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## **Lindenwood Bio/Chem Students Collaborate with Students From Spain in Coil Course**

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**November 7, 2023**

Lindenwood University Associate Professor of Biology Dr. Chad Welsh and seven Lindenwood students studying [chemistry and biology](#) participated in a Collaborative Online International Learning (COIL) course with faculty at the Universidad San Pablo CEU in Madrid this fall.

The group of Lindenwood students was joined by eight Universidad San Pablo CEU students and seven faculty members to learn about bacterial antibiotic resistance mechanisms.

During this five-week virtual course, students worked on teams that included faculty mentors, and were guided in the research and development of a group lecture on an assigned bacterial pathogen. The groups then presented their findings to the class. The program was designed to allow students to introduce the resistance mechanism topic to the class as a whole while giving the students a foundation in scientific literature research and public speaking.

“The student groups researched in the primary literature for information about the clinical presentation and symptoms associated with their pathogens, epidemiology of infections, current treatments, and most importantly the antibiotic resistance mechanisms associated with each pathogen,” Welsh said. “... As a final part of the project, students had to write a reflective piece that looked at what they learned, what sources they used, how they were able to collaborate with someone on the other side of the world, and their thoughts on the course overall.

The program came about on the heels of Reche’s visit to Lindenwood’s campus last year. While visiting her daughter, Reche requested to sit in on a microbiology course to see how it was taught in America. Welsh and Reche then talked about their shared scholarly interest in bacterial pathogens and clinical treatments.

Upon returning to Madrid, Reche connected with Welsh and invited him to collaborate on a COIL course with students from both universities.

Overall, the program was a success, and all seven Lindenwood students who participated in the COIL course gained first-hand experience through a diverse, educational setting. They will use these experiences as a springboard in their professional endeavors.

“This course was a great learning experience regarding bacterial antibiotic resistance, as well as learning to work with students and faculty of diverse cultures and learning backgrounds,” Lindenwood junior student Cagney Kwiatkowski said.

Lindenwood senior cellular/molecular biology major Jillian Ems said her favorite part of the COIL course was working with students from Madrid.