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## Minutes of the Regular Meeting of the Academic Council

Thursday, October 24, 2013

**Joshua Socolar (Chair of Academic Council/Physics):** Okay everybody, let's get started. Welcome to our second meeting of the year of the Academic Council. I hope your semester is going well and that you're enjoying the change of seasons. I want to start today by noting the recent openings of two great venues on our campus: the renovated Baldwin Auditorium and the new space for the Mary Lou Williams Center for Black Culture. I had the pleasure of hearing music in both places this past week, and I want to thank all the people who have worked hard to bring these places to life. They're really great. But much as I'd like to tell you more about the wonderful programs that I got to see, we have work to do today.

We're going to hear from several of our colleagues who are proposing new degree programs. While each of these has already been reviewed and approved by a number of committees with strong faculty representation, it is up to the full Academic Council to approve them or not for submission to the Board of Trustees. One great thing about having this responsibility is that we get to learn more about the academic interests of fellow faculty and, in particular, about the emerging directions that they have found exciting enough to warrant all the work required to make it through the long pipeline that leads to this point.

We'll get to all that soon, in fact our whole meeting will be taken up with these three proposals, but the first order of business is to approve the minutes from the September 19 meeting, which were posted with our agenda on Monday. Are there any corrections or edits for the minutes?

(approved by voice vote with no dissent)

Attendance sheets are being circulated, so please initial and return these to Sandra at the end of our meeting. And I'll remind you to please identify yourself if you ask a question or offer a comment.

Now, it turns out that we have a lot of new programs coming through this semester for approval. As promised in our agenda, we're going to hear about three of them today, proposals for new master's degrees. And three is a lot for one meeting. The reason it is necessary is that there are several more in the pipeline from colleagues who are hoping to get approval in time to begin recruiting in December. That situation requires that we hear additional proposals in November. Our two-meeting rule then means those proposals cannot be approved by the Council until its next meeting. Given the need for finishing our work in time for recruitment to begin, and the fact that there are additional topics deserving our attention this fall, ECAC would like to add a Council meeting to the calendar on December 5. You will receive an email

confirming this soon, which will request that you indicate whether you can be present so that we will know whether we can expect a quorum. It's an unusual semester; a lot of degree programs need to be approved.

### *PROPOSED MASTER'S DEGREE IN BIOETHICS & SCIENCE POLICY*

Okay, let's get right to it then. Professor Nita Farahany holds appointments in the Law School, the Institute for Genome Sciences & Policy, and the Philosophy Department. She is here to present the proposal for a Master of Arts in Bioethics & Science Policy. The proposal and other supporting materials were posted with your agenda. And we now have the chance to ask questions and raise any issues that we may want to see addressed before we vote on the proposal at the November meeting. Nita?

**Nita Farahany** (Law School/Institute for Genome Sciences & Policy/Philosophy): It's a pleasure to be here with you today, and thank you for your time. I know you have a lot on your agenda, so I will be brief with just a few introductory remarks to what the master's in bioethics and science policy is, hoping to leave time for your questions. As we've been going through the process at each of the different steps, it has been enormously useful to continue to shape the proposal. I know your comments and questions today will help, hopefully, make this an extraordinarily successful program for new incoming Duke students.

So, just to give you a sense because bioethics and science policy sounds like it could cover absolutely everything on earth: what is it and where is it situated? I wanted to give you a bit of the intellectual scope of what it covers. The basic idea is to focus on the ethical, legal, and social policy concerns that arise from

science and medical technology. And in particular, bioethics focuses on the intersection of life sciences, biotechnology, medicine, politics, law, and philosophy. As a result, it is a very interdisciplinary degree, and this degree comes to you from quite a few faculty members across quite a few schools, departments, and institutes who have come together, and who will come together, to offer the course offerings in this.

The basic principles of bioethics were best articulated in a report called the *Belmont Report*, and the process of principlism informs many different bioethical analyses. There are the general canons known as respect for persons, beneficence, justice, and democratic deliberation, which is a newer one added by the President's Commission on Bioethics, on which I serve. The methodology that we plan to introduce and to provide in this particular master's degree focuses on foundations of principlism as a methodology of bioethics, starting from the top down. The casuistic approach, which is more of a case study inductive method, allows us to remain nimble about the different types of major advances that happen in technology and in science and to incorporate that into the curriculum, to take into account the political systems, deliberative decision making and data analysis from science policy. Because from our perspective, bringing together bioethics with science policy in today's world is essential. Far too many bioethics programs in the country focus on clinical or research bioethics rather than actually situating it within policy. You can ask the "should we?" but unless you focus also on the "how can we?" it's very difficult to advance.

So, to give you a sense of who the intended audience for this is, we expect--and we've already heard plenty of rumblings of people who would be interested in this program--our intended audience is a little bit more fo-

cused and directed than the many people who might be attracted. In particular, we are interested in mid-career professionals, people who have had several years of work experience and people who hold an advanced undergraduate degree in science. These people generally will have done science as an undergraduate, will have spent a few years in the workplace focusing on areas that touch on health care, biotechnology, or they've spent many years in, for example, a biotech company or a research company and are interested in transitioning to serve, for example, on their institutional review board, to serve in a more administrative capacity, to serve in end-of-life decision making within a hospital, and more. The students could also be enrolled in a complimentary degree program, and in fact that's a great target audience because it expands their horizons significantly. So a law student, or a particular medical school program with a third year, would be terrific students to be able to bring into this program. We want to start by having the master's degree go forward and then contemplate and work with individual schools to develop joint degree programs that could be sensible. We could admit advanced undergraduate students, although this is not our target audience. Very few students who are advanced undergraduates, having just completed their undergraduate program, would make sense for this program. And that's because having some work experience is better for giving you the best possible job opportunities, such as a lecturer of bioethics, an ethicist, an attorney at NIH, or an editor of a health or a law journal, ethics education and consultation programs that exist around the country, working in science policy in mediatechnology, or different subcommittees and committees within DC.

To give you a sense of the program structure: there is the option to do this in a single calendar year, three semesters, which is pretty

fast and pretty intensive. But every other master's in bioethics program in the country enables student to do it within one calendar year. That makes sense if you think about the people who are the mid-career professionals who are wanting to make the transition. They can come in to spend an intensive year, and they're prepared to really delve into the material. But they may not be able to afford to spend more time away. So, our core courses focus on foundations. They don't do just clinical and research bioethics, which is what a lot of areas do, they give a broader foundation in science, law, and policy with a contemporary issues and bioethics and science policy component that spans across two semesters. Our goal is to provide these classes in the late afternoon, early evening in order to accommodate people who are doing it on a part-time schedule as well. They can do it on a part-time schedule over three years, and this core course curriculum would enable them to do so. One of the distinctive features about the program is that many other master's in bioethics programs in the country focus on skills-based learning, primarily in clinical and research bioethics for hospital practice. We focus on an area of Duke strength, which is topical areas, in particular in genomics, neuroscience, and impact ethics. This draws from the strengths we already have at Duke. It also focuses on the strengths in the world where people are really having high demand for people trained in this intersection. Genomics and neuroscience are cutting-edge issues of the day. We have significant strength at Duke. We can train people to be uniquely well-suited to address the questions that need to be addressed. We also leave open the option of an ad hoc track where students can create in the spirit of the Program II undergraduate degree and other programs at Duke that enable entrepreneurial students to focus in particular areas. And we've talked with a number of schools about things like engineering tracks and other tracks where they can focus

on several courses. They finish with a capstone project, ideally over the summer, either working in a place like a hospital, somewhere in DC, in a think-tank, with a professor, or writing a substantial research paper where they actually get to put some of these skills to use.

Our core faculty is derived from places across campus, including from within IGSP, from the Philosophy Department, from the Trent Center of Bioethics, a person who has been teaching for years in the business school in the health informatics and clinical informatics space who's a lawyer and a science policy expert by training. And then we bring in a post-doc regularly who will be administering the two semester program that is the contemporary issues program, which brings in regular speakers on an every other week basis. And by having that as a year-long program it enables students to have a common course that they come together for allowing for a culture to develop.

The financial model you'll see in the details that we provided. I put up just some of the basics here, but the financial model is quite detailed. It should enable us to pay back the original investment loan with conservative enrollment numbers by year two of the program. Year zero is this year, the investment that we're putting in to actually develop it. And then you should start to see positive returns. Those positive returns we ideally use to hire research-track faculty who can be the core faculty to ensure the steady success of this program. That's the basic overview. I would welcome any questions about any details of the proposal or anything that I've mentioned here.

**Philip Benfey (Biology):** Can you expand a little on the competitive landscape? The number of students that are actually out there, and you mentioned already a bit of

your competitive advantage but it might be good to...

**Farahany:** Sure. So, it turns out that our highest competition, the people who we focus on as the best programs in the country, the two we think are the best programs in the country are the Penn bioethics program and the Columbia bioethics program. The Penn bioethics program is over-enrolling and turning people away with about a hundred people per year right now in their program. That's extraordinary. And there continues to be high demand, not just from within Penn, but from around the country. They're doing things well, but we could do things much better, in part because we'll have a much more individualistic opportunity for students. They don't have a very good faculty to student ratio, and they're over-subscribing such that they have a lot of people who are not ending up with jobs that make sense commensurate to the program that they have. The Columbia program, which is in the division of continuing education, which you would expect to actually have a lower enrollment--it would suit well the part-time individuals, but wouldn't have the same cache and prestige as the rest of the programs--they're only in their third year of the program. Their target estimates were to enroll fifteen and then a steady-state of twenty-five, and they have forty-five in their class right now. And they're turning people away as well. Wake Forest has a program, and they're doing well. They have fifteen people per year right now in their program. Other programs across the country have had no problem attracting people. We think both within the Duke community and more broadly in the Research Triangle Park area and nationally, that we'll be very competitive. There is a strong demand for this degree, and we're well positioned to receive those students.

**Alex Rosenberg (Philosophy):** Nita, can you

give us an idea of the comparative advantage of this program over Penn, Columbia, and the other significant players?

**Farahany:** So first is the positioning of it. The Penn program is positioned in the medical school and the Columbia program is positioned within the division of continuing education. Positioning this as an interdepartmental, across-campus program that really draws from the tremendous resources we have as an interdisciplinary institution gives us, in part, a competitive advantage. It also is because we are uniquely interdisciplinary by design. This is an interdisciplinary program; the fact that we've already overcome so many barriers to interdisciplinary design makes us well-situated. The best thing that makes us well-situated is the tremendous demand for these research tracks that we've developed. In genomics and neuroethics training, there is virtually no specialized training within a master's in bioethics and science policy. We would be the first program of its kind. No other place in the country has an impact ethics track. This enables us to really draw from the tremendous science and society offerings we already have at Duke and grow those through this program.

**Fritz Mayer (Sanford School):** I have a parochial question and then a more general one, maybe more general even than your presentation. The parochial is, we talked before--very interesting, fascinating idea--I guess that we had a conversation at Sanford about how we might work to articulate more fully the relationship between this program, especially the science policy piece of it, and public policy, and there was some concern raised there that we would like to be more engaged with you than we have been. And I guess the question would be, you know, might we do that going forward? The word policy shows up a number of times but we've really not been a major partner in this. Which

is not that our feelings are hurt (laughter) but I think when we have a program that says "science policy" that there's probably some things that we could add or help to strengthen. I don't know what thinking you've had since we met.

**Farahany:** So first of all, as you know, we'd very much like a strong, collaborative relationship with the Public Policy School. So the institute for science and genome policy has always been doing the kind of science policy in the genome space, but the relationships need to be strengthened with science policy in this program. And our hope is to have--we have a faculty council we've identified as one mechanism for the program--but a second mechanism for the program that we've been trying to work on in anticipation of approval of this is to come up with a set of topics that each of these core classes would actually cover. So each faculty member is going to have an innovative way that they are going to address the materials, but to have a set of topics that are the core topics that are covered, I think is essential to ensure the continuity of education in an interdisciplinary program. So our hope is to work closely with Public Policy in developing the core curriculum classes and the topics that should be covered. Bob Cook-Deegan from Public Policy has already been helping us. Peter Ubel has offered to teach one of the elective classes. But we hope to sit down after approval of this process and really be able to nail down what the key topics are and what's the additional expertise that we can really bring to bear to ensure a strong relationship.

**Mayer:** Can I ask you if I could, I'll just throw out a question that's probably not best addressed here but I didn't see where else we could, which is that we have a number of these degrees programs coming forward, more the next meeting, and I know that a lot of people have thought about this, but I'd be

curious to hear what the thinking is about the proliferation of these degrees? We're considering these serially and each will have its merits and this looks really great, but I'm curious about the cumulative effect of this. I know that we have a committee that thinks about that and I know that these issues have been vetted elsewhere, but I'd love to hear the thinking about that as a background to our consideration of these separately.

**Socolar:** So, let me just say that ECAC is with you on that. We realize that there's an issue here that deserves some attention. For the present though, it wouldn't be fair to the people who have put all the work in to hold anything up for that conversation now. But it's on our agenda, and we may well have some opportunity at a future Council meeting to address it more fully.

**Paul Baker (Nicholas School):** And I'd like to second Fritz's last part of the question, I think that's a very important point. Wonderful proposal, really thoroughly presented and very well justified. I think I heard your last sentence that I was a little puzzled and troubled by. And that's, did you say research-track faculty who will become the core faculty?

**Farahany:** So, to add to the faculty, right? We already have core faculty, and some of those people are research-track faculty. So the Institute for Genome Sciences and Policy doesn't have the power to appoint tenure-track faculty, and unfortunately one of the consequences of this interdisciplinary field across institutions, at nearly every institution, is some pretty extraordinary people who would clearly be tenured faculty if there was a bioethics kind of departmental home that had that position. But the norm in the field actually has been to have research-track faculty. And so our hope is to take some of the resources--not all of them because they'll

support some of the other activities and the broader space that is here--but to take some of that to actually dedicate to core faculty who can be dedicated to this. Now to the extent that we can actually hire faculty through joint appointments that have departmental homes, that will also be an opportunity that we'll explore.

**Baker:** Just as a statement I'd like to say that I'm old fashioned, you know, and I do support regular tenure-track faculty. And I think we should try to promote that as much as possible.

**Farahany:** And we already have been in conversations, for example with Philosophy, about having a tenure-track faculty member who would have a focus in this particular space. That's certainly my preference as well and the preference of others who are in the program. To the extent that there's an extraordinary person who makes sense in this space in research faculty, that's somebody we would contemplate as well.

**George Truskey (Biomedical Engineering):** Could you describe a little bit the physical space of the program, particularly where the students will interact outside of the classroom?

**Farahany:** That's a great question. So, there's the short-term and then there's the longer-term. So the short term is there's space in both CIEMAS and in the North building. We have a space in the North building that is dedicated to the student lounge space for this program, as well as some office space that's surrounding it that will be used in the shorter-term. We're in conversations about the longer-term depending on where space actually opens up and assuming the success of the program, to have broader space that's dedicated. A lot of the classes will happen in various places that are within the departmental

home since this is an interdisciplinary degree. But there's common meeting space for the students that's already been dedicated in North and some of it will also occur in CIE-MAS.

**Dona Chikaraishi (Neurobiology):** Do you have metrics that highlight the success of the program?

**Farahany:** We're developing them. So we have some metrics, one outcome metric for us is placement. That's because the type of student that we're attracting has various different options that they would be exploring. So the joint degree students or the dual student will look very different in their placement than the student who goes straight through. Our first and primary metric that we've been developing at the backend is making sure that we have excellent opportunities for students for employment afterwards that are relevant and that actually use this degree. We've been developing metrics for additional ways that we want to measure the success of the program, including the quality of the applicants, the type of experience they're having, the faculty involvement, the mentorship, etc. But our first and foremost is employment in this space with relevant skills that are demonstrable and successful.

**Craig Henriquez (Biomedical Engineering):** I was a little surprised to hear that Public Policy was kind of an outsider here and we have the Kenan Institute for Ethics. I was wondering why they weren't more prominent in this proposal? And the second question has to do with your plan for the budget. How many students do you expect to be related to other programs, like law or medicine, and are they paying full tuition and how does that fit into the bottom line of the budget?

**Farahany:** So let me address them in turn.

The first one with respect to Public Policy is we've been cultivating that relationship and have invited them to be part of the conversation since the inception. So as we started on this program we reached out to multiple people in Public Policy. Because they were in a dean transition they asked that we wait until the new dean arrived. The second that he arrived we met and discussed it. I then met with the executive committee of Public Policy and invited them to be part of it. We'd really very much like for them to be part of it, and we have people and faculty who are interested in this space. This isn't a primary space that Public Policy is focused within, and so understandably it's not one of their highest priorities. But we've actively engaged them in conversation from the beginning. We've also actively engaged Kenan since the beginning. And so you'll see one of the letters of support is from Suzanne Shanahan because she was the acting director at the time. I've met regularly with Noah to discuss it as well. We've been talking about ways in which we dovetail. This is also a space that they don't focus on. They focus more generally on ethics, and so we've been talking about ways in which this can complement the undergraduate certificate program and ways in which we can work together. And we've invited them to be a supporting institution as well for this program. So all of the folks have been part of the conversation and the answer has been generally this is a space people are really excited about, it doesn't actually poach on anybody's existing space so that they're happy to be supportive of it, but it's not one of their primary areas of dedication.

*PROPOSED MASTER'S DEGREE  
IN HISTORICAL & CULTURAL  
VISUALIZATION*

**Socolar:** Thanks, Nita. As with all the programs that we'll hear about today, we'll be

voting on them in November. And the purpose of that is to give people a chance to mull over what they've heard today, and if any concerns arise we can discuss them further in November. I would just ask that you alert me if anything comes up that you think is going to require a substantial amount of time before we can take the vote so that we can plan the meeting agenda. But there's no time limit on that. Anytime something comes up, just let me know.

Our next presentation is from Professor Hans Van Miegroet, chair of the Art, Art History and Visual Studies department. And he'll present the proposal for a new Master of Arts in Historical & Cultural Visualization. Hans?

**Hans Van Miegroet (Chair, Art, Art History and Visual Studies):** Good afternoon to all of you, and what I would like to do today is briefly go over the principles of our proposal here. The full content you can find on the website and also on the website from the Wired! group where all the current projects are fully documented. If you want to know more about what we are doing in this part of the university campus, look at Duke Today. We have one of the cover stories there on media arts and sciences. The master's degree in Historical & Cultural Visualization started really in the department of Art, Art History and Visual Studies as well as in the visual studies initiative, which was initially a university-wide initiative to work for the humanities outward towards the sciences and the social sciences. And in the process, of course, we learned a lot of new things. We learned from the sciences, we learned from the social sciences, and we wanted to integrate these new digital technologies in solid scholarship, not only in art history, but also in what we now have called historical and cultural visualization that spans all the way from archeology, art history, urban planning, architecture, and so on and so forth. You need

digital technologies to reconstruct an ancient sculpture or ancient sites--that does not need a lot of explanation--but what is relatively new in our part of the university is that we began to set up new experimental labs. This is of course, standard operating procedure in the sciences and social sciences, but not in the humanities, which allowed us to teach and do research with a team, to work with students who really can gain experience in historical and cultural visualization and bring in new types of scholarship that are usually not connected with humanities: coders, computer scientists, and engineers. Now we work with mathematicians. This is actually the first time I'm really enjoying myself tremendously (laughter) in an environment like that. This is what we're best at.

We first began to implement an undergraduate program. Caroline Bruzelius is the lead figure there, and she developed an undergraduate program that is vertically integrated--so basically undergraduates, early stage graduates, late stage graduates, post-docs all working together on major projects. So what I'm going to do today is go over the intellectual scope very briefly. I'm not going to read all my power points, I think you can. I want to allow some time for discussion, our intended audience, our basic structure, the faculty, and then the sustainable model. Again the whole detailed budget sits in the proposal, so I'm not going to go into that budget here. But it's for us in humanities a unique opportunity to do something that is more than just go to the dean and wait for a handout to organize a program. Now what we really want to do is to prepare students for the twenty-first century with hands-on experience in digital technologies, and this is an integrated teaching and research endeavor to deal with historical materials that could be, again, architectural history, urban planning and so on and so forth. We built on existing courses so that we do not start from scratch. We also use teaching

surpluses in particular areas, especially in art history, and then we try to bring in all kinds of new media specialists to cross-fertilize schools that are used to working on their own, they're not used to working in teams, and this in turn allows us to formulate entirely new questions. This is not a gimmick; this is not just constructing a 3D room or something like that. This is really about serious scholarship. We now have teams run that include engineers and architects to reconstruct archeological sites. So it really helps us to study archeology, but also architecture. Caroline and her team together with researchers from Padua and Venice are working also on the Visualizing Venice project for instance. And basically some of the projects that we have done already since 2008 are training workshops and digital tools for humanists. I mean you have no idea how much time and effort you have to spend to teach somebody how to code something. For humanists that's a foreign universe. Visualizing Venice, modeling historical artifacts, we're also working with the Nasher Museum to visualize the Brummer Collection. We work together with engineering, as I said earlier, but also with computer science and so on and so forth.

I think you've got more or less the sense, and here once again if you want to know more details about all these projects, I'm not going to talk over it, please go to the website of the Wired! team and you'll find all the details. The same thing for Visualizing Venice. It's a very important project where the Wired! team is also collaborating with environmental science. So this was again completely unexpected but we ended up studying the evolution of urban design, which until now was never studied in a dynamic way. You always saw the little captions, but how can that alter how you think about the material? Again details are there on the website and just brief text that you also can consult if you don't want to go to the entire proposal. But basic-

ly what this does is model urban growth, and this is one of the projects that the Wired! team is interested in--in natural space, animated models that show urban change over time. And again initially we experimented with it on an undergraduate level, and that's where they began to learn about the demand that could exist for a program like this. Because many of the undergrads said, "well we do not know enough, this is not serious enough, we need more courses in a very particular direction and especially the marriage of new media and historical materials." And our audience is students who are interested in all kinds of professional careers in the cultural sector, and there are many--museums, architecture, landmarks. Also innovative multimedia corporations at work with the cultural sector to do big reconstructions of particular cities or what have you. But also an academic career and graduate work--art, architecture, architectural history, archaeology, and you have a whole gambit of possibilities.

As far as the basic structure is concerned, this is basically a three semester master's program with a summer session that allow the students to go in-situ in our digs for instance in Catalhoyukin Turkey or in Athens where students can do on-site laser scanning and bring that stuff back to Duke. So basically 30 credit hours, 8 credit labs, this is just standard master's to have some core. We also have visualization core and pro seminar I and II, which is again meant to create a necessary core. So that these student stay together in very basic methodology and visualization core courses and then it also contains a thesis. And here the thesis is comprised out of two parts, a written part and also a project part, where they have to show in a rigorous manner how that is significant to one of the other historical fields. So it's not just, "I'm going to play a little bit," but "I'm going to reconstruct the forum romanum and that's it." The faculty involved, this is all taught by reg-

ular-rank, tenured faculty in Duke. Several of the courses are already being taught, both on the graduate and the undergraduate level. And we have core faculty that can teach, so basically the staffing needs are not a problem for this program. We also have post-docs-- which is also quite unusual for a humanities program--who are also going to be involved in the teaching. But we have overload as far as faculty engagement is concerned. As far as the sustainable model is concerned, again the detailed budget you can find in the proposal itself. We go about this in a rather sort of modest way, ten students per year. But that gives us enough revenue to sustain basically the infrastructure, the M&O, the FMD for Smith Warehouse base, and the lab. This will allow us also to have enough critical mass on an intellectual level and basically what we also have in mind is to have some administrative personnel for the MA. We're learning our way. I don't pretend that everything is neatly in place, it's not, but one of the great things in collaborating in Bay 11 and Bay 10 is that we also allow ourselves to make mistakes. But I hope seriously that that is not one of them (laughter). So that's my presentation du jour, and please, I welcome your questions.

**Baker:** You said that the core faculty will be primarily presently employed Duke faculty. How would this impact your teaching in either your doctoral program or your undergrad program. It must be a drain on them.

**Van Miegroet:** Not really because that is discretionary. And to be very honest with you, we have a teaching surplus in some of our areas. For instance, we have teaching surpluses in art history and we have a teaching surplus in the early areas of art history, which is not surprising. Most art historians are contemporary people and not really interested in older cultures. It's too complicated, sometimes they have to learn a language, sometimes they don't want to do that anymore. So there is a

considerable surplus there. The interesting part is the old seasoned faculty who got interested in the new digital media and began to run with it. And that created a fantastic atmosphere also for the students, so the impact is really very positive. Double positive really, because they have critical mass in their courses and they're also rejuvenated in their methodologies. And that's again a Duke thing. I mean, that's what we do best.

**Benfey:** Could you elaborate a little bit more about the type of research questions that come out of this? I get very well the 3D visualization, but I haven't yet grasped what are the research questions that can be answered using this sort of technology?

**Van Miegroet:** For instance, ones that are related to urban design. For instance, how is a city being shaped over three centuries? Usually that's not visualized, and when you do not visualize something, you're missing a number of steps or you're missing the dynamics of how a building was shaped or how a city was shaped. And then the question can for instance be, like what Caroline is doing with Venice, the relationship between the development of the city, which is a standard question for an architectural historian, and then the cisterns for instance, the water cisterns that were placed in there, which is a question for an environmental scientist. And in bringing these two people together you begin to look at those dynamics completely differently. I must say, I've been several times to Venice and I never wondered where do they get their water from because it's surrounded by water. But the point is that by studying this together--the architectural question, the dynamics of the city, where are the cisterns--we can learn a few things for the future. Because this is all about preserving water, preserving nature, how did they use cisterns to be efficient? That's one instance where they really brought something to the

table. And the Lausanne Polytechnique is very interested to join the project. And these are really hardcore MIT-types basically (laughter). I say that with the fullest respect!

**Walter Sinnott-Armstrong (Philosophy):** I was interested in to what extent the program's going to focus on art history because they all seem to be required to take this methodology, but I can imagine people coming in with an interest in military history who could use visualization and have no interest in art history whatsoever and still being required to take that course. How does that focus on art history fit with the way the students may be interested?

**Van Miegroet:** You're absolutely right, but the reason why we want to do that, at least in the beginning stages, is to keep the focus and to first learn from this. And if there is really enough pressure on the system, if people say, well we don't really want to do all the time in art history or we don't want to be completely based in art history, then we move out of it. But we wanted to start really--and you'll see that in the proposal too--with five really focused projects, so that the students know this is what I'm signing up for, this is the sort of project I wanted to be connected to. If we get a lot of push back from our audience, who say, well you should expand it, then we'll do that. But in the atmosphere of full disclosure, we're working on another program, which is basically going in that direction. This is sort of dealing with historical visualization. Our other program is more MIT-style media arts and science where that sort of student would have a space. And these two are going to work together. Again, have a look at Duke Today and you'll see the story on media arts and sciences and what we're doing there, and you'll get it. I hope that answers your question.

**Justin Wright (Biology):** I was wondering if

you could talk a little bit more about the downstream-side of this. Is there a market for students with these particular skills or is there money for job placement? I'm sure there are people who'd want to take this course, but would we then be creating individuals who wouldn't have anything to go on to?

**Van Miegroet:** The cultural sector is a big market. And for instance if you look over at the museum world, the whole museum world is really changing dramatically because you have a whole generation which is still in the old, sort of setting-up exhibitions and things like that whereas they really need to be very well conversant with new technologies because the people who come to museums and young students who come to museums are conversant with that technology. But there is that gap there. So that's the sort of specialist who could be trained there. This is also someone who could go into academe in historical visualization because we see that object of inquiry gaining more serious academic traction over the years. So definitely the museum sector, academe to a lesser degree, and what we have not yet fully explored and what we will be doing in the future is all these new media start-ups who also need someone of this skill-set who deals with advanced visualization, it's a bit softer, but these three we identify.

**Christina Williams (Psychology & Neuroscience):** I just wondered who you expect the students to be? Are they likely Duke undergrads who graduated and want to go on or do you expect a broad international population of students?

**Van Miegroet:** Both, both. Because nationally the Wired! team and Caroline Bruzelius's work is highly respected, she's a member of the academy, she's regularly invited to Harvard and MIT. I mean, they know what we're

doing here. And that's how we began to learn we should set up a master's program because we have already a lot of demand from our undergraduate students. And that's, as far as survey is concerned, a very limited pool. And then we began to talk to our colleagues who said that would be fantastic. But with anything, when you set up a business you have to set it up and see what is happening. So I can make a very rosy picture. I can only tell you when I started with the PhD in Art History in the beginning, and it was also in this committee here, people said to me, why do you want a PhD in Art History? You're never going to get jobs for these people. Most of our PhDs are employed. And we didn't know either. So to be honest with you, I think we're going to be good with applications; that's safe. And I expect anywhere between 50 to 60 so that we have a good ratio of applications vis-a-vis admissions to that we can keep the quality high enough. And we learned that with the MFA too. The MFA is also a program that we developed in our quarters, completely self-supporting and the same argument: Duke has no tradition in MFA, nobody's going to come to Duke to study art. And in addition, studying art and paying for it? Artists are poor! Artists don't pay for stuff (laughter). And it was exactly the opposite. So we have over a hundred applications in our first year of operation.

**Henriquez:** I was curious, you were mentioning the fact that the students need to have some enhanced computational realization skill-set perhaps to be employable. Are these things being taught to undergraduate students at Duke who are in these programs and are they learning these skill sets as well?

**Van Miegroet:** Yeah, because--and this is an area, of course, where we need to give you some explanation of what we're doing there in Bay 11--because we have there a team in place that is constituted purely of scientists.

So it is headed by a physicist, there are two coders there, there is a data-mining specialist. So we are trying, not only to be conversant with these techniques, but also to learn them. And they are teaching both our students and our faculty, which is great fun for us too. Because for the first time, for instance, in art history we have introduced code as a language requirement. That was a small revolution in that department. But this is where we give the correct signal: if you want to do this, you need to learn code. We began to develop, for instance, art market simulation programs and things like that. Really the sky is the limit, but that's how good experimental environments should be. I can give you more specifics on that one.

**Janet Ewald (History):** I think a version of this question has been asked before, but I'm going to simply reword it. To what extent will your teaching relay on, say non-tenure track, faculty?

**Van Miegroet:** None whatsoever.

**Socolar:** You did mention post-docs.

**Van Miegroet:** One.

**Ewald:** I was thinking of like a research professor. It was my understanding that research professor wasn't necessarily tenure-track?

**Van Miegroet:** There is one research professor involved, and that's Victoria Szabo. But that's regular rank. All the rest is...

**Ewald:** So she's tenure-track?

**Van Miegroet:** No, she's on five-year...

**Ewald:** Oh, but that was my question, whether...

**Van Miegroet:** Yes, only one.

**Ewald:** Okay.

**Socolar:** Another question for Hans? Okay, thanks very much.

**Van Miegroet:** Thank you.

### *PROPOSED MASTER'S IN MEDICAL PHYSICS AT DKU*

**Socolar:** Okay, so before we hear about the DKU Medical Physics program, I want to remind everyone of the context for the Academic Council's consideration of this proposal. This is a Duke degree to be offered at Duke-Kunshan University--it is not a DKU degree--and it is the third such degree that has come before this body. The first was the Fuqua School's Master in Management Studies degree, which was approved in December 2011, and the second was the Master's in Global Health, which was approved at the May 2012 Council meeting.

On March 22, 2012, this Council passed a resolution stating its support for proceeding with the development of Duke degree programs at DKU. So here is the resolution that was passed, and I've just highlighted in red the crucial sentence, that the Academic Council is prepared to consider graduate program proposals at DKU that lead to Duke degrees or Duke credit.

Our job regarding the present proposal is to evaluate it on its own merits, not to hold a referendum on the larger DKU project (laughter). This does not mean, however, that we should ignore the complexities of running the program in Kunshan, and I hope we have reserved enough time for Council members to be satisfied that the relevant issues have been raised and addressed.

One issue that I would like to anticipate with a brief explanation is the process by which DKU faculty will be hired. First, any faculty member with a Duke appointment will be hired through the usual channels at Duke, following our standard procedures for searches, evaluations, and offers. Now for DKU faculty in master's degree programs who do not have Duke appointments, the search will be carried out as shown here. It will be carried out, initiated at Duke in the usual way by the relevant hiring unit. Their recommendation, the successful candidate, will then be recommended to the DKU Faculty Appointments Committee, which consists of five members of the Duke University faculty, two faculty from our partner university, Wuhan, and two DKU faculty. And that committee will forward the recommendation to the Executive Vice Chancellor of DKU who will generate the offer. It's a little bit different for undergraduate programs. There's a nominating committee, but that's not something we have to concern ourselves with today. And this procedure, this committee structure, is actually specified in the Articles of Association of DKU.

So, I also just want to mention for those of you, and I assume it's many of you, who are interested in how the overall picture is shaping up at DKU, I'll let you know that Dr. Mary Brown-Bullock will address this Council in February when she's in town. So at our February 20<sup>th</sup> meeting we'll have a chance to hear from her directly.

Okay so, I'd now like to call on Professors Jim Dobbins, who's the Director of Duke's Medical Physics Graduate Program, and Fang-Fang Yin, who will direct the program at DKU if approved, to present the proposal for a Master of Science in Medical Physics at DKU.

**James Dobbins (Director, Medical Physics Graduate Program):** Thank you, Josh. I also would like to thank the Academic Council for allowing us to put forward our proposal for a new graduate program in medical physics at DKU. As Josh mentioned, I'm Jim Dobbins, the director of the medical physics graduate program here on the Durham campus, and I would like to make a few introductory comments to give you a little context about our graduate program and about medical physics before I turn it over to Fang-Fang Yin, who will be directing our program there.

Let me start by giving a brief description of the field of medical physics for those of you who are not familiar with it. Jokingly, I like to say that medical physics has more Nobel Prizes than any field you've never heard of. Medical Physics began about a hundred years ago with the discoveries of x-rays and natural radioactivity, which went on to be awarded two of the first Nobel Prizes in physics. Not only were these discoveries important in ushering in the era of modern physics, but they were also the beginning of very important contributions that physicists were going to make over the past century to the development of modern medicine. More recently, there have been two Nobel Prizes in Physiology or Medicine awarded for work that's essentially medical physics work, and that is namely the development of Computed Tomography and Magnetic Resonance Imaging.

Medical Physics is an interdisciplinary, cutting-edge field at the intersection of physics, engineering, and medicine. It comprises the science behind the development of three important specialties of modern medicine--namely, radiology, radiation oncology, and nuclear medicine--and it also contributes to other fields in medicine as well, such as cardiology. And it also plays an important role in molecular medicine and other things that

are relevant to the future of biomedical research. Students who study medical physics have a wide array of career opportunities available to them, including work in academia, work in the clinic, industry, and government labs.

Our medical physics graduate program at Duke was approved by the Board of Trustees in 2004, and we are currently in our ninth academic year. We offer both a master's and a PhD degree. Over the past eight years, we have grown to become the second largest medical physics graduate program in the U.S. and one of the top three or four in quality. We have quite a large faculty and student body, with over 50 faculty members from five departments and generally 50-60 graduate students at any given time. We have graduated about 120 students so far, and they have competed excellently in the marketplace for jobs or for additional residency training in our field. Our students have shown outstanding scholarly output with over 400 publications and presentations given to date. And we have become a leader in the national enterprise of medical physics education by being the founding organization for a new professional society called the Society of Directors of Academic Medical Physics Programs. That new international body came out of our work here at Duke.

So I want to thank you for allowing me to present this brief introduction. I thought it would be important to understand the context about what medical physics is and what we have done here before you hear about our plans for DKU. At this point I would like to invite Fang-Fang Yin to come to the podium. Fang-Fang is the Associate Director of our program here at Duke and the director of our DKU initiative.

**Fang-Fang Yin (Associate Director, Medical Physics Graduate Program):** Thank you,

Jim. About nine years ago my first job in coming here was to work with Jim to do things for the approval of the medical physics program. So nine years later now today we are talking about a different program, the Duke-DKU program. To follow up on what Jim talked about, I'm going to just summarize what we're going to do for DKU to build a similar high-quality medical physics program in China. So the rationale for this proposal is that we see there is a substantial need for medical physics professionals both in China and in other Asian countries. The reason is that there are growing facilities in both those regions, in China and other Asian countries, and they need scientifically prepared professionals. And just for China alone, they would need more than fifteen hundred medical physicists in the hospitals by the year 2020, and that's not including the needs in industry and government organizations. And also we consider this a good opportunity for our Duke medical physics faculty because they will enrich their teaching and the research experience as well as their collaboration in other regions and other countries. Third, we think this will advance the best practices for medical physics education as well as research through Duke-DKU exchanges. And finally, we consider this to be furthering Duke's mission to advance the civic and global engagement of Duke University as well as to promote and enhance Duke's brand of academic quality.

So the master's degree in medical physics, the curriculum will be including forty credit hours and that would be completed in two years. We will emphasize three tracks from the existing four tracks at Duke. One is for radiation therapy, which will be the majority, and then diagnostic imaging as well as nuclear medicine. And typically it will include credit hours for six core courses, which are eighteen hours, and seven credit hours of required seminars and practicum courses, and nine credit hours that are devoted to one

track specifically, and one elective course, and one frontier course. And also we'll have six credit hours towards thesis research or some students might choose to do scholarly papers plus one additional track-specific course. We have an optional summer internship program for students who wish to enhance their clinical skills.

The class size, the timing, and the location in brief for the student studying and taking courses at DKU, and before that I'm going to summarize the class sizes. Each class will enroll fifteen students for the first three years. And then we're planning to increase to eighteen to twenty in the fourth and the fifth years. This number is calculated based on the experience we had at Duke as well as bearing on the financial need. So as I said, the student would take courses at DKU for the first year, both the fall and the spring. And then we'll offer students to continue from June to December to do research in their courses at Duke, and they will travel here and join our medical physics program at Duke. And also they will take a qualifying exam for graduation as well as for some students, they may want to move to a PhD and we will enroll a few students from DKU in the Duke program here. For the second year the spring semester, the students will go back to DKU to continue their research and a few courses and mainly complete and defend their thesis work. So in terms of research work, that could be done three places. One, they will do research at Duke's campus during the second year, June to December. Or they could do it at DKU affiliated hospitals because we have very similar equipment between Duke and some affiliated Chinese hospitals. And also they could do research at the DKU campus to do software or hardware work.

The teaching and the mentoring: let's first talk about faculty. As Josh mentioned, all the faculty will be Duke faculty or DKU adjunct

faculty approved by Duke's graduate school. And all courses will be taught in English. The course schedule may be flexible to accommodate faculty time and schedules. The class will mostly be classroom teaching, and the classroom teaching will be offered by three types of faculty. One is locally hired DKU faculty or adjunct faculty working for the universities or hospitals in China or affiliated regions. And also there's faculty from Duke who will travel to DKU to offer teaching. We have a pool of 27 faculty members who have expressed the interest to do so. And lastly, we will have teaching offered by faculty at Durham through remote learning tools. This is only for seminars because there is one credit seminar per semester that will be offered.

Co-mentorship for each student: Durham faculty will serve as the primary advisors for all the students, and that will be done by students coming to Durham and by visitation of the Duke faculty to DKU. Also each student will have a DKU faculty member or DKU adjunct faculty member as a co-advisor. The quality research assessment: we want the research to be able to be presented at a national or international meeting. Ideally we expect the student to write up a manuscript for publication. So how do we assess the quality and the ethical standards? For academic quality, we want Duke quality. In order to do so, initially the DKU medical physics program will be directed by Duke faculty. The medical physics program has selected me to be the initial director, so I'll try to do my best to fulfill the standards of Duke quality. And also we have DGS at DKU on-site, and they will be hired. Any program changes will be overseen by DKU and administrative consultants at Duke. We will also make sure students get the Duke experience. That's why during the third semester in Durham we have co-mentorship arrangements. And finally the

graduate school will evaluate the DKU medical physics program after three years.

Ethics and scientific integrity training will be offered for every student initially when they enter the graduate program, and this is mandatory. The research design ethics: we will make sure that we have Duke IRB or IACUC approval for all projects involving human subjects or animals. Although most medical physics research projects involve hardware or software design, occasionally we have some project related to human subjects and clinical data. So some faculty will also serve as a PI, as I have myself. I have had a few protocols where I have served as a PI. So we will follow IRB and IACUC approval. And also some projects may involve hospitals in China or some other countries, so we will try to make sure we meet additional required local approval and meet the regulatory and ethical requirements for projects in China and other countries. At minimum, all projects will meet Duke IRB and IACUC standards.

Very briefly about the financial model, the major income will come from tuition, and the major expense will be faculty teaching and administrative efforts. The administrative staff, operation, and office expenses and some faculty mentoring and travel will be minor. Additional notes for the financial model, this financial model because it's DKU is developed and prepared with assistance from budgetary staff in the Provost's office so that we can get better bearings. The program will cover direct costs including start up by the fifth year. Contributions to overall DKU expenses are built into the budget. Any surplus from the program remains in China. However, Duke bills DKU for all necessary expenses of the Durham program, including faculty time. DKU and the Provost will back-stop the finances, and there will be no negative finances of the DKU program. That's my brief description. Thank you.

**Socolar:** Questions for Jim or Fang-Fang?

**Warren Grill (Biomedical Engineering):**

How many students from mainland China currently come to Durham for a master's degree? How much does it cost for them? And who pays for the expenses of that program for the student?

**Yin:** Currently we estimate about twenty, sometimes twenty to thirty, students from mainland China. And for PhD students they get a fellowship, and that means the university will pay or the faculty will pay and they get a tuition fellowship too. For the master's degree, they all pay their own expense, tuition plus living costs.

**Grill:** How many are pursuing a master's in Durham, did you say twenty or thirty?

**Yin:** Durham? Yeah, between twenty to thirty percent.

**Dobbins:** Yeah, our graduate program here over the past eight years has been about thirty percent international students and about half of those are from People's Republic. And in terms of the finances as well, as Fang-Fang said, the PhD students of course all get full fellowships and the master's student pay tuition. We off-set that tuition by a fairly healthy scholarship amount in order to set our price-point right for the US market.

**Grill:** Could you be clear on what that is in dollars? What's the price tag and what do they actually pay?

**Dobbins:** Yes. The price tag, the list price in Durham is forty-four thousand, that's the cost of a master's degree in the graduate school at Duke. It will be exactly the same in DKU. In Durham the scholarship amounts that we give to students vary on the quality of the

student. But it might be on an average of eight to ten thousand dollars per year per student in the US. In DKU the exact scholarship amounts are still being worked out between the DKU leadership and the pricing agency in China, but it will be approximately, we anticipate, it will be about fifty percent scholarship for PRC students at DKU off of the forty-four thousand list price. For students who are not from China the scholarship amount would be less. So again those are still being worked out, but that's our understanding of roughly what we're targeting for the cost in China.

**Grill:** So it would be less expensive for a student to attend the program at DKU than it would be to attend the program in Durham?

**Dobbins:** Correct. For a master's degree, that's right.

**Yin:** That's mainly for the people from China.

**Dobbins.** For China, yeah. For the students who are from other areas, like maybe Singapore, Japan, Korea, India, who may also be attracted to the DKU program the cost might be about the same out of pocket.

**Truskey:** Are there any comparable medical physics programs in China?

**Yin:** There are some programs in China, about three. There are some universities that are considering starting new programs. They produce about twenty students every year. So this is way below what is needed at this time.

**Truskey:** And what is the cost of their program relative to what you're going to change with the discount?

**Yin:** The cost in China in universities-- because many of the programs are sponsored

by the government--for them the cost would be much, much lower than what we provide. Different universities are different, so I cannot provide the detailed numbers.

**Garnett Kelsoe (Immunology):** You mentioned that students might do research on the DKU campus or at the affiliated hospitals, and I have a two part question. One, what is the medical physics equipment that is located on the DKU campus, and which are the affiliated hospitals and how did they become affiliated?

**Yin:** Those are good questions. The equipment in China, most hospitals will have very comparable equipment to what we have and some will have identical equipment in the hospitals. And around DKU, within one hour traveling, there are five hospitals that are very interested in working with us to be our affiliated sites for students to do practicum, for their hours of clinical work, as well as providing the potential to do research work.

**Kelsoe:** That's terrific. I'm just curious, have we actually had any participation in deciding whether DKU will be associated with these hospitals or is that a decision of the medical physics program?

**Yin:** This will be just for the medical physics program, but the arrangement probably will have to go through DKU.

**Benfey:** So what market research has been done as to the size of the potential customer base and their ability to pay this amount?

**Yin:** The number I mentioned, fifteen hundred by the year 2020 of medical physicists needed, that is given by the Chinese Association of Medical Physics and the Chinese Association of Radiation Therapy/Oncology. So those are hard numbers. The paper was published in the International Journal of Radiation Oncology, Biology and Physics. Now

whether we have done enough marketing for how many students will be willing to pay this tuition, we have not done this kind of survey at this time. But from informal discussion with students who are here and visiting physicists and radiation oncologists from China, they think there would be a good market for this.

**Benfey:** But what's the yearly salary of people in these jobs in China?

**Yin:** After they graduate? I think right now the average salary, you know it has a big range and some people working for the hospital might get relatively lower, probably twenty, thirty thousand dollars a year, and if they work for industry they probably would get between fifty to a hundred thousand dollars a year. Now in the US, it's much higher.

**Benfey:** How are they going to finance twenty thousand dollars a year for three years if they're making twenty thousand dollars a year?

**Yin:** You would be surprised--they will find the resources to pay for this kind of tuition if they really want to. Just like how they come here to study. And the salaries are the same.

**Sara Beale (Law School/ECAC):** Can you give us some idea of how many applications that the Durham program is now getting from China because I think that might give us some idea of the pool of people who want to spend even more to get a Duke degree?

**Yin:** Jim, do you have that amount?

**Dobbins:** Our PhD program here, which is different from what we're talking about in DKU, is highly competitive. We have about four or five matriculates per year, and we get over a hundred applications. So that's a little hard to say because we're highly, highly se-

lective with everyone that applies. We've had a number of students from PRC enroll as PhD students. In terms of the master's students, we end up getting about fifty or so master's applicants per year, and I don't know the exact number, but I would say probably...

**Beale:** Fifty total?

**Dobbins:** Fifty total, and some of our PhD pool we pull over into the master's pool of applicants, if they allow us to do that, for people who are not admitted into our PhD program. And I would say that since about fifteen percent of our overall student body is from PRC, I would say that we get probably in the twenty, twenty-five percent range of those people being from China. I don't know the exact number; I could get the exact number for you if you wanted.

**Yin:** Just to add one more point to answer your question, for most students in China their parents will pay the tuition. That's the tradition in China, and the parents will do everything, give up everything, and put a lot of money towards their kid's education. So they don't have to get a student loan.

**Jennifer Green (School of Medicine):** I'm just not familiar with this training path. Is a master's degree in general the stepping stone to a PhD or is it a stand-alone degree adequate for individuals to attain employment with a master's degree?

**Yin:** A master's degree can be the terminal degree for clinical practice, for government agencies, and also for the regulatory industry as well for service as a medical physicist. And just to take radiation oncology here at Duke: I have twenty-five medical physicists in radiation oncology alone, not talking about radiology as a whole. And I have six master's degree students and eighteen are PhD degrees because we are a university, so we hire a

higher ratio of PhDs. So in the medical field--we call it the American Association of Medical Physicists--of the people working in clinical settings, almost fifty percent or more have master's degrees that are practicing.

**Green:** You are not planning to offer the PhD degree at the present time, is that correct? Do you think that will have any adverse impact on the desirability of the training program?

**Yin:** Excuse me, I'm trying to understand your question better. Are you asking whether adding a PhD program would enhance or affect our current program?

**Green:** I guess I'm asking the reverse. Are you offering the PhD program or are there plans to do that soon?

**Yin:** For DKU?

**Green:** Yes.

**Yin:** At this time we are not planning to offer it immediately, but we do have a plan to propose it in the future, the PhD program for DKU. Now the reason I say that is there are no PhD programs in clinical medical physics of a high quality in China. And there is substantial demand for high quality, both academically and for clinical professionals in medical fields, and they can only be trained by going to a PhD program. So I think a PhD will be very, very critical for DKU in the future if we want to survive.

**Henriquez:** I have a question, two questions. One, there's an English proficiency requirement for all Duke international graduate students and I wondered how that is being satisfied at DKU, is there somebody on-site who would do that? Like Peter, is Peter going to do it? (laughter)

**Peter Lange (Provost):** It's not a program specific thing at DKU. We are using Duke ESL folks to set up the program at DKU. They will oversee it, and there are people from here going to DKU for both the graduate and undergraduate programs.

**Henriquez:** My second question had to do with the facilities to do things like equipment design or software design. Is there going to be a lab there for these students to do that sort of thing? Is that going to be staffed and ready to go?

**Yin:** For software development we requested a lab and DKU has enough space at this time to satisfy our requirements, and I think it's much easier than here because DKU is new and we're one of only three programs. For hardware, that's why we need affiliated hospitals, and they will be used. And just like here, the students will be using clinical equipment for research.

**David MacAlpine (Pharmacology/Cancer Biology):** I just wanted a little clarification. Did I understand right that after their first year, they're going to come to Duke for six months?

**Yin:** Yes.

**MacAlpine:** Do you guys have the infrastructure and capacity to absorb twenty additional students?

**Yin:** Yes, we calculated that. Jim could probably give you more information.

**Dobbins:** Right, we considered that question carefully. We think it adds to the educational experience for students at DKU to come here. It's also a way for us to ensure that we put the sort of the imprimatur Duke quality on the graduate school education that they receive. Now in terms of capacity, we do have

the capacity to handle these additional students. As an example of that, back in 2010 the students that were admitted into the program were about twice the number that we had anticipated. Our yield was twice as high as we expected because it was the recovery right after the recession. So many more people accepted our offers, so instead of getting sixteen students that year, we got almost thirty. Now we were a little concerned about that at first, are we going to be able to handle adequate mentoring for these students? But it ended up happening that in fact, not only did we handle that well, but the professors still told us they would like more students. Because a lot of faculty members who participate in the medical physics program have appointments in clinical departments here, so for them to be able to have master's students come--and they don't have to pay for them like you would for a PhD--to have them come and work on a research project that you've just been waiting to do but haven't had the resources to do is quite a plus for the faculty. So that year we handled those thirty students just fine, so I don't think that adding these additional fifteen students per year here will be a problem.

**MacAlpine:** Well, just to flip it around to the perspective of the student. I mean, my graduate students come into my lab and might be international, and I mean, that's a big transition for them. And of course, we're paying them a full stipend, and I just worry that these students are going to come for a master's and they're paying their way or their parents are, as you said, and now they've got to find housing in Durham and everything else on a master's program?

**Dobbins:** Yeah, but all of our other master's students come and get acclimated, the international students as well. So we certainly will do everything we can to make sure that there's a smooth transition for them. You

want to address the issue specifically for the Chinese students?

**Yin:** Yeah, I think that the vice president of student housing, he already promised that if we need any housing or health insurance that he is all for it. And he has a reservation for this. Every student has a choice, whatever they want to do. The other point is we will establish a student network through the internet, so our students here will be able to provide consultations and other stuff to help the students over there.

**Baker:** Could you tell us, you mentioned a role, but you didn't say how big the role is for adjunct faculty. Could you tell us about how you select the adjunct faculty and how many courses? And what percentage of the courses the adjunct faculty will teach?

**Yin:** Adjunct faculty recruitment or hiring will follow the exact same process as defined by Josh for DKU. So there's no substandard in anything, we'll follow the same standard. The only difference is their primary appointment is maybe Fudan University in Shanghai. And one who has expressed that he's extremely interested is a radiation oncologist. He has MD/PhD degrees, and he's interested in teaching anatomy and physiology for us. And he has a PhD degree from this country and went back to China to practice radiation oncology, and we think this would be the perfect person to do this kind...

**Baker:** Would they teach ninety percent of the courses?

**Yin:** No, they are interested in teaching four courses, but we probably will have a DKU faculty member to join in the activity and efforts. Just like here, not all of the faculty teaching the courses will have medical physics primary appointments. I'm teaching one course, and I'm primary practice in radiation

oncology. And I'm chief physicist; I'm responsible for six hospitals, technical support, and other stuff. But my teaching is, you know, really my second job.

**Socolar:** Further questions? Thanks so much. So I will just remind you that we vote on all three of these proposals...Oh, Earl?

**Earl Dowell (Mechanical Engineering):** Is it kosher to ask a question about the chart you showed just before you introduced this topic?

**Socolar:** We've got a couple minutes and Peter is here, so go ahead.

**Dowell:** The question is if someone who is recruited to DKU as a faculty member acquires tenure at some point, are they tenured at DKU only or could they choose to return to the Durham campus and join their academic department here?

**Lange:** For the current period there is no tenure at DKU. If we hire a faculty member for DKU and the department here wishes to give that person tenure, then an appointment structure could be worked out so that that could happen. And the department would, in doing so, be taking on the long term obligation to have that faculty member come back here if the faculty member chose to do that.

**Socolar:** Okay, thank you. I'll just remind you that we're going to vote in November, and to please let me know if anything comes up between now then that you think really requires further discussion. And with that we conclude today's meeting of the Council, and I'll see you in November.