In 2012, the President’s Council on Jobs and Competitiveness recognized the efforts of engineering deans to enhance the retention and graduation of engineering students, by making its own commitment to increase the number of engineering graduates over the next 10 years. To this end, engineering faculty have conducted pilot studies that have shown a combination of factors contribute to variability in student retention. According to these studies, one of the primary reasons for the attrition of students from engineering is the perception that the learning environment fails to motivate them. Hence, these studies assert that many engineering programs can improve student retention by adopting best practices and strategies for retaining students.

As part of a larger study of student retention, the American Society of Engineering Education (ASEE) conducted a review of literature and documented more than 60 successful strategies that were identified as effective in retaining students in engineering. Practices cited by engineering programs spanned the full range of retention strategies found in the literature. Most engineering programs took a “holistic” approach to improving retention; rather than focusing on one approach, they pursued multiple strategies. The most successful strategies and practices focused on tutoring, mentoring, learning centers, first-year instruction, academic advising and career awareness.
The College of Engineering’s Academic Success Center (ASC) is lighting the way for student success now and in the future. For many first-year students, managing schedules, finances and academics can be overwhelming; hence, the primary goal of the ASC is to give students an individualized option with the mentors, advisers and training that will empower them to have a successful experience throughout college and beyond.

The ASC staff provides academic advising for first-year and returning students to strengthen and improve upon their progress. The ASC also gives engineering students one-stop access to peer-to-peer tutoring, alumni mentoring, first-year instruction and diversity support programs, all designed to promote student success. These initiatives have been developed to welcome, empower and encourage students to reach their fullest potential. By providing a sense of belonging, the ASC staff help students navigate the pressures of college life and earn their degree.

With group study stations, computer workstations, conference rooms, team building areas and multimedia flex rooms, the associated facilities have been developed to continually reinforce the discipline of working in a team setting. This teamwork modality helps ensure that students are fully prepared to join the rapidly changing workforce after graduation.

The ASC also offers workshops on topics such as study skills, time management, engineering careers and internships. The center’s Collaborative Learning Laboratory serves as home to the innovative Scholars Assisting Scholars (SAS) program, which hires upper-level students to tutor their peers, while also developing their own teaching and leadership skills.
Scholars Assisting Scholars is a free walk-in tutoring service employing upper-level students in math, science and engineering to provide tutoring in calculus, chemistry, economics, physics, programming and engineering science courses. SAS is available to all university students in these courses. Tutoring takes place in the new Collaborative Learning Laboratory. Tutors are assigned to a specific course each semester and work with course professors to provide appropriate supplemental instruction for students. This includes the following:

- Providing assistance consistent with course instruction
- Leading review sessions before each exam
- Providing academic coaching
- Facilitating learning groups

"SAS is really good. Probably one of the best tutoring services at K-State. The review sessions before tests were AMAZING!"

Some freshmen pursuing an engineering degree are unsure about which degree program will best fit their interests, skills and career goals. In order to fully engage these highly capable and interested students, the ASC offers the First-Year Engineering Program. Students receive detailed exposure to different career possibilities across the 10 different degree programs offered in the College of Engineering through its Engineering Orientation course, DEN 160. In addition, students participate in the Engineering Problem Solving course, DEN 161, which provides a research-based learning environment that helps them achieve academic success. This course offers the following:

- Fundamental skills and engagement in real-world problem solving
- An introduction to the ability to effectively communicate design and analysis decisions
- Positive reinforcement and targeted feedback on problem-solving skills critical for success in future engineering courses
- Experience working in collaborative student team environments
- Exposure to working with modern computer software
- Exploration of a variety of technical content as a preview of different degree programs
- A firm basis to confidently select an engineering discipline that aligns with interests, skill sets and career goals

After completing the First-Year Engineering Program, students can easily transition into the College of Engineering degree program of their choice and stay on track with their peers. The First-Year Engineering Program provides students with a perspective of the various types of engineering problems and career paths, and develops a strong foundation for their personal and professional development.
The Alumni Mentor Program provides students with the opportunity to learn from highly successful and experienced professionals in their field of study. Here are a few of the ways in which mentors can help mentees:

- Share technical expertise
- Discuss industry trends
- Introduce students to colleagues to help build professional networks
- Provide knowledge and understanding
- Facilitate career development through guidance and advice
- Give advice on professional communication, dress and demeanor

The Building Excellent Engineers (BEE) program was developed to assist engineering students in overcoming challenges associated with academic concerns and/or perceived barriers to success. The program is structured around peer academic mentors working with engineering students on time management, a balanced schedule, organizational tools, academic study skills/approaches, test-taking strategies, professor communications and goal setting, all in combination with a knowledge of various campus resources. Academic mentors are trained on a specific series of sessions throughout the semester to enhance the student's experience.

The BEE program is designed to:

- Improve retention and graduation rates of engineering students;
- Foster active learning, which structures activities that encourage students to complete assignments and related academic projects;
- Use positive reinforcement to build students' confidence;
- Enhance academic processes and learning modalities;
- Serve as a role model for academic success and integrity;
- Reduce stressors for students through academic preparedness;
- Assist students in obtaining knowledge of various campus resources; and
- Above all, maintain ethical integrity in accordance with the rules and Honor Code of Kansas State University.

The College of Engineering Alumni Mentor Program is aimed at connecting current engineering students with alumni. Students are matched with a mentor based on background, experience and interest. The program is a nine-month series (September – May) designed specifically for engineering students with sophomore standing or above.

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- Provide knowledge and understanding
- Facilitate career development through guidance and advice
- Give advice on professional communication, dress and demeanor
The Multicultural Engineering Program (MEP) is focused on increasing the pool of interested and qualified students from historically underrepresented groups pursuing engineering degrees, while also providing a foundational support system. Programs providing support and engagement for multicultural students include the following:

- MEP Kompass summer bridge program, a free three-day intensive bridge program designed to accelerate academic success for incoming freshmen
- Multicultural Academic Program Success (MAPS), a six-week summer bridge program providing opportunities to network with peers and faculty while also acclimating to the K-State campus
- Student organizations, including American Indian Science and Engineering Society, National Society of Black Engineers, and Society of Hispanic Professional Engineers

The Women in Engineering (WiE) program provides opportunities for women in engineering to connect, share and support each other during their time at K-State. WiE mentors and leaders create and plan events and activities that provide social engagement, professional development and academic support for women in the college through –

- Engineering Women Mentoring Women program
- Seminars and workshops
- Social activities
- Professional societies, including Society of Women Engineers (SWE) and Women in Chemical, Civil, Computer Science, Electrical, and Mechanical Engineering organizations
- Engineering organizations
- Women in Engineering Laboratory Experience (WiELE) program

“Diversity in the engineering world has brought new ideas and concepts. Men and women are different, and that is a good thing.”

DIVERSITY

"Diversity in the engineering world has brought new ideas and concepts. Men and women are different, and that is a good thing.”
Creative Inquiry Mentor Program

Creative inquiry is the College of Engineering’s highly successful blend of engineering principles and practice. Faculty mentors lead teams of undergraduate students in their search for innovative solutions to problems with challenging technical, economic and social components. Each year, faculty mentor hundreds of students who join creative inquiry teams that compete in regional, national and international events on topics ranging from wind power to unmanned aircraft. Participation on creative inquiry teams gives students a competitive edge in the job market, while also supporting the college’s visionary plan and K-State’s 2025 goal to enhance the student experience.

Based on a previous record of outstanding creative inquiry mentoring accomplishments, faculty members are nominated by their department head for creative inquiry mentor positions in each of the departments throughout the college. Each creative inquiry mentor is given a three-year appointment, with a salary increase and discretionary funds to support the mentoring of a creative inquiry team or project each year. Creative inquiry accomplishments are closely reviewed to achieve academic excellence and maintain high student interest.

Cornerstone Teaching Scholars Program

The Cornerstone Teaching Scholars Program fosters exemplary undergraduate teaching skills and commitment to excellence in fundamental engineering courses. Specifically, the Cornerstone Teaching Scholars Program encourages the college’s best teaching faculty members to teach its most fundamental courses in the sophomore and junior years. Hence, this will improve student retention and graduation rates by ensuring students obtain the best possible learning experience in the early, formative stages.

Based on a previous record of outstanding teaching accomplishments, faculty members are nominated by their department head for teaching scholar positions in each of the departments throughout the college. Each Cornerstone Teaching Scholar is given a three-year appointment, with a salary increase and discretionary funds to support instruction of at least two fundamental engineering courses each year. Courses are closely reviewed to achieve academic excellence and high student interest.
LIGHTING THE WAY FOR STUDENT SUCCESS
Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the University’s programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University’s Title IX Coordinator: the Director of the Office of Institutional Equity, equity@k-state.edu, 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6277. The campus ADA Coordinator is the Director of Employee Relations, charlott@k-state.edu, who may be reached at 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6277. Revised July 7, 2015.