**I-COURSE ORIENTATION 2021
TRANSCRIPT**

**Slide 1**: Hello and welcome! If you're watching this presentation, that means that you're part of the I-Team, a team that is engaging in redesigning engineering courses to be more inclusive for all kinds of learners.

**Slide 2:** Over the next few minutes, you’ll learn about the key aspects of the INCLUDE program, some basic information about neurodiversity or cognitive diversity, which is the particular focus of the INCLUDE program, and finally, a little bit about how taking a strengths-based approach in your course may improve the experiences of neurodivergent students.

**Slide 3:** The INCLUDE program is led by the CEE department head and it’s supported by a generous $2 million grant from the National Science Foundation. On a large scale, the project is all about encouraging innovation in engineering by welcoming and cultivating the strengths of neurodiverse students. We believe that many of the changes we're making, especially the changes we're making in our I-Courses can be beneficial to all students, even those who don't identify as neurodiverse. The program is actively recruiting neurodiverse students, building a supportive community, transforming engineering courses, providing specialized support, and providing career preparation for the transition into the engineering workforce.

**Slide 4:** The INCLUDE program is centered primarily around the idea that innovation is most likely to happen when the engineering workforce is diverse. You already know about aspects of diversity like race, ethnicity, gender, sexual orientation, and socioeconomic status. This program focuses on neurodiversity, or cognitive variations, as a key aspect of a diverse student body. An author named Harvey Blume wrote that “Neurodiversity may be every bit as crucial for the human race as biodiversity is for life in general. Who can say what form of wiring will prove best at any given moment?” INCLUDE aims to make engineering more welcoming to students who've been underrepresented in engineering and whose unique wiring can open up opportunities to tackle complex engineering problems in new ways. So first, let me explain what we mean by neurodiversity and what cognitive variations fall under the neurodiversity umbrella.

**Slide 5:** When the term neurodiversity was first introduced in the 1990s, it primarily referred to autism. Autistic individuals started speaking out and redefining their cognitive variations as differences rather than a disability. Since then, the term neurodiversity has expanded quite a bit. This is now a term that includes a wide variety of differently wired brains. Some examples of the cognitive variations that fall under the neurodiversity umbrella are anxiety, the autism spectrum, ADHD, depression, dyslexia, dyscalculia, dyspraxia, and other learning differences. Not all neurodiverse people have received a diagnosis and not everyone wants to. We also know that accessing diagnostic services can be time-consuming and expensive, which can be barriers for some students. However, we do know that at least 10 percent and quite possibly more of our student body here at UConn are neurodiverse.

**Slide 6:** The INCLUDE program defines neurodiversity through a broad definition that includes variations in sociability, learning, attention, mood, and other mental functions. Students don't need to be officially diagnosed to participate in our programming or redesigned courses.

**Slide 7:** We believe that these differences and variations are very important to a diverse engineering community. While they've often been associated with challenges within the traditional education environment, it's important to note that these variations often bring strengths that can be huge assets in engineering, such as creativity and risk-taking, pattern recognition or strong 3D visualization skills. They're invisible forms of diversity that offer benefits to society by allowing us to consider non-traditional approaches to problem-solving.

**Slide 8:** I’d like to give a few examples of the strengths and challenges related to certain types of neurodiversity. With the autism spectrum students may have challenges with communication, social interaction, and sensory sensitivity. This means that some students may have misunderstandings with professors or TAs or may feel overwhelmed in large classroom settings where there’s a lot going on. However, there often strengths related to autism, such as the ability to understand how systems work, strong attention to detail, and other unique abilities that we just can’t generalize about.

**Slide 9:** Students with ADHD often have challenges with focus, memory, and motivation. This means that some students may have trouble maintaining their attention during a long lecture, remembering facts during exams, or staying motivated to complete their tasks. However, the strengths related to ADHD include risk-taking, creativity, or hyperfocus. Creativity and risk-taking allow students to take creative leaps in solving problems, and hyperfocus is a unique state that is particular to ADHD that allows students to engage in an activity that find interesting for hours and hours, often without stopping to sleep or eat.

**Slide 10:** Dyslexic students may face challenges with reading and writing, and this may affect their ability to work efficiently and their ability to recall things with their short-term memory. However, students who are dyslexic may also have strengths in 3D visualization, holistic thinking, or global thinking, and creativity. Anecdotally, dyslexic students often have a strong entrepreneurial tendency.

**Slide 11:** What makes an I-Course different? Since you’re teaching an I-Course, you’ll be providing an inclusive learning environment, taking a strength-based approach, helping students personalize their learning, using Universal Design principles, and providing active learning opportunities.

**Slide 12:** It is important to consider neurodiversity within the context of engineering courses because many neurodivergent students struggle within the context of the traditional classroom environment. One reason for this is that there is a disconnect between the demands of the traditional classroom and the unique abilities of neurodivergent students. Take the following examples, which may be related to autism, ADHD and dyslexia.

* First, consider visual vs. verbal thinking. This example is drawn from the life experience of well-known autism activist, author, and professor of Animal Science, Temple Grandin. She was non-verbal when she was a child, and while she now is able to express herself verbally, she has a strong preference for images and says that she “thinks in pictures” rather than words. She has used her visual abilities to design humane livestock handling facilities.
* Second, let’s think about divergent and convergent thinking. Students with ADHD often have strong divergent thinking abilities. This means that they often excel at coming up with multiple solutions to problems and sometimes find different ways to get to an answer. However, many engineering problems are designed in a way that uses convergent thinking. For example, students may be required to use one specific method to arrive at one particular correct answer.
* Finally, let’s look at written communication. For dyslexic students, the requirement to complete assignments and assessments in writing can be taxing and may hinder students’ ability to demonstrate their learning. However, many dyslexic individuals have strong visual-spatial abilities, such as 3D visualization that may be leveraged to complete tasks related to design and modeling.

You may not be able to incorporate all of these skills into every assignment or assessment, but by building in flexibility that allows students to showcase their unique strengths, you may support the success of students who otherwise may feel that they just don’t fit the mold.

**Slide 13:** We’ve already talked a bit about neurodiversity-related strengths, and now we’ll talk about something that you’ll hear more about in the coming weeks, the Strengths-Based Approach. Rooted in positive psychology, the strengths-based approach promotes the idea that students do best when they are using their strengths rather than focusing on their weaknesses. This requires a mindshift for educators, who often focus on remediation of deficits. Within this approach, educators encourage students to stay engaged by incorporating their unique strengths, passions, and talents into their learning, and provide flexibility to empower students to make choices about their learning experience.

**Slide 14:** We anticipate that adopting a strengths-based approach in our engineering courses may

1) make courses more inclusive for different types of learners

2) encourage students to identify and use their strengths

3) help students thrive within the learning environment

4) encourage a sense of belonging among students who often feel that they don’t fit in engineering

And 5) contribute to emerging engineering identity by encouraging students to use their unique strengths in an engineering context

**Slide 15**: As we close out this introduction to neurodiversity, consider the following questions:

What unique assets do neurodivergent students bring to your engineering course?

How can you empower students to use their strengths within your engineering course?

Thank you for taking the time to watch this presentation, and best of luck with your course redesign process!