Date: October 10, 2023
To: Dr. Kimberly Kostelis, Provost & Vice President for Academic Affairs
From: Dr. Steven Minkler, Dean of the School of Engineering, Science & Technology
Subj: Academic Program Planning Report

Over the past six weeks, the School of Engineering, Science, and Technology has been engaged in a discovery process to determine SEST's goals and objectives for the 2023-24 academic year. We have been using the University Mission Statement, the SEST Mission Statement, Central's *Strategic Plan 2030: Changing Lives, Building Communities*, and the SP2030 Action Plan as foundational documents for this work. Our deliberations have been guided by enrollment data, course schedules, faculty load reports, the Governor's Workforce Council Strategic Plan, the OIRA website, Power BI Link data, State of Connecticut Department of Labor Occupational Projections, and periodic program review and accreditation reports at the SEST department level.

Our process resulted in broad participation from across the School. Over 100 individuals actively contributed to discussions and brainstorming exercises held at the SEST Opening Day Meeting (9/8), two Open Forums (9/27 in-person, 9/28 virtual), faculty department meetings, the SEST Department Chairs meeting (10/2), and SEST APP Task Force meetings (10/4, 10/5, and 10/9).

We gathered close to 200 suggestions which will be edited, combined, refined, and categorized into a SEST Strategic Plan. Several proposals from the departments included fully articulated action plans which could be scaled to the School and University level. We collated many of these suggestions into five "action clusters," as described below, for the purpose of responding to the Academic Program Planning request. We anticipate this process will foster deeper collaboration among SEST departments to create a more cohesive School. We will renew partnerships with the other Schools/Colleges, departments across the University, employers, government agencies, and community stakeholders. We believe the actions we identified will have a positive impact on enrollment, student success, and financial stability.

The good news is that SEST headcount enrollment is up 4.2% over last year, totaling 2,789 students. Points of pride include experiential learning embedded throughout the curriculum, strong employer partnerships, and faculty who engage students in research that has gained regional, national, and international attention. Part of our challenge is telling our story better and to tell that story to new and wider audiences.

We believe it is realistic to set an aspirational goal of reaching a pre-pandemic School enrollment of 3,000 students by Fall 2025 – an increase of 211 students (7.6%) over this semester. To do so, SEST must focus its efforts to recruit and retain more students, reduce DFW rates in gateway courses (which affect students' progress through general education in all majors at Central), work through interdisciplinary teams to optimize curriculum and facilities management, and expand partnerships with business and industry.

1. **Expand STEM-specific recruitment, outreach, and college transition programs.**
   We will engage in aggressive outreach to high schools, community colleges, and the international community to widen the pipeline into STEM majors and STEM Education programs. We expect these actions to result in increased enrollment and contribute to retention by developing a sense of community early in a student's academic journey. Examples include:

   - Grow the number of SEST dual-enrollment courses to provide high school students the opportunity to earn early college credit toward establishing Central as a first choice among students applying to college for STEM programs.
   - Collaborate across campus to create synergies among college transition and summer bridge programs (e.g., DEEP-STEM, NSF-LSAMP, EOP, Trio SSS, GearUp) to be more effective at attracting and transitioning students into Central's STEM majors – especially underrepresented groups in STEM, students of color, and first-generation college students.
   - Partner more closely with community colleges to facilitate transfer, develop new articulation agreements, and offer dually enrolled courses with CT State Community College.
   - Expand international student recruitment and establish strategic partnerships with international institutions and organizations to facilitate student/faculty exchanges, dual-degree programs, and joint research initiatives.

2. **Collaborate with the Learning Center to create "Central MathPort" (Math Lab).**
   Success in mathematics has a significant impact on student retention, persistence, and timely graduation. This is particularly true among students who initially place into Central's lowest-level math courses. OIRA data showed an aggregate DFW rate of 40 percent among the 9,436 students (duplicated enrollment) who took MATH 099, 101, 102, and 103 over the five-year period 2017-2022. This rate improves only slightly for the Calculus sequence required in most SEST majors.

   Similar in name and concept to an airport, Central MathPort will be a physical location jointly run by the Learning Center and Math Department to assist students on their mathematical journeys. Students will find focused support from their arrival (enhanced placement process or course transfer) to their destination (graduation). A hub of services will include tutoring, skill development, supplemental online resources, and math advising. Central MathPort will open opportunities for faculty, graduate assistants, peer tutors, and professional tutors to improve math support with the goals of decreasing DFW rates (especially in general education math courses), closing performance gaps based on race/ethnicity, and improving transferability of courses from other institutions.

3. **Create a new SEST Tutoring Center.**
   We will work with the Learning Center to reimagine how and where to provide tutoring services to students enrolled in the very diverse types of programs found in our School. Examples include:

   - Create a new SEST Tutoring Center, a physical location in AIH, Copernicus, or the Burritt Library – closer to the SEST academic buildings – staffed by Central science and engineering students and faculty.
   - Train and employ part-time faculty to serve as tutors.
   - Encourage faculty to hold at least one office hour per week in the new SEST Tutoring Center.

4. **Optimize curriculum and facilities through interdisciplinary collaboration.**
   We will form cross-disciplinary teams to make our curriculum and course schedule more transparent to students, allocate resources more efficiently, reduce overhead costs, and invest in shared laboratories and research facilities. Examples include:

   - Cross-list and/or merge courses that have significant content overlap, wherever possible.
   - Review courses which have four (4) or more faculty load hours to confirm efficient use of instructional time for both students and faculty, and ensure workload assignments are equitable across departments and disciplines.
   - Bundle existing courses into new programs to reach untapped markets. For example, complete the proposal to create an interdisciplinary Climate Change program shared by all four schools, using existing courses.
   - Create First-Year Pathways (e.g., Pre-Engineering) using core curricula similar to those used in the School of Business to better support students' transition to college-level courses and choice to follow a successful academic track.
   - Create "Accelerate Central" pathways for every bachelor's program that has a corresponding master's degree program.
   - Work with Continuing Education to create stackable pathways from non-credit programs.
   - Review the course scheduling process to optimize room utilization (time, day, and class size), instructional modalities, and cycling of upper-level and elective courses.
   - Foster improved relationships among professional advisors, faculty advisors, the Career Development Office, and employers to support seamless transitions for students.
   - Coordinate supply purchases and equipment service contracts across multiple departments.
   - Explore interdisciplinary initiatives with external connections such as the Connecticut Transportation Collaborative, Materials Research & Development Collaborative, and Challenger Center.
   - Work with Facilities Management to develop a comprehensive and transparent facilities planning and maintenance process.

5. **Expand Business, Industry, and Community Partnerships.**
   We will improve recruitment and retention by offering a "real-world" curriculum, tied to business and industry needs, leading directly to internships and employment. Examples include:
   - Increase formal collaborations and philanthropic partnerships to generate fee-for-service projects, paid internships, student scholarships, space naming sponsorships, and opportunities to recruit current employees to enroll in academic programs at Central.
   - Continue building out the "SEST Career Link" initiative in partnership with employers, the Career Development Office, and Institutional Advancement.
   - Collaborate with the Center for Community Engagement & Social Research to support faculty research projects that explore the needs of business, industry, and community partners.
   - Expand Industry Advisory Board (IAB) participation to all SEST programs.
   - Create a "Dean's Circle" school-wide advisory board.
   - Cultivate fee-based usage of facilities to increase visibility to industry and local community partners.

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