

00:00 (upbeat music)
00:08 Hi, everyone.
00:09 Thank you for joining this session.
00:11 My name is Jacky Nyamwanda,
00:12 and I'm the Director of the Master of Science
00:14 in Medical Dosimetry here at Suffolk University,
00:17 and I'm really excited to tell you about the program
00:20 and share some information that I hope you'll find helpful.
00:25 So I think I'll start with the mission of the program.
00:28 So one of the key things that we are looking to do
00:31 is to provide a rigorous and comprehensive education.
00:34 And so this is something
00:35 that we take very seriously,
00:37 and the coursework is all designed to be rigorous
00:40 and to give students, you know,
00:41 the absolute best information that they need,
00:44 especially to prepare them for clinical practice.
00:48 Our students receive instruction
00:50 from a very wide variety of faculty
00:52 who mostly come from our clinical facilities
00:55 in and around the Boston area.
00:57 So all our adjuncts are either medical dosimetrists
01:00 or medical physicists
01:01 in some of the local affiliates that we have.
01:03 And this has been really a blessing for the program
01:07 because the students are learning from experts.
01:09 Our students will also use the most advanced technologies
01:13 to develop exceptional clinical skills
01:15 as well as research experiences.
01:17 And very important is we are preparing students
01:19 for entry level positions.
01:21 So at the base we are basically preparing students
01:25 to graduate, to go into entry level positions.
01:27 We're not expecting that they're going to be experts
01:29 right on day one,
01:30 but they will have the skills necessary
01:32 to get them going at an entry level position.
01:37 Some of the goals is that our students
01:39 will be clinically competent,
01:40 and these are things that we evaluate
01:42 and I'll elaborate a little bit more about that later.
01:44 That they will think critically.
01:46 This is highly, highly important.
01:48 We are dealing with radiation.
01:51 It's something that's once it's been delivered,
01:52 it cannot be taken back and the effects can have, you know,
01:55 you can have side effects that show up immediately.
01:58 Some don't show up until much later in life,
02:00 15, 20 years down the line.
02:02 So the ability to think critically
02:04 is really, really important
02:05 because you're presented with patients
02:07 in very different and unique situations

02:09 and you have to make decisions
02:11 about how you're going to create this treatment plan.
02:13 We also hope to graduate students
02:15 who are able to communicate effectively,
02:17 both in written and in verbal form.
02:20 This is, it goes to professionalism
02:23 and being part of a team.
02:24 And so communication is always a very critical part
02:27 of that work that we do.
02:29 And then lastly that they also appreciate
02:31 the importance of continued education.
02:34 This is a rapidly evolving field, always changing.
02:37 There's always new techniques coming out.
02:39 We are constantly learning,
02:40 and I'm still working as a dosimetrist part-time
02:43 at Mass General Hospital.
02:44 And, you know, I'm still learning every day.
02:46 A lot of times I learn from my students
02:48 because the technology changes so quickly.
02:50 And I think that's also something
02:51 that makes the the field very exciting
02:54 because you are constantly exposed to new information
02:56 and learning new things.
02:59 So what do dosimetrists do exactly?
03:02 This is something that a lot of people
03:04 who are applying to our programs
03:06 are having to explain to their parents and families
03:09 and, you know, people that they're meeting.
03:11 And so a dosimetrist is,
03:13 is part of the radiation oncology team.
03:16 And we are charged with designing radiation treatment plans
03:20 by computer means for patients living with cancer
03:24 who are going to get radiation treatment.
03:26 And so the goal is to deliver a curative dose to the tumor
03:30 while at the same time trying to spare
03:32 as much as possible all the normal tissues
03:35 that are surrounding, in the surrounding area.
03:37 So for example, if you are giving radiation,
03:39 if you're designing a radiation treatment plan
03:41 for a patient with breast cancer
03:43 like what is shown on the screen there,
03:45 one of the things you might be worried about is the heart,
03:47 which is that central structure that's being shown there,
03:50 as well as the lungs,
03:51 which is the dark area that you see on the screen.
03:53 So it's always this balance between getting enough dose
03:57 to the tumor and eradicate those tumor cells,
04:00 but also not causing damage to the patient.
04:03 So for example, in breast cancer,
04:05 if you eradicate the tumor,
04:07 but then later down the line the patient has cardiac issues
04:10 and ends up, you know, and some of those can be very morbid,
04:13 you know, then that's not a good outcome.
04:14 So our goal is to basically do the best we can

04:17 and meet these sort of competing demands
04:19 when creating the treatment plan.
04:24 So a little bit about the program.
04:25 So we enroll students in the fall semester.
04:28 The program length is 21 months for students
04:31 without background in radiation therapy.
04:33 Applicants who are coming in with a background
04:36 in radiation therapy
04:37 may be able to waive the first semester,
04:39 which is a leveling semester,
04:40 and complete the program in 17 months.
04:43 However, most students actually do not have a background
04:45 in radiation therapy.
04:47 So we are a very small program.
04:49 Right now, we are enrolling eight students
04:51 and typically we just have one or two
04:53 who have a background in radiation therapy.
04:55 I myself had a background in physics.
04:57 I had never worked as a radiation therapist,
04:59 and I, you know, at the time that I went into the dosimetry
05:02 was on the job training.
05:03 And so all my training was done in the clinical setting.
05:06 Now, obviously, graduating from an accredited program
05:09 is required, but, again,
05:11 most of our applicants don't have a background
05:14 in radiation therapy.
05:15 So what kind of backgrounds come into the program?
05:17 We have people with majors in biology, physics, chemistry,
05:22 even mathematics, and then health sciences, psychology.
05:25 So as long as the student has all the prerequisite courses
05:28 and the minimum GPA,
05:29 they're welcome to apply to the program.
05:33 Our affiliates are in and around the Boston area.
05:36 I feel like we're very lucky to be surrounded
05:38 by just a wide array of incredible world class hospitals.
05:44 Mass General Hospital and Brigham and Women's Hospital
05:47 were the first two facilities when we started the program
05:49 that we had on board.
05:52 MGH is a 12 minute walk literally
05:54 from where I'm sitting right now at the university.
05:56 So we are so blessed and so lucky
05:58 to be able to take advantage
06:00 of that as a training site for our students.
06:03 Other hospitals include Lahey Hospital,
06:05 Rhode Island Hospital in Providence,
06:07 and then various satellites of the MGH
06:10 and the Brigham and Women's Hospital
06:11 in and around the greater Boston area.
06:15 And this map just shows a distribution
06:18 of where these facilities are.
06:20 So all those different points on the map show you
06:23 in a sense where all the facilities are located.
06:26 All of these facilities,
06:27 the farthest one away is about an hour drive

06:30 from the university.
06:34 All of the rest, some of them are actually
06:35 accessible via the subway,
06:37 and students rotate and go to at least two facilities.
06:42 So what are some of the strengths of the program?
06:43 I think one of the main strengths is the small class sizes.
06:46 Like I said, right now we take eight students per cohort.
06:49 We may go up to 10 in the next year or in a couple of years.
06:53 So again, very small,
06:54 and so we get to know our students really well.
06:57 The students get to know us very well
06:59 and I think it helps us to be able
07:01 to keep track of the students
07:02 and see where they are and how they're doing
07:04 both, you know, didactically in the clinic
07:07 and also on a personal level.
07:08 So we do a lot of, you know, one-on-one advising
07:10 and we're able to do that
07:12 just because the program is so small.
07:14 Something else I had mentioned and I will reiterate here
07:16 is that we, a lot of our instructors are adjuncts
07:19 from the different hospitals.
07:20 So again, these are board certified
07:22 medical physicists and dosimetrists
07:24 and they're clinical experts.
07:25 They have current knowledge.
07:27 And so I feel like our students are exposed
07:29 to all the latest information.
07:31 Sometimes even before it gets into the curriculum,
07:33 we, you know, we get to get information from them
07:37 and are able to add them in because one of the,
07:39 one of the things with the curriculum that we follow
07:41 is that it's a living, breathing curriculum
07:43 that has to get updated
07:44 as new techniques and protocols come up.
07:46 So that's been, I think, a very big strength of the program.
07:49 And then the other one is that, you know,
07:51 at its core is that the clinical rotations,
07:54 it's all experiential.
07:56 Students are graduating with about 1300 clinical hours.
07:59 They get to rotate to a large center,
08:01 a large academic medical center,
08:03 as well as a small center.
08:04 And we feel very strongly that this is a good,
08:07 these are good experiences
08:08 so that students can learn in different settings
08:11 and be able to anticipate what they might see
08:14 once they start working,
08:15 rather than just being at one center and not,
08:18 and only learning one style of doing things.
08:21 So that, I think, is another strength of the program.
08:25 It also allows them to get exposure
08:27 to multiple treatment planning systems.
08:29 So all of our students will graduate with experience

08:31 both in Raystation as well as Eclipse,
08:34 which are the two main planning systems
08:37 out at the market at the moment.
08:41 And then the other strength that we have
08:42 is that our students,
08:44 all students get a three week rotation in proton therapy.
08:48 So proton therapy is a specialist type
08:49 of radiation treatment that's,
08:52 it's a bit more precise,
08:54 a little bit more, it's more specialized.
08:56 It's not available everywhere.
08:58 We're very lucky that our students
08:59 get a three week rotation at MGH.
09:01 And in fact, I've had some graduates,
09:04 some of our graduates get employed in proton centers
09:06 in different parts of the country directly from the program.
09:09 So that's been a big, big plus for us.
09:12 The other is that the Brigham and Women's Hospital
09:14 has an MRI Linac.
09:15 So this is a linac accelerator
09:17 that has an MRI Linac embedded,
09:19 and eventually we are going to be having students
09:22 having experiences on that machine as well
09:24 in terms of observing treatments
09:26 and just learning how that works for adaptive treatments,
09:30 which is where you might actually modify a plan of the day
09:34 based on what you see on the patient's anatomy
09:36 on that given day.
09:39 In terms of the curriculum,
09:40 it is four semesters plus a full-time summer internship
09:44 in between year one and year two.
09:47 As I said, the first semester is a leveling semester
09:49 that's required for everyone
09:51 without a background in radiation therapy.
09:53 And again, majority of our students do take the,
09:56 the leveling semester.
09:57 So that's just an outline of what the curriculum looks like.
10:01 And then the clinical rotations
10:03 will start in the spring semester or year two.
10:06 And then, again, you have two other rotations
10:08 in the second year.
10:12 And so what do the clinical rotations look like?
10:15 You know, so in the first semester you are in the clinic,
10:17 students in the clinic two days a week.
10:19 That's Tuesdays and Thursdays right now
10:21 from eight to 4:30.
10:23 In the summer, it's 40 hours a week.
10:24 It's a full-time summer internship for 12 weeks.
10:29 So this is where I think everything comes together
10:32 for the students because you're doing nothing
10:34 but you are only in the clinic
10:36 and there's no didactic work at that time.
10:38 And then in the second year, both spring and fall,
10:41 the students are in the clinic for three days a week.

10:45 The rotations are competency based.
10:47 So it's not just about the 1300 hours,
10:49 but there's set competencies that students have to complete
10:53 based on designing treatment plans
10:55 for different anatomic sites.
10:57 So we might start with palliative, like whole brain,
11:00 maybe spine, and then the rectum,
11:02 and then we move on sequentially.
11:05 As we progress through the program,
11:06 the complexity of the planning, you know, increases.
11:09 So we'll start students in the summer on breast treatment.
11:12 They might do prostate, abdomen,
11:14 and then move on into the second year.
11:16 And by the end they're doing the most complex planning,
11:19 which is like for head and neck cancers
11:21 as well as GYN with a lot of nodal involvement.
11:26 So it's built to be very sequential.
11:27 And throughout the rotations,
11:29 students are also doing a lot of observations.
11:31 They're going to the treatment units
11:32 and observing different simulations
11:34 and different treatments, different procedures.
11:36 They spend time with medical physics
11:39 looking at QA, physics plan checks.
11:43 So they're involved in, you know,
11:44 just different aspects of the operations in the clinic
11:48 and observing all these different treatments.
11:50 And we feel that that is very important,
11:51 especially for people coming without a background
11:53 in radiation therapy.
11:54 We feel very strongly that they have to be exposed
11:56 and be in the clinics
11:58 and actually learn and see how the treatments are delivered
12:00 because that's how, as a planner,
12:02 you get to learn what works and what doesn't work
12:05 when you actually see the treatments.
12:06 We do follow AMD curriculum guidelines,
12:08 but we also add additional content.
12:11 We're very fortunate to have an advisory committee
12:14 that's made up of representatives
12:16 from all the different clinical sites
12:18 and they advise us on what they think
12:20 should be added to the curriculum,
12:21 what should be emphasized,
12:23 what are the skills that they feel students
12:26 should have when they graduate.
12:27 So those are all things,
12:28 we're very fortunate to have that committee
12:30 that that helps us.
12:31 Every student is assigned a clinical preceptor.
12:35 So this is someone who is a dosimetrist
12:37 in the clinic, board certified,
12:39 that is in charge of their clinical education,
12:42 making sure that they're staying on track

12:43 with their assignments, providing evaluations,
12:47 and is sort of the liaison between the university
12:50 and the hospital.
12:51 And so, and in terms of the evaluation,
12:54 what's one thing that I think is very important
12:56 is that the way students are evaluated
12:59 in the clinical component
13:00 is not just on their technical knowledge, on the cognitive.
13:04 We also look at affective, meaning your attitude.
13:07 Professionalism is a very big component of the program.
13:10 You know, what's your attitude?
13:11 Are you on time?
13:12 Do you take criticism well?
13:15 Do you take initiative?
13:16 Do you show an inclination for learning?
13:19 Are you self-directed?
13:21 Things like that.
13:21 And then psychomotor, how do you go about doing things?
13:24 And all these three things are weighted equally,
13:26 which sometimes surprises students,
13:28 but it's important because we don't want
13:31 to graduate students who can create beautiful,
13:34 excellent treatment plans,
13:36 but, you know, don't have a good attitude.
13:38 You know, there's a certain, you know,
13:40 level of behavior that is expected
13:42 in a professional setting,
13:43 especially in a hospital.
13:44 And so we put a lot of emphasis on all those,
13:46 all those aspects.
13:47 So we are training students to be,
13:49 to be good dosimetrists,
13:51 but also to be professionals, you know,
13:52 so that when, you know, when they go out there,
13:55 they're representing the university
13:56 and representing the program.
13:57 And so those are things that we really emphasize.
14:02 We do also have a clinical coordinator, Crystal Stancell.
14:05 She's in charge of all the scheduling
14:06 and coordinating everything having to do with the rotations.
14:10 She's our liaison to the clinical sites
14:12 and keeps everything running,
14:14 does clinical advisement with the students.
14:16 So we, we keep, you know,
14:18 we end up between her and I,
14:19 you know, we keep a very close eye
14:21 on how the students are progressing.
14:23 And so, and I think that's just good in terms
14:26 of providing students with support.
14:27 Like I said, the program is very rigorous
14:29 and so all the help that they need
14:30 to make sure that everyone is on track
14:32 I think is pretty useful.
14:34 And so she's a supportive resource

14:36 that all the students I think appreciate having.
14:41 The program also has a research component.
14:43 This is year-long.
14:44 Students get to pick their own topic.
14:47 We emphasize evidence-based practice.
14:49 So a lot of what we do is based on, you know, protocols,
14:53 certainly based on what the clinical sites are doing,
14:56 but this is always based on research, right?
14:58 It's always based on evidence.
15:00 And so we want our students to graduate with the,
15:03 with a strong basis of understanding
15:05 how this evidence is generated
15:08 and how to use it in their clinical practice.
15:10 And so one of the ways we do that is to,
15:12 in this yearlong research methods course,
15:14 which also culminates in a project.
15:17 So like I said, the students pick their own topic.
15:19 they're assigned a clinical mentor
15:21 who is the subject matter expert,
15:23 and then I serve as a faculty advisor on the Suffolk side.
15:26 And students have, you know, presented,
15:28 have actually gone on to submit posters.
15:31 We've sent out manuscripts to publication that are pending.
15:35 And one year, we also won the student writing competition
15:38 through the professional association,
15:39 which is the American Association of Medical Dosimetry.
15:42 So that was, that was one of the highlights
15:44 that came out of this work with these research projects.
15:50 So this is an example of a poster
15:51 that one of our students did.
15:53 This was in conjunction with one of the physicians at MGH,
15:57 and that was presented at the annual conference
15:59 that year for our professional association.
16:03 And then in 2021, two of our students won third place
16:08 in the student writing competition
16:10 through their professional association again.
16:12 This was an evaluation of robustness
16:14 of delivery between two techniques.
16:17 And so that was also another highlight for us.
16:20 So we're very proud of the students
16:22 when things go well and their projects, you know,
16:24 end up getting recognized.
16:28 So in terms of program effectiveness, you know,
16:30 how does the program compare
16:32 or how do we, what are some of the outcomes that we look at?
16:35 So these are, these are metrics we have to report
16:37 to our creditor, which is the JRCRT.
16:41 So in terms of job placement, you know,
16:43 most of our students actually are hired
16:44 well before graduation.
16:46 Almost every year all the students
16:48 have a job before graduation,
16:50 and a hundred percent
16:52 are hired within six months of graduation.

16:55 One of the highlights of the program,
16:58 sorry, of the university,
16:59 is we have a career center who have been invaluable
17:02 in helping our students in the job search process.
17:04 They have, we have a career readiness prep module
17:08 in conjunction with the career center
17:11 that involves helping students with resume preparation
17:14 interviews, having mock interviews,
17:17 and just best practice on how to go about
17:20 searching for a job.
17:22 They walk them through a SWOT analysis,
17:23 you know, what are their strengths,
17:25 what are their weaknesses,
17:26 where do they want to be?
17:27 And I think that's been really helpful for them.
17:29 In terms of the MDCB exam,
17:32 this is a board exam that students will take post-graduation
17:35 typically in September or January.
17:37 And right now our pass rate is 95% on the first attempt,
17:41 and this is a five year average.
17:43 And then our retention has been very good.
17:44 We are at a hundred percent retention for last year.
17:47 That is reported on an annual basis,
17:49 and so we're hoping to be able to keep those metrics up.
17:54 This is just an example of some of the recent employers
17:58 where our students have ended up.
18:00 So Mass General Brigham is one of the biggest employers
18:03 for the program.
18:04 We have about 20 of our graduates
18:05 working within the Mass General Brigham system.
18:08 We also have people working at Beth Israel Lahey,
18:11 Rhode Island Hospital,
18:12 Memorial Sloan Kettering in New York,
18:15 Vanderbilt in Tennessee,
18:17 Montefiore in New York,
18:18 Maryland Proton Center, UC San Diego.
18:20 So basically our students
18:21 are in different parts of the country.
18:25 And just depending on, you know, where they want to be
18:27 and and where the jobs are.
18:28 So right now the job outlook is looking very good
18:31 and we give them as much assistance as possible.
18:35 So in terms of what to expect in the program.
18:39 You know, it is a graduate program,
18:40 so for some students coming in from undergrad
18:43 there is a little bit of an adjustment to be made.
18:45 It is rigorous, but it is also fun.
18:47 So if you can believe that we can merge the two,
18:50 so it's rigorous and yet it's fun.
18:52 We do look for accountability.
18:54 It is a graduate level program,
18:56 and so we are expecting some level of independence
18:58 and self-directedness.
19:01 We emphasize students learning from peers.

19:03 You know, we encourage students to collaborate.
19:06 You know, certainly hand in their own work,
19:08 but I think students do learn well from one another.
19:10 And sometimes a student could explain a concept
19:12 even better than I could to somebody else,
19:14 just in a different way.
19:15 And so we encourage that.
19:16 We encourage sharing because that actually
19:19 is a reflection of what goes on in the clinical setting.
19:22 No one ever really practices
19:23 in a vacuum on their own
19:26 and so it's very collaborative.
19:29 We also expect that students will grow
19:31 both personally and professionally.
19:32 I do see that as students end up graduating,
19:35 when I compare them from how they were
19:37 when they first came into the program, they're changed.
19:39 They've become a different person.
19:41 And so it's always nice to see them
19:43 go through that trajectory.
19:45 And I think at the end of the day, it's rewarding.
19:48 You're in the clinic,
19:48 you're working on actual clinical cases.
19:50 Meaning the plans that you create
19:52 are going to be used for treatment.
19:54 And so, and I think at the end of the day that's rewarding
19:56 because everything you're doing
19:57 ultimately is helping someone at the end of the day.
20:02 And so that's all I wanted to share with you
20:04 about the program.
20:05 Thank you so much for taking time to listen,
20:08 to listen in on this presentation.
20:10 That is our contact information.
20:12 If you have any questions,
20:13 feel free to get in touch with us.
20:15 Thank you.
20:16 (upbeat music)