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This is Eastern Michigan University's *Career Corner*. Welcome to season 3, Major Choices and Career Decision.

Welcome back to the *Career Corner Podcast*. Today, we're continuing our amazing series about major choices and career decisions this week with this episode focusing on math and science. So many students start their career journey knowing that they love one or maybe both of these disciplines but don't really know the incredible paths that are available to them.

That's right. We're so happy to have a special guest with us today. Cassie Briggs is with us. And let me tell you a little bit about Dr. Cassie Briggs. She's a conservation biologist, a college professor, and a career coach, so she is the triple threat here. Her research is centered around the conservation of endangered bog turtles and undergraduate learning. Her work has been published in scientific journals, such as biological invasions, conservation biology, and global ecology and conservation.

Dr. Briggs has been teaching college of biology for over 10 years. Her students have commended her for her focus on study skills and personal reflection, as well as her inclusion in bioethics and her introductory courses. Lastly, Cassie is also the founder and career coach of Success in Science Career Coaching, a career coaching service for science students assisting with everything from picking a career to applying to grad school and medical school. So welcome, Cassie.

Thank you, both. It's wonderful to be here.

Awesome So you come in with a lot of accolades. You're very busy. You have so many different things that you're currently working on and kudos to you for that. So I was hoping you could tell our listeners a little bit about your background and how you got into this area.

Yeah, so I guess you could consider me a bit of an oddball, because I knew what I wanted to do since I was in ninth grader in high school. And I know that's pretty uncommon. And I initially wanted to be a college professor. Well, I did that. But I wanted to be a professor of math. And over the course of my education, I discovered I really like the application of math more than the theory of math. And so I found biology through two college courses, genetics and animal behavior.

And I absolutely fell in love as I continued on. I committed to biology during my undergrad research opportunities. So that's one thing I would strongly recommend to any listeners out there. Go do it. Go

see if you enjoy it. So I got to trudge around in streams, chasing crayfish, and then I was working with turtles most recently. And it's been an absolute joy. And then, I was really sold when I started teaching it. And that passion was starting to wear off on the people I was teaching.

And I think that's essentially how I came to this career path and the Career Coaching came actually through office hours as a professor. And those of you out there attending office hours, I hope you use them in this way as well. It's not just about your class content, but it's about talking to your professors about your career hopes and dreams, and what you can do with your major. Because we also have a lot to offer you in that respect. So that's basically how I got where I am.

Well, Cassie, we are certainly excited to have you joining us today to share your expertise with our students. And having work with students as both faculty and as a career coach, what do you think are some of those common misconceptions about pursuing math and science careers?

Well, I tend to teach a lot to honor students that are either premed, prevet, some engineering students, and they seem to have this preconceived notion that you have to 4.0 all your classes. And that's just not true. Your application packet to grad school or jobs is going to be much more than just your grades. And the other thing I would say is what your grades are in introductory courses and how you transition into your upper levels is really what they're looking at.

So if you 4.0 all your classes, awesome, good for you. But there's no context to provide a sign that you're going to improve and you're going to excel when you're challenged. And so even if you don't ace your intro courses, be encouraged that those intro courses are preparing you to succeed in the upper levels. And those are the ones that really count. And so I think that is the most common misconception I hear.

I think another one that some of your listeners may be able to relate to is when you think of science, you think of a scientist, you tend to picture an old white guy.

[LAUGHS]

And that's just not true anymore. I am a white female herpetologist. And if you don't know what herpetologist is. It's someone who studies amphibians and reptiles. And you can imagine that's pretty male dominated. I was the only female in my lab. And I was one of a handful of females that went to these conferences. And so just being prepared for that potential depending what field you're in within science, that may still exist, there might still be a male bias. But I will tell you culture is changing. And no matter how you identify, you belong in science, you belong in STEM.

And I'm so excited. I've had male colleagues really pushed me and encouraged me as a mentor. And I've had female mentors as well. And so I think seeing it helps you believe you belong there. And they're there. I promise you. There's someone that looks like you in that field you're pursuing.

Wow. I love that. That's a really, really empowering message. And particularly for young females, again, I mean, there's a place-- there's a place for them to be able to leverage their skills and their unique abilities. And so I love that. As we're talking about some of these misconceptions, I think sometimes we might think a little bit about personal traits, or qualities, or characteristics. And so some of those might not always be the most informed as well.

So when you're thinking about those types of things, what traits and what characteristics are students really going to need to be able to possess in order to find success in these math and science disciplines? What comes to your mind?

I have to be honest, I don't think there's any unique characteristics that will make you more successful in this career path than others despite our left brain thinking scientists. But I think the number one characteristic would be resilience, and that growth mindset, and that you want to be coachable. So having that thought, OK, I've just hit a roadblock, I've just hit a challenge. Are you going to see that brick wall as something that's going to stop? or you are you going to find a way over it and around it?

So I would say, challenges are there just to see how bad you want it. They're not there to stop you. And so your resilience is really going to unfold in terms of whether you're going to succeed in that career. I think another one would be you have to be collaborative. For many of your listeners out there, I'm sure you've had to be reading some scientific papers, and how many of those are published by one author? Very few.

So the truth of it is in science and in STEM, in general, you're working in a team. And I'm sure you've experienced this in your personal life when you go to the doctor. Is it just the doctor you see? No, you see the attendants, and the schedulers, and they work in a team. And the same thing with putting up a building. That takes an army of people to create the design, and get the materials, and actually build it. And so I think collaboration would be the second one.

And the third, this is going to sound a bit counterintuitive, maybe even controversial, but I think being well-rounded is really important. And I'm saying that could be controversial, because in education, you're steering towards a particular career. So say. You want engineering. OK, well, what do you want

to specialize in engineering? Is it chemical engineering? Is it mechanical engineering? And I would argue that at this stage in your career, you want to stay pretty well-rounded.

And then even when you get into that specialty, I think it's also important to be well-rounded, because what you're doing is going to have an impact on society in some way. And if you're oblivious to that societal context, I think that's going to really limit how successful you can be, but also how people are going to use your work. You want your work used for good, right? And so I think being well-rounded would be the third characteristic.

Yeah, I think those three are probably essentials for any career, right? You have to be collaborative in the work that Brad and I do, any type of industry, but it's definitely essential in STEM. Now for a lot of our students, they actually begin their exploration or coming to Brad and I already having an idea or knowing the interest areas that are unique to them. But well, they may recognize that they have these interest areas in math or science, they might not actually possess the aptitude or skills to be successful in those certain fields. So can you talk a little bit about that?

Yeah, I mean, I think that's a fair statement. But I must say, I am a firm believer that you should pursue your passions over your talents. Because your passions can become your talents, but you can't force your talents to become your passions. And so I think you learn a lot along the way. You learn a lot in your classes, but you learn a lot on the job. And so you can fill in those skill gaps. But if you're not passionate about it, you're not going to learn about it in the depth you need to.

And so I guess I would encourage you, even if someone has told you you can't do that career, or even if you do find your intro engineering course, if you still love it and you're still passionate about it, seek the resources, seek the help you need to be successful in it. And, of course, I will always tell you, you got to try it to be convinced it's the right field. So just because you took a class in it and you did well in the class doesn't mean you're going to like the job.

And so meeting with professionals over coffee or over Zoom, I think is really important. Ask them questions about their career journey. Ask them the aspects of the job they love and the aspects that are not so pleasant. And I think internships are a big one, too. While you're an undergrad, it's a perfect opportunity. Use your summers, or your spring breaks to intern with some of the organizations you'd consider working for. Because that will give you some insider information about if that's really where you're going to be fulfilled in life.

I really appreciate everything that you said, and for multiple reasons, probably the first being the fact that you have reiterated so much of the things that we talk about with our students. So you're just

reinforcing the message about how that-- I like how you put it, really trusting your passions over your talent sometimes. Because if you're flipping that a little bit, that can be a little bit frustrating, because the passion doesn't always come after that if you're just going on your skills. So I really, really like that.

Kind of switching gears here, I wanted to kind of ask you a little bit about some of the areas that students can really start looking into. One of the amazing things about math and science fields is that they're constantly evolving. There's constant change going on. It's very, very exciting. There's so much innovation happening in those areas and so much that students can potentially dive into. So what are some of those really, really hot, maybe up and coming areas, that students may not always be aware of that are going to be in demand in the next couple of years?

Great question. I think I'll probably start with biology, because that's what I'm most familiar with. But through Career Coaching, I've coached lots of different STEM students. So I know a little bit about what you can do with math and engineering as well. So I'll share that tidbit as well. So when I was a PhD student, I was working in genetics. And I'm sure you're aware of the crazy improvements we've made in terms of genetics. You can use genetics to look at the whole genome of an organism at this point.

And so bioinformatics is one of the big growing fields within biology. And it's nice because it really blends math and biology. So there's a lot of coding. So I've coded in Python, in R, in Java. So there's a lot of different systems you all might be familiar with that we actually use in biology to answer cool questions like, how different are these two populations, how long ago did they diverge. So when you're thinking about conservation, and say, poachers collected a handful of turtles, you don't know where they came from.

But now with genetics and with the help of mathematicians, we can say, mhm, this is where they go. And so we can make sure to put them back in the populations they came from. Another one that's really cool is called biomimicry. So I'll tell you a little story to describe what that is. If you imagine going into a hospital, and all the cleaning that they do, right? There's antibiotic soaps used on just about everything, but we know in science that there are some bacteria that are good, but these antibiotics are killing everything.

And so they discovered that this Galapagos shark, their skin has a certain structure that prevents bacteria from binding to it. And so that's why they're free of any bacterial infections in that realm. And engineers mimicked that structure of their skin on the surface. This is essentially like tape or a

plastic adhesive that you put on door handles and that kind of thing. So they're using that in the hospitals around the country. And that's just an example of blending biology with engineering.

And so there's some really cool applications of math and engineering just in the biology world. But I actually-- when I was asked to join you for this podcast, I did spend some time contacting alumni from the college that I teach at and asking of the math majors, what are they doing now? What are the jobs are they in? And yes, there are some engineers, but that was just the tip of the iceberg. So there were some statisticians, and actuaries, accountants, data scientists, financial analysts. They worked for the US Department of Agriculture, State Farm Insurance, Cold Water Machine Company, the IBM corporation, the list goes on.

And so I think when you're thinking about a career in math, or engineering, or science, in general, you're not isolated to academia, or a government job, or industry behind a lab bench. There's a lot of companies that will use your skills. And so I think to keep your eyes open for those opportunities is huge.

Well, that was absolutely incredible, Cassie. And I really, really love the diversity of those different fields. And you're absolutely right. It's just that the sky is really the limit. You can really take a foundation in those disciplines and really apply to so many different unique areas and unique challenges that exist. That's fantastic. So with all that in mind, as we start closing in on today's episode, I was hoping you could tell us a little bit about maybe some of the resources that students can access.

Yeah, definitely. I hinted at one already, alumni. So there's an alumni director in almost every college. And so reach out to them. Ask them are there any alum with this same major as me and would they be willing to talk to me about their career? Because that's a great starting point. Because they're very unlikely to say no to a student at the school they graduated from. And so it's kind of a low risk way of getting your name out there and learning more about the career you're interested in.

Another one would be the society for industrial and applied mathematics. They put out a catalog that outlines the different career paths you could choose, if math is of interest to you. And I ran across this website recently. It's fantastic. It's called weusemath.org. And it goes into some of the examples I was sharing about how math is applied in nearly every subject. And if you're lost to where you want to start or what careers you should even consider, I highly recommend weusemath.org to start with.

And, of course, if you're interested in what are the upcoming careers that are likely to be growing in the future, the US Bureau of Labor Statistics is a great one. So they outline what's projected, so

software developers, they're projected to grow in the next 10 years by 22%. That's a big one. Engineering is only 4%, but it's still growing. So if you're looking for that stability in the future, that's a good place to go for that.

And, of course, I'll do a little selfplug here and that the Success in Science Career Coaching. I'm on social media, and I post all sorts of cool career options within science. That's my Wednesday posts. And so Wednesday and Thursday, I tend to post information about careers and images of scientists that aren't your typical white male to inspire you, that there's a place for you as well. And so I'm on Facebook, Instagram, and Twitter, and I'll share those links with you, guys.

Yes, I can personally vouch for Cassie. She has some amazing content that she shares on LinkedIn. So absolutely, absolutely.

Well, thank you for sharing those with us, Cassie. And thank you also for being here with us today. You definitely have provided lots of valuable information for us but also for our listeners who may be interested in STEM. So for our listeners who maybe want to get connected with you Cassie, I know you mentioned your social media already, but how can our students find and follow with your content?

So the easiest place is probably my website, which is justsuccessinsciencecc.com. And so I also have the blog there so you can follow content. And I have a page of resources everything from how to write a personal essay for your grad school or med school all the way to finding careers. And so that's a good resource to lean on. And then, of course, you can always email me. I personally answer every single email I get. And so cassie@successinsciencecc.com. And I would love to hear from you, and thank you, both so much for having me on today. It was a pleasure.

Awesome. Well, thank you, Cassie. And don't forget that if you're struggling with your career decisions, Brad and I and our lovely fellow career coaches, April and Barb, here at EMU, you have plenty of tools and resources to help you as well. So you can set up an appointment with one of us on Handshake by going to att.joinhandshake.com. So as we sign off today, stay tuned for another amazing episode next Wednesday of the *Career Corner Podcast*. And don't forget--

We're here for you and we support your goals.

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