical research opportunity or they may do a practicum at a local organization or agency. In terms of our faculty, our inaugural faculty are going to be our faculty largely within the School of Medicine, be they basic science, medical education or clinical science faculty. And we also have a colleague from the graduate school who is going to join us in this work. We represent several of the clinical departments and several of the basic science departments. And these are highly engaged faculty that are already at work designing their courses because they're doing it with a very real view of being integrated with one course content really being mirrored in others as well. So they're already hard at work on the courses for this. This is our financial model and it looks out the next five years starting with what we hope is our first class group in 2015-16. There are a couple of points I want to make on this. The first is we want to start with a group of 20 students and we want to grow up to 50 over the next five years which we think is reasonable given the environmental scan. The very bottom line there is our gain/loss. You can see that we hope to be financially self-sustaining by year three. There are two intentional things we built into this program and the first is really our tuition. So we have really placed the tuition rate at the point at which we think it's going to take to deliver the quality product that we want to deliver. So we honestly think we could

charge more than this but we're really charging what we think it's going to take to provide the educational experience we want for our students. So we're going to start at less than \$40,000. That is not inexpensive but it is about \$8,000-10,000 less than some other masters' within our own institution and master's programs that are somewhat similar to this around the county. So that's one piece. We want to try to be respectful to student debt for all our students. The second is we're going to start with some scholarship support which is the same level of scholarship support which we have for our MD students. That's initially 15% of tuition revenue. We are committed to growing this pot of money once we have an established program to get philanthropy and other entities to provide some resources. Because we really do want to be able to recruit the students we want here at Duke and not necessarily just those who could afford to come. So with that, I want to thank the hundred-plus faculty who have contributed endless hours to forming the proposal that you see here on the Academic Council website and also many of you in the audience who have also spent hours helping us refine this proposal and strengthen our proposal through the MAC and through APC and through ECAC. So thank you.

**Amy Bejsovec (Biology):** So I'm not seeing where in your program you're exposing students to different subjects where they're trying to decide between different specialties. Is that in the action plan at the end?

**Andolsek:** So I think that there are a couple of places where we're doing that. One is by having faculty who represent a

lot of different disciplines involved in the courses and the teaching and the modeling and the advising. So we have faculty that are representing MDs, physician assistants, physical therapists, doctors of pharmacy, nutrition, so we have those individuals who we're going to be working with on a daily basis. That's one way. Secondly, we think they're going to be doing this through their EMT work when they're working in the emergency room or when they're working on the truck in the field. They're going to be interfacing with other members of the healthcare team in those areas. Each of our students will have an advisor from the office of health professions advising from our undergraduate campus as well as they will have a dedicated advisor that will be one of the members of health professions.

**Bejsovec:** Do you have a mechanism for modeling the different career paths so the students can see all the options open to them?

**Andolsek:** Certainly, if they wanted a shadowing kind of experience, which is what we offer students from Pratt and Trinity, we have the opportunities for that too. But I think they're going to be pretty immersed with those of us within the classroom and the seminars in addition to that.

**Cindy Kuhn (Pharmacology and Cancer Biology):** This seems to be a really good clinical kind of discussion. I'm confused about how they're going to get research labs and I'm wondering how long they're going to spend there and what they expect to do.

**Andolsek:** The question is really how

they interface with research. And I think the research that they experience that they might elect for the five credit hours of elective time is obviously going to be modest. That's really going to be an opportunity to do a selection of work across the semester probably with either a clinical science research project or with a basic science lab. That's not incredibly dissimilar to what our third year medical students already do with a year, although, again, this will be smaller. This will be a semester. So it will not interfere at all with the T32- it's not designed to do that.

**Kuhn:** As somebody who runs a lab, it's really hard to give someone a brief experience and have them be able to use that experience.

**Buckley:** We would agree with that. We actually think that a segment of this student body will be interested in doing a year of research. Once they get immersed in the biomedical sciences, we anticipate there is going to be a cohort that will want to do some research. They may get their feet wet with that opportunity but I expect there are going to be folks who want to do an extra year in a lab just like our other students do. I anticipate that there will be a group who will want to do that.

**Andolsek:** And I think this is going to be part of identifying what the right opportunities for them are and matching appropriate mentors with the appropriate student's interest. And you're right; it's not going to be every lab or every experience.

**Holloway:** Would students who take this degree, let's say they go on to Duke Medicine, would that have any impact on

their curriculum?

**Andolsek:** That's a really great question. And no, because it's going to be a different curriculum. What we do anticipate, though, is that it's going to be tremendously strengthening for the students, not just in terms of the content so they're going to be able to hit the ground running probably with an advantage over the other students, but also the model for teaching in this program is going to be team-based learning and that's a model the first year medical school program uses. So they would be well-acquainted with both elements of the content and in the teaching strategy which we take advantage of. But it isn't like they can place out of the first year. The advantage for the admissions is that they would be able to move to our interview step if they were successful.

**Buckley:** We clearly expect that these folks would come into any medical school curriculum way ahead of the folks who are otherwise coming in because they would have had cadaveric dissection, gross anatomy, they will have a lot of the early basic science curriculum. And while they won't be complete, it will certainly save them a heck of a lot of time and allow them to concentrate on stuff that they might not normally concentrate on because they're trying to learn the basics.

**Andolsek:** Just by comment, there's a peer program where they do something similar to this where they take the cohort and totally dump them into the first year medical school class. And there's no distinguishing feature. And even that program does not give them any course credit once they matriculate to that med

school. So it's different and for our courses they are going to be very intentionally designed for this group of students.

**George Truskey (Biomedical Engineering):** There are many different types of programs that are similar around the country. I wonder if you could explain the unique features of Duke's program. What sets this program apart?

**Andolsek:** I think there are several elements that are important in our program. One is the cadaveric dissections, the gross anatomy piece is really important. We believe the training as an EMT and the opportunity to have a healthcare role, not just observe or shadow is important. We think the quality of the advising and the really intentional advising plan for each of these students is very important. So we think those are three key elements. Plus we also believe designing courses specifically for this cohort and teaching in a model which really models and helps them gain some skills with team-based learning which is really a team environment they're going to be doing the rest of their career. We think those are all advantages over existing programs.

**Kathy Franz (Chemistry):** I advise a lot of pre-med students. I'm not convinced it's a good trend and I am concerned about this tacking on of an extra \$40,000 in terms of what we're doing to this generation of students. Is there evidence that this kind of factor opportunity is a real advantage? Does it increase the students' chances to get into medical school over other opportunities?

**Andolsek:** Very good question. What I

would like to be able to do is show you the studies from research that really address that. And one of the things we hope to do is actually work with a consortium of programs like this to try to address that. But if you look at what people will say about their programs or look at what they put on their websites, which, I agree is maybe not much better than Wikipedia, but if you look at the quality of those kinds of data, the national average, if you don't get into med school and you try again, for instance, is about 40%. What a lot of these programs say is with their program, they're getting upwards of 85-90%. Now, I'm just putting that out there because it's not all controlled. They're not getting the data the same ways.

**Franz:** If they go out and get a job and actually earn some money and use that as experience, is that going to make them feel the same way?

**Andolsek:** I completely hear what you're saying. I can tell you 15 Duke Students at least enter one of these programs every year. We know that and those that are known to the office of health professions advising so there are also probably students they don't know that are also doing that. And about 13% of students who apply to medical school are engaging in this type of program. So those are great questions.

**Jennifer Green (School of Medicine):** I'm just going to echo some of the previous comments. This seems like an expensive way for someone to beef up their resume or for someone to figure out what they want to do. With all the different activities I can see how that might be attractive but that's a little bit

less useful than perhaps an area of focused study. I'm just struggling to understand the utility of this degree as compared to something like a master's degree in public health.

**Buckley:** First of all, there are plenty of people who are taking advantage of these kinds of programs. A lot of folks do end up going into an MPH or something like that and never using this because they were using it as a tool to beef up their resume, if you will. And we see those all the time. The real issue here is what we're providing is some structure around that effort as opposed to "I'm just going to go do something." And we're also incorporating a lot of career counseling with that which helps focus these individuals going forward. So they do come in ready to compete in the medical world which, as you well know, is not just the medical school, it's what happens after medical school as well. So if they get a head start into medical school, they're going to have a head start with the rest of their career. And I think it really does add a lot of value that simply going and doing something for a year may not add.

**Andolsek:** I think even the EMT piece that you mentioned is that they can certainly go out and become an EMT. There's no question about that. But our EMT coursework is being integrated into their basic science courses. So not only are they going to learn how many voltages to shock the heart with, but they're really going to understand something about cardiology, pharmacology, whatever, as foundational to what they're actually doing. So I think that's really a different learning than what they would get if they just became an EMT.

**Harvey Cohen:** I think a lot of the discussion has been about this as a way into medical school. Obviously that's part of the program but that's not the only part of the program. Some of the other parts are perhaps more interesting and exciting than that. In particular it is for people who are interested not in medicine as a profession but in other things that relate to medicine. So people who might be going into pharmaceutical industry to develop drugs. Wouldn't it be nice to have some of those people actually understand something about medicine when they go do that? People who are going into engineering and might want to do something a little more than shadowing and understand some of the basic underpinnings of medical things that they might need for biomedical engineering in their career. I can imagine a lot of different scenarios and many different professions where this kind of background would be an advantage. To me, that's actually the more interesting and exciting part of a program like this. The other thing about the medical school entry is, our numbers of medical students these days will come to the point of graduation having done lots of stuff, but not a lot of the things that may help them get through medical school in practical ways. Some of the sciences et cetera. Some of the medical schools now increasingly like having those people come in with these backgrounds, et cetera. But still, when they get there having some real preparation to be able to stand the rigors of what's going to happen over the next few years is some advantage for a program like this over the other programs.

**John French (History):** I think the big

issue over the last year in these discussions was whether or not Duke should stop this avalanche of master's degrees and ask some larger questions. One of the big questions for me is that we're essentially in a model where "if we can sell it, we should do it." And that's really what drives - and I know Peter Lange disagreed with me on this as to whether that's true--but this is how this particular avalanche emerged. I don't think "if you can sell it we should do it" is an appropriate basis for University's degrees, and especially degrees that have a whole series of ancillary effects on the experience of doctoral students and for the efforts of the faculty that make this the best university it can be.

**Buckley:** We would agree.

**Andolsek:** I will say that our faculty are very enthusiastic about this and it really will allow them to continue teaching with another cohort of students. So for our faculty who love to teach, this is actually a great opportunity for them and they're very happy about doing this.

**Kelsoe:** I think it would be surprising if this were a pathway into the basic sciences and the pharmaceutical sciences. I wouldn't focus on the sciences; I would focus on the non-sciences.

**Cohen:** I wasn't talking about the non-sciences.

**Kelsoe:** Okay, so it may be a pathway for salesmen. But it seems to me that the natural cohorts to this may be what you call near misses. Or people who wish to bolster their GPAs and their backgrounds. And that seems to be a good enough role for this itself. But I do have a question

since the medical school admissions committees often look at the sort of implied intent. The intensity with which the applicants have dedicated themselves to one of the other medical professions. If in a school other than Duke someone came in, punched a one-year ticket for \$40,000, would they be equally considered by the University of Michigan or some other medical school as someone who was really committed to becoming a physician or is this just something that might show a lack of intensity is absent?

**Buckley:** I think you're being very clear. If a student came and said "Listen, I really wanted to do this and the reason I felt I didn't make it the first time" if you're talking about a near miss, "is because either I didn't clearly articulate what I was doing, or I didn't have a good enough background, or whatever," and they said "I'm going to devote another year to try to prove that I can handle the workload, that I understand what I'm getting into from a clinical standpoint, and devoted to doing that," If they articulate it that way, that surely is going to impress folks who are trying to make a decision about Person A versus Person B.

**Jane Richardson (Biochemistry):** I think you're right in terms of this being very popular. I'm worried about the fact that, in the long run, this adds a year of medical school. Because everybody will have to do it.

**Buckley:** I can't speak to that one, but a lot of students, like we showed on the first slide, are looking at what they had done in undergraduate work and say "maybe I didn't quite do what's necessary to prepare myself for the next step." And medical schools are looking for more

preparation. It used to be that we provided a lot of preparation in medical school. Now we're requiring cell biology and biochemistry and genetics and things that we never required before because medicine is growing, the knowledge base is growing, we only have a short period of time so our students need to be preloaded in order to be successful. So they're running up against that as well.

**Andolsek:** At the same time the MCAT, the standardized test to apply to medical school, is incorporating more humanities and social sciences. So really more is necessary. And you're right. How that plays out in terms of length of time, there are certainly models now where they're trying to look at whether medical school should be three years. There's nothing magic about the four. Maybe students should progress when they have the right competencies to progress. And you could look at undergraduate and medical school as a blend of, when you're ready, you go.

**Richardson:** So a master's is not necessarily bad. Maybe you do need another year for medical school to prepare.

**Tim Reddy (Biostatistics):** Do you see an opportunity where this could increase or improve the premed program in undergrad as well? So that they would be better prepared?

**Andolsek:** So I think one of the things that we're interested in is looking at what types of elective work that we might be able to have with this program for which on a space-available basis for the right students with the right level of preparation we might be able to accommodate. And I think that's probably

one answer to your question. The other is, our faculty are starting to have a better alliance with the office of health professions advising over at Trinity. So at least the extent of developing relationships and trying to share strategies and learning more about what one another need, that maybe we can look at ways of sharing some of the resources. In terms of curriculum enhancements, we're a little ways away.

**Reddy:** So you see no possibility of crossing this curriculum over to the graduate school?

**Andolsek:** I think we would certainly be willing to look at that for the student that was eligible to take this. But I think we really need to look at this carefully mainly around these very difficult things like when semesters start and stop. We're really trying to spread this over 11 months and it may not align perfectly well with the two semesters.

**Kuhn:** You mentioned in the beginning that you thought students in undergraduate and PhD programs would be interested in information about basic sciences. Is there a cap on what they can participate in?

**Andolsek:** I think the question is in an era when it's increasingly difficult to get NIH grants and really tier stuff up to success in the research endeavor, the more you can really understand the clinical issues and really where your science is best positioned to help address some of those issues. It might make a compelling case to funding agencies and groups.

**Kuhn:** I don't disagree at all.

**Andolsek:** I think perhaps a student who might think about an MD/PhD program- a doctoral student who might go in reverse and look at MD programs might find that they get enough of the clinical side in this and some breadth in sciences rather than the deep dive they've done in their doctoral studies might find themselves advantaged by this program.

**Ken Dodge (Public Policy):** So I heard you say 15% tuition financial aid is your goal?

**Andolsek:** No, that's the starting point.

**Dodge:** That's the starting point. You don't have aspirations otherwise?

**Andolsek:** Absolutely.

**Dodge:** The concern I have with 15% is that the \$39,000 tuition every year- the student pays \$33,000 in tuition coming out of college for this. Only the wealthy can afford this program. If the program is going to actually help the applicant's chances for medical school, could the program inadvertently - I know it's not the goal- widen the existing socioeconomic gap for who enters our medical professional program?

**Andolsek:** And that really is one of our goals, to try to get there.

**Dodge:** Aren't you going to widen the gap having wealthy individuals have a greater likelihood of entering medical school because they're the only ones who could afford this program? It will give them a competitive edge.

**Buckley:** That's why we're devoting some

of the tuition in grants, we're going to make available the school of medicine loan program which will be cheaper and that's why we've held the cost down. The cost is much lower than any other of the programs out there and so we're cognizant of that fact. And so we'd like to increase the diversity of the healthcare pool going into medical school, professions, et cetera. We figure this is a way to do this. Clearly, once the program starts to become solvent, the plan is to direct more of that money towards tuition relief and typically the school of medicine is somewhere around 23-24% of what we collect in tuition. So that would be our goal and maybe even higher if we can do it.

**Andolsek:** I've already been to development to try to see whether or not we can look at philanthropy to try to expand that pool too. They think they have a potential donor in funding one scholarship. But I don't have a program yet so I think some of the ability to help recruit the philanthropy is really to have an approved program.

**Patton:** Just to give an institutional context for the question about the undergraduate premed curriculum. We have an oversight committee between the School of Medicine and the Arts and Sciences that meets monthly. This is something that we only preliminarily discussed. But the deans are both aware of it, both the divisional deans as well as the approval deans. And they are very interested in making sure that not only is there complementarity but what we might call productive overlap. We are in initial phases but I just wanted you to know that that conversation is happening and there is an institutional structure to

address it.

**Andolsek:** And perhaps with some of the graduate programs too. There is another place where we could get some very exciting collaboration.

**Socular:** Thank you very much. I hereby grant everyone here one hour of leave with pay. You can use it to fight the traffic or prepare for the game or whatever you like. This meeting is now adjourned. Our next meeting is in just two weeks when we will hear from David Rubenstein, chair of Duke's Board of Trustees. I hope all of you have a nice Thanksgiving.