***Academic Programs Subcommittee Minutes***

***November 19, 2024***

***Voting members present:*** Jennifer Schnellmann, Allison Lee, Michael McKisson, Melissa Goldsmith, Lisa Rezende, Christopher Domin, Moe Momayez, Dana Lema, Marie Wallace, Bobby Torres

***Non-voting members present:*** Mike Kwinn, Anne Pagel, Tedley Pihl, Melanie Madden, Bryanna Andrade

1. **Lisa Rezende called meeting to order at 3:31 pm.**
2. **Approval of the October 22nd, 2024, meeting minutes**
   1. Christopher Domin motioned to approve. Melissa Goldsmith seconded. Motion carried unanimously with 7 yeas.
3. **New Action Items**
   1. **New Major: BS in Integrated Business and Engineering (Engineering) by Mike Kwinn and Anne Pagel**
      1. I’ve taught in the Department of Systems and Industrial Engineering for about two years. Previously, I taught for many years at the U.S. Military Academy at West Point in their Department of Systems Engineering, focusing on systems engineering and engineering management.
      2. I was brought here as the director of the Engineering Management program and have worked hard to make it robust. Initially, all courses in the program came from the Systems and Industrial Engineering Department or other engineering disciplines. However, engineering management also requires a business and management component, which we didn’t initially include. I intended to integrate with Eller College of Management to bridge that gap. Before I could formally approach them, Dean Han and Karthik from Eller approached us about exploring an integrated Business and Engineering major. This program would be like, but distinct from, the Engineering Management program. They specifically suggested we review Purdue’s program, which made sense given Karthik’s background there. We also studied similar programs at Ohio State, Drexel, Lehigh, the University of Texas, and UC Berkeley to understand different approaches. After evaluating these, we decided to model our program on Purdue’s. At Purdue, the program comprises about 60% business and 40% engineering. Our version, developed in collaboration with Jayanthi at Eller, will be approximately 40% business, 40% engineering, and 20% project-based learning. The project component is integral to the program. Students will engage in entrepreneurial, technology-focused projects throughout their undergraduate years, from freshman to senior levels. These projects are designed to integrate business and engineering concepts seamlessly. We’re excited about this initiative, which we believe will be an outstanding addition to our offerings. Similar programs at other universities have been highly successful. For instance, Drexel’s program is celebrating its 100th year. You’ve already seen our proposal and the program outline. We’re eager to move forward with this innovative approach.

Q: How will students learn about ethics in this new program? I noticed there isn’t a standalone ethics class required.

A: Ethics and leadership will be integrated into every project course throughout the program. From the very beginning, students will learn about ethics in engineering, management, and leadership. Additionally, we have designated the junior seminar—one of the project courses in the junior year—to focus heavily on ethics and leadership. Our goal is to develop ethical leaders who understand the importance of leading projects in both business and engineering. Students will get a thorough understanding of these concepts, ensuring they are prepared to lead responsibly in their fields.

Q: The project-based 20% sounds great. Do we already have relationships with specific local groups for these projects?

A: We are preparing to launch partnerships for these projects. Dr. Larry Head, who oversees the capstone program for the engineering school, has been approached by individuals and organizations interested in projects that integrate engineering and management. He already has funding and plans lined up. Additionally, we’re working with Tech Launch Arizona (formerly Forge), led by Derek Maggart, to connect with relevant projects. Once we get the official go-ahead for the program, we’ll be ready to engage with these partners and start projects. Specifically, in the sophomore year, we plan to focus on working with nonprofit organizations in Southern Arizona. These projects will address issues such as tribal concerns and low-income community challenges, applying the skills students are learning to real-world problems.

Q: How do we plan to recruit underrepresented populations in Southern Arizona?

A: We believe focusing on nonprofit and community-driven projects in the sophomore year will resonate with underrepresented populations. Addressing issues like tribal and low-income community challenges will help us connect with these groups and demonstrate the program’s relevance to their lives. Moreover, this program provides an accessible entry point for students who might feel overwhelmed by pursuing a traditional engineering degree. By combining engineering with management, we aim to create a program that appeals to a broader range of students, including those from underrepresented backgrounds. We’re excited about this approach and believe it will help us recruit a diverse student body.

Allison Lee motioned to approve; Dana Lema seconded. Motion carried unanimously with 10 yeas.

* 1. **New Minor: Food Science and Fermentation (CALES) by Tedley Pihl**
     1. How many of you have ever met a food scientist before? Probably not many. That’s because we don’t currently have a food science program at the University of Arizona, which is unfortunate. I’m a food scientist with 30 years of experience in product development for both large and small CPG companies. Since 2017, I’ve been teaching the basics of food science to nutrition and dietetics majors, and I’m passionate about helping nutrition majors discover rewarding careers in the food industry. Over the past eight years, we’ve worked to create emphasis areas for students interested in food science, strengthening their resumes for careers in this field. This has led us to develop a new emphasis on **fermentation and food science,** as fermentation is increasingly recognized as the wave of the future. Fermented foods, which support gut health through the microbiome, are a growing sector in the food industry. We even have a brewery on campus, located in the Cork and Craft restaurant at the student union. This started with fermentation experiments in the foods lab, expanded to a pilot plant in Forbes, and is now a full-scale brewery under construction. We hired a head brewer last year to support this initiative. This fermentation emphasis will be a unique point of difference for the university. As a land-grant university, the U of A is meant to strengthen research, extension, and teaching in food and agricultural sciences. Many land-grant universities have strong food science programs, but there’s currently no food science curriculum at U of A, ASU, or NAU. This is a major gap, especially considering Arizona’s strong and growing food industry. Food science and technology careers are in high demand as the industry focuses on creating health-focused, profitable food products. These are solid, well-paying careers. To address this, we surveyed industry professionals and students. Among industry respondents, 56% indicated a strong interest in having a food science major or minor at UofA. While creating a full bachelor’s program would require significant investment, this minor is a manageable way to address the gap and benefit students immediately. Students, particularly nutrition majors, have expressed interest in exploring food science and the food industry. This minor complements not only nutrition majors but also those in biology or chemistry. I’ve already guided students into successful careers at companies like Impossible Burger, Nestlé, and Mark Anthony Brewing, but they needed specialized coursework to set them apart. The proposed curriculum includes 19 units, with 16 coming from existing courses, and emphasizes hands-on learning through facilities like the pilot plant and Cork and Craft Brewery. We sponsor 5-7 brewing internships with local craft brewers each semester, providing students practical experience in food safety, processing, and production. This is a low-barrier way to give students valuable, marketable skills without requiring new hires or additional courses. The minor focuses on key learning objectives, including designing experiments, communicating research through posters and abstracts, and conducting product development. Food science serves as the hub of a wheel, integrating sensory analysis, regulatory requirements, food safety, and project management. In summary, the **Food Science and Fermentation Minor** provides students with complementary skills to pursue opportunities in the growing food and beverage industry. It ties nutrition with food science and emphasizes “better-for-you” food products, preparing students to excel in both science and science communication. This initiative reflects my passion for food science and my belief in its potential to benefit both our students and the food industry at large.

Allison Lee motioned to approve. Bobby Torres seconded. Motion carried unanimously with 10 yeas.

* 1. **Modification: Minor in Human Services (CAST) by Marie Wallace**
     1. This revision is a reconfiguration of courses based on the need to align with accreditation standards. When I joined, I reviewed the curriculum and noticed replication issues, particularly within our minors. For example, many social behavioral science majors minor in human services, and both programs require a social science research class. This redundancy took up valuable space that could be used for a more skills-based course. To address this, I looked at programs at the University of Alaska Anchorage and the University of Maine, both of which serve largely rural populations and offer significant human service programs. Inspired by their approaches, I redesigned the curriculum to incorporate more practical, skills-based courses. Key changes include adding a basic counseling course and a behavioral health course, which functions as a social case management course. Each course, including the introductory anchor course, integrates components aligned with ethical standards and practices. These elements are woven throughout every course in both the minor and the major to ensure consistency and alignment with professional expectations.

Moe Momayez motioned to approve. Melissa Goldsmith seconded. Motion carried with 9 yeas and 1 abstention.

* 1. **New Major: BS in Medical Pharmacology and Toxicology (Pharmacy) by Jennifer Schnellmann**
     1. We’re proposing this major as a natural extension of the existing expertise within the college. Previously, we launched our Bachelor of Science in Pharmaceutical Sciences (BSPS), which focuses on the formulation and chemistry behind drugs. In parallel, we developed toxicology courses and saw enormous interest, particularly in *Intro to Toxicology*, one of the most popular classes I teach every semester. Our college is well-equipped to support this major. Toxicology is deeply ingrained in our foundation, with half of our faculty tied to the field and a toxicology training grant active since 1972. Even our Dean is a graduate of that program. This major will serve as another pathway to careers in medicine, pharmacy, and beyond, appealing to students with diverse academic strengths. The toxicology major will differ from other programs. For instance, unlike the College of Medicine’s BSPS, which requires algebra, this program emphasizes calculus, ensuring a strong scientific foundation. At the same time, we’ve diversified requirements, such as offering ecology instead of standard biology courses. Student interest is high. Surveys suggest many students would consider adding toxicology as a second major or minor. Additionally, our recruitment team, led by bilingual recruiter Luz Marie Hernandez, has a proven track record of engaging students statewide, and we anticipate similar success for this program. There are currently only eight toxicology majors nationwide, with the closest at the University of Wisconsin–Madison. Our program would fill a significant gap in the Southwest, offering a more in-depth and medical focus compared to Arizona State University’s smaller toxicology program. For example, while ASU offers environmental chemistry and risk communication, we will provide environmental toxicology and risk assessment, diving deeper into the science and its applications. Our electives are heavily medically focused and align seamlessly with physiology courses, appealing to students who want to explore the interactions of drugs and toxicants with organ systems. With our existing resources and expertise, we believe this program offers an unparalleled opportunity for students and will set a new standard for toxicology education in the region.

Christopher Domin motioned to approve; Dana Lema seconded. Motion carried with 9 yeas and 1 abstention.

1. **Meeting adjourned at 4:33 pm.**

*Respectfully prepared by Bryanna Andrade*