



American River College

**STEM**

Capital  
Campaign

*Investing in Knowledge –  
Building for the Future*



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# The Emergence of **Sac 2.0**

There's a renaissance occurring throughout the Greater Sacramento region. A revitalized downtown, new business interests, and an affordable lifestyle are expected to drive economic growth and prosperity for our region. Yet to fuel and sustain that revitalization, we must have a workforce today that is equipped for the economies of tomorrow.

Sacramento is positioned for substantial growth in STEM (Science, Technology, Engineering, and Math) related industries. Our proximity to Silicon Valley, coupled with the substantially lower cost to do business in Sacramento compared to the Bay Area, makes Sacramento a highly desirable home for many businesses that rely on technology.

However, to successfully attract and keep these businesses, Sacramento must be able to provide a well-trained, highly-skilled workforce to meet the demands of the diverse employers who rely on technology for their business needs.

American River College has the top-notch teaching faculty and educational experience to train the next generation of STEM workers to fuel the growth of high-tech industry in Sac 2.0 – but we need your help.



## **Creating Our Region's Premier STEM Innovation Center**

ARC has a culture of innovation and a reputation for exemplarily and award winning programs from Culinary Arts to Biotechnology that prepare students for successful transfer to four-year universities and 21st century employment. To continue on this trajectory, we are embarking on a campaign to build a state-of-the-art STEM Innovation Center and 21st Century Science Space for biology and chemistry.

Funding for construction of the building and modernization of the existing science wing has already been secured. However, it is the technology and equipment that will go inside the new building that will make the real difference for our students. For that reason ARC is embarking on a \$3.5 million campaign to raise the funds needed to fully equip the new STEM Innovation Center. Funded through generous donations from community members like you, this equipment will allow students to gain hands-on experience using the same cutting-edge tools they will encounter at high-tech employers. ARC's top-tier teaching faculty, small class sizes, unique two-year degree and certificate programs lead to high-wage, high-growth STEM jobs, and effective student support programs. This experiential learning will ensure that Sacramento's students have access to the highest-quality, affordable and most up-to-date STEM education available, establishing ARC and Sacramento as a leader in STEM education and employment.

# American River College: A History of **Top-Tier** Education

## **American River College... On the Cutting-Edge of Education – MESA Program for Community Colleges**

Research has shown that students who have on-campus friends with similar interests and career goals are more likely to succeed in college. ARC's MESA program provides a learning community for students pursuing four-year degrees in the STEM fields and provides tutoring, study groups, academic advising and support.

Founded in 1955, American River College (ARC) educates more than 30,000 students annually, making it one of the largest public education institutions in the region.

Recognized statewide for its innovative programs and services, ARC ranks in the top 15% of California's community colleges in transfer rates to four-year institutions. 53% of ARC students are working towards transfer, and another 40% of students attend to obtain a degree, certificate, or to enhance their job skills.

ARC is part of the Los Rios Community College District that includes Cosumnes River College, Folsom Lake College, and Sacramento City College.

The largest in the system, ARC leads in student enrollment in science disciplines, with more than 7,000 students declaring a STEM major in fall 2017.

## **Top-Notch, Highly Involved Faculty**

ARC's history of excellence in STEM education is rooted in our outstanding faculty. All 110 full-time STEM faculty have master's degrees and 34% have post-doctorate degrees. Their alma maters include Oxford, Stanford, Vanderbilt, Rutgers, UC Davis, UC Berkeley, and UCLA, and many also teach in the UC or CSU systems.

ARC courses are taught directly by these skilled faculty who work closely with students in small classes (30 students on average), providing at

least 5 hours of contact time each week during a standard science lecture and lab class. This allows faculty to build relationships with students and provide individualized support.

Many of ARC's part-time faculty are also employed full-time in STEM fields, allowing them to bring real world knowledge and expertise to the classroom. In degree fields like Computer Science and Engineering where the cutting edge is constantly moving forward, this industry knowledge ensures our students will graduate with the skills that employers need.

## Affordable Educational Options: 2-Year Degrees, Certificates, and Transfers

ARC provides students with diverse opportunities to meet their unique educational and career goals. Students at ARC are able to pursue a STEM education that leads to a certificate, AA/AS degree or prepares them to transfer to a 4-year institution. Many of ARC's STEM certificates and AA/AS programs prepare students for employment in living-wage, high-demand jobs without the need for further education. ARC's AA/AS and certificate programs make us uniquely well positioned to meet Sacramento's immediate need for career-ready STEM professionals. A sampling of these programs include:

### Registered Nursing Degree and LVN to RN Career Mobility Degree

These programs prepare students for success as registered nurses (RN). Healthcare is Sacramento's top industry based on number of jobs, and many of our region's largest employers – Kaiser Permanente, Sutter Health, Dignity Health, UC Davis – are in regular need of RNs.

### Biotechnology Certificate

This certificate prepares students for jobs in biotechnology, teaching practical laboratory skills with emphasis on good laboratory practice, quality control, and regulatory issues in the biotechnology workplace.

### Solar Energy Technology Certificate

This certificate provides training in all aspects of Solar Photovoltaic (PV) System design, installation, troubleshooting and repair. The courses qualify students to take the North American Board of Certified Energy Practitioners (NABCEP) PV Entry Level Certificate of Knowledge Exam. SMUD, PG&E, and Solar City, who together employ more than 25,000 people, have a growing need for trained Solar Energy professionals.

### Engineering Technology Degree and Certificate

This degree and certificate emphasizes the knowledge and skills required for entry-level success in the engineering professions. Projects include environmental and sustainable

Engineering students at ARC have access to the **Community College Mentoring Initiative**. First piloted at ARC through a partnership with Intel, this program provides engineering students with virtual mentorships with Intel engineers from around the world.

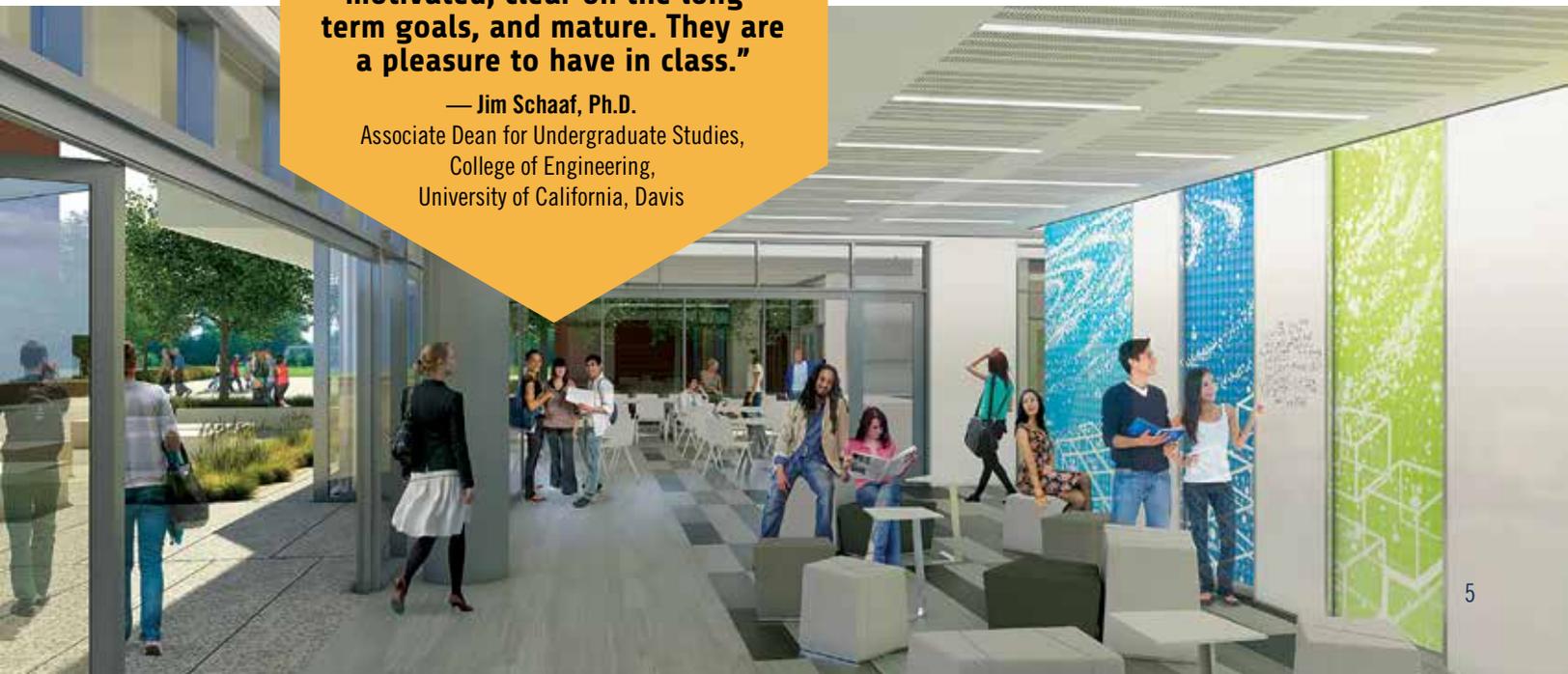
design issues, product economics, and legal considerations. Current computer technologies and various analytical design and documentation software is emphasized throughout the program.

For those students who want to continue their education at a 4-year institution, ARC's programs provide the coursework and hands-on education to effectively prepare them for success after transfer. Whether it is a 2-year certificate program that leads to immediate employment or the first step on the path to a PhD, ARC offers flexible options to help students achieve their goals.

ARC truly is a smart choice for smart students, providing hands-on learning in small class sizes, with educational supports to ensure each student is challenged and achieves his/her academic goals. All of this is available for the lowest fees in higher education. Tuition fees at ARC are just \$46/unit or \$552 for a full-time student taking 12 units, and that fee is waived for approximately 60% of ARC students who qualify for the government fee waiver. In comparison, tuition fees at CSU are \$6,857 and \$12,630 at UC, making ARC the affordable choice in addition to being the smart choice.

**"I find ARC transfer students very well prepared for the challenges of transitioning to a research university. I find them highly motivated, clear on the long-term goals, and mature. They are a pleasure to have in class."**

— Jim Schaaf, Ph.D.  
Associate Dean for Undergraduate Studies,  
College of Engineering,  
University of California, Davis



## High-Quality Educational Supports

One of ARC's unique strengths is our educational support programs that allow us to serve a diverse population of students – from first-generation college students to high school valedictorians – equipping them with the skills they need to leave ARC as highly skilled, capable students and employees who succeed in their future college and career paths. Among ARC's educational support programs are:

### Honors Program

ARC's Honors Program provides challenging courses and a community of support for high-performing students. Students who complete 15 units of Honors coursework and maintain a 3.5 or better GPA are eligible for enhanced prospects for transfer to competitive schools through ARC Honors Program's partnerships with UCLA, UC Irvine, and other public and private four-year institutions. These transfer partnerships provide excellent opportunities for top-performing students to transfer to top-tier STEM programs to complete a 4-year degree.

### TRIO SSS STEM

The TRIO Student Support Services Program is funded by the Department of Education, and designed to serve 120 first generation, low-income, and disabled students. In its first year, the program ended up serving 130 students with a 93% retention rate. TRIO SSS STEM and TRIO SSS Veterans programs provide STEM students with a team of supporters (faculty mentors, peer mentor/tutor, counselor, project advisor and a director) to assist in the entire college process from beginning to end.

### MESA

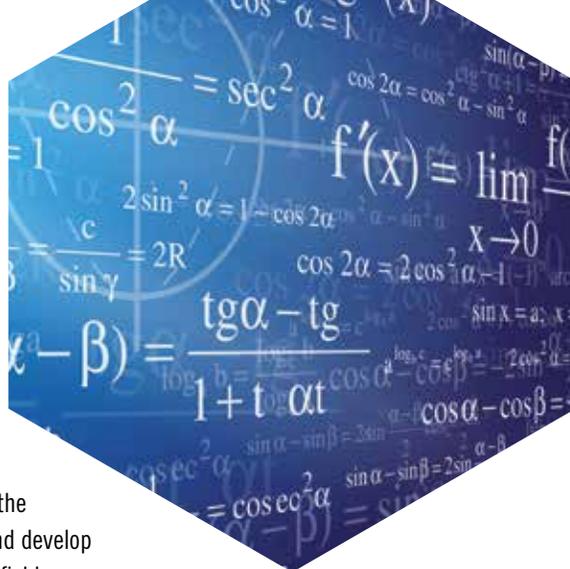
Mathematics Engineering Science Achievement (MESA) is a learning community for students pursuing four-year degrees in the fields of mathematics, science or engineering. MESA helps students achieve in the classroom, progress academically, and develop professionally. The program provides field trips to universities and science/engineering locations, math/chemistry boot camps for incoming students, and individual and group support from faculty and staff.

### MMLC

The Math Multimedia Learning Center supports students by filling in gaps in mathematical knowledge. The MMLC educates students in foundational mathematical concepts using a mastery-based, independent study approach, supported through regular interactions with an instructor.

### Hands-On Learning

Through small class-sizes and regular interactions with faculty, ARC's Science, Technology, and Engineering programs provide students with regular opportunities to practice the skills they learn in class through hands-on labs and opportunities to interact with real-world technology.



## “American River College was just what my son needed after high school.”

Like a lot of students, Josh didn't know exactly what he wanted to do out of high school and I don't think he was ready for a 4-year college. ARC allowed him to take some introductory classes in a much smaller setting than he would have seen at a 4-year school. More importantly, Josh signed a transfer agreement after his first year that guaranteed him a spot at UC Davis if he met certain fairly easily attainable requirements. That's exactly what he did. He's since graduated from UC Davis with a degree in Economics. ARC was instrumental in Josh achieving all this and he was able to do so at just a fraction of the cost of a 4-year university.

— Gary L. Bradus  
Shareholder  
Weintraub Tobin



## Top-Tier Graduates

As a result of ARC's top-notch faculty, small class sizes, hands-on learning opportunities, and effective educational supports, ARC provides students of all backgrounds and experiences with a high-quality education that prepares them to successfully transfer to any one of our region's top tier universities, or to enter directly into the workforce. Examples of ARC's many successful graduates include:

### Diane Bryant, Intel Executive Vice President

Diane was homeless when she began taking courses at ARC. She shares: "Community college was my only option to continue my education given my lack of resources. My father's rule was that when his children turned 18 his legal obligations were done, so I was on my own and homeless four months before graduating from high school. The key to my career success was that

ARC had absolutely streamlined the (transfer) process, which was impressive. Once a student goes through a community college and transfers to a four-year institution, the chances that student will graduate are higher than if he/she started at a four-year institution as a freshman. My career would not exist without ARC."

### Dr. Michele Aizenberg, Neurosurgeon

Michele Aizenberg decided at a relatively early age that neurosurgery was what she wanted to do with her life. "My path was to go to medical school," she says, and she found her footing at ARC, and like many students, took the majority of her pre-requisite courses that started her educational trek. After ARC, she went to University of California, Davis, for her B.S. in physiology.

Advanced training took her to Brown University in Rhode Island, George Washington University in Washington D.C., and the National Institutes of Health in Maryland. She then went to the M.D. Anderson Cancer Center in Houston where she did her fellowship in neurosurgical oncology. She's now at the University of Nebraska Medical Center, where she was recruited to help found the Brain and Spine Cancer Center.

### Dr. Pablo Garcia, Geoscientist

Garcia is a geoscientist who credits ARC with giving him the fundamental tools to study, analyze and question academic subjects and ideas so that he could nurture his intellectual appetite and design his own scien-



— Diane Bryant  
Honorary Chair of the  
STEM Capital Campaign

tific endeavors. With the solid research foundation gained at ARC, Dr. Garcia went on to earn a

BS and PhD in geological and environmental sciences at Stanford, and now works as a geoscientist for Fugro, where he assists with worldwide marine expeditions to study the world's oceans.

### Qudsia Wahab, Civil Engineer

Qudsia was a participant in ARC's MESA program. Following her education at ARC, she transferred to UC Berkeley, where she earned a degree in Civil and Environmental Engineering. After graduating from UC Berkeley, she secured a job at Forell/Elsesser Engineers, and is currently pursuing a master's in Structural Engineering, Mechanics and Materials at UC Berkeley. Qudsia shares: "MESA helped me build confidence, stay successful academically, and develop a sense of professionalism via field trips, retreats, and leadership opportunities. With the help of mentors and advisors at MESA, I received many scholarships which contributed towards my academic success. While at ARC, I participated in research funded by NSF in the physics department at UC Davis. The research project was in the experimental condensed matter lab led by a notable faculty member. I worked on an experimental model for avalanches in a granular system. At Berkeley, I participated in "The Steel Bridge Competition" which is an annual contest that challenges students to design and fabricate the most structurally efficient, economic, stiff, and light bridge. I was on the design team, and we competed against 48 universities at the National Competition earning first place overall for the second consecutive year. After obtaining my BS in Civil Engineering, I started working at Forell/Elsesser Engineers. I worked on many projects including SFMTA Central Subway Chinatown Station and projects at Stanford University, UC Davis, UC Merced, SFSU, and Genentech among others."

**"The College of Biological Sciences is pleased to accept transfer students from American River College.**

**The average first quarter GPA for ARC transfers in 2015 was 3.34, so we find the students to be well qualified for our programs.**

**Our 2016 Excellence in STEM award for transfer students was given to former ARC student Jennifer Diamond based on her excellent academic record on campus."**

— Susan L. Keen, Ph.D.

Associate Dean for Undergraduate Academic Programs  
College of Biological Sciences  
University of California, Davis

# The Growing Need for **STEM** Proficiency

While ARC has a long history of effectively preparing students for STEM careers, never before has there been such a great need for highly skilled STEM graduates in the region.

From automotive technicians to construction and manufacturing jobs, nursing and medical research to computer programmers and engineers, a strong STEM education is critical to a wide variety of fields that impact our economy and everyday life. Yet the U.S. Department of Commerce estimates that by 2018, the United States will have 1.2 million unfilled jobs in STEM fields.

Sacramento's top industries by number of jobs are 1) health care and social services, and 2) professional, scientific, and technical services. Many of our region's largest employers have a growing need for skilled STEM workers.

Furthermore, Sacramento is positioned for substantial future growth from new STEM employers. Our proximity to the Bay Area and Silicon Valley, along with our comparatively low cost of living and doing business, makes Sacramento highly attractive to start-ups looking for a home for their headquarters.

ARC's AA/AS and certificate programs make us equipped to quickly meet Sacramento's immediate need for career-ready STEM professionals.

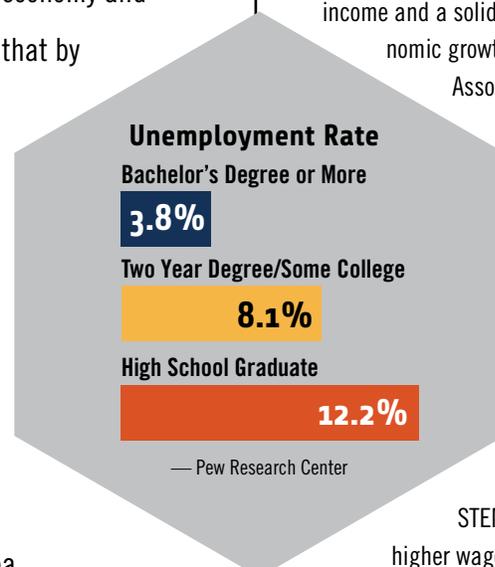
## Supporting Home-Grown Talent for Sacramento's High-Tech Growth

Studies show that higher education leads to higher wages, which generates more disposable income and a solid tax base to support economic growth and prosperity for all.

Associate degree holders have a significantly lower unemployment rate than their peers with only a high school diploma, and have median lifetime earnings that are \$423,000 greater than their peers with only a high school diploma.

Those employed in STEM careers command even higher wages, earning 26% more than their non-STEM peers. The average yearly salary of those with a non-STEM degree is \$49,500, while the average salary of those with a STEM degree is \$65,000.

Furthermore, half of all STEM jobs are available to workers without a four-year college degree, and these jobs pay \$53,000/year on average – 10% higher than non-STEM jobs with similar educational requirements.



# STEM Innovation Center: The **Details**

To effectively train Sacramento students to perform at the top of their field in STEM occupations, ARC is embarking on a capital campaign to build and outfit a new STEM Innovation Center with the real-world environments and educational tools students need to pursue highly-skilled professions.

In Spring 2018, ARC will break ground on a new STEM building to provide needed infrastructure, state-of-the-art classrooms and laboratory spaces. The three-story, 37,000 square foot building will replace an aging and inadequate wing that was built more than 50 years ago and, while dutifully maintained, has long outlived its useful lifespan and is not designed to handle necessary modern upgrades and technology.

Design elements will provide shared, flexible and moveable space to mirror today's work environments and provide ARC with the ability to reconfigure learning environments to meet student needs and STEM advancements. It will also provide labs for Business and Computer

Science, Mathematics, Astronomy, Physics and Engineering. During the second phase of the project, the Science division will be outfitted with state-of-the-art wet labs for Biology and Chemistry. A Business Center located on the first floor of the STEM Innovation Center will provide space for area businesses to use the Innovation Center as a Business Incubator and collaborate with students on projects. The STEM building is designed to LEED Silver equivalent standards using the latest green technologies.

**The total cost of the new STEM building and Science modernization is \$32.5 million.** The vast majority of funding has been secured through bond financing and state monies earmarked for STEM modernization projects. The college is funding the \$2.5 million cost of the science wing expansion and modernization.

**American River College is seeking \$3.5 million, to be funded through generous contributions from community members like you, to enable ARC to invest in the critical equipment and technology components that are not ordinarily available to community college students and that will transform the STEM building into a state-of-the-art learning environment, on par with some of the best college and university STEM facilities in the state.**

**American River  
College  
is Seeking  
\$3.5 Million**

**The  
Total Cost  
of the New  
STEM Building  
and Science  
Modernization is  
\$32.5 Million.**



## The Technology Enhancements for the STEM building will include:

### \$1 million for interior space innovations

Including moveable walls and furnishings to create multi-discipline “hacker lab” style environments designed to fuel creative thinking with co-working areas that mirror situations students will encounter in high tech firms and industries. Engineering, Math, Business, Computer Science, and Physics are among the subjects that will benefit from this space.

### \$1.2 million for high tech classrooms and modern wet labs

Including virtual reality technology, touch screen walls, gesture-based computer interfaces, and 360-degree presentation surfaces. The modern technology

and state of the art labs will facilitate innovative approaches to teaching and provide experiential and hand-on learning experiences. Engineering, Math, Business, Computer Science, and Physics are among the disciplines that will benefit from these classrooms.

### \$1.3 million for equipment and other technology

That students will need to not only complete their studies but also excel in their work environments.

As technologies continue to develop, so will the STEM building.

Continued partnerships with STEM corporations, philanthropic support from donors in our community, as

well as institutional resources will help sustain innovation within the building and ensure that students will still enjoy state of the art facilities for years to come.

When fully outfitted, the new STEM facility will provide students with a learning environment that prepares them to either transfer to a four-year institution or connect with and gain employment in their chosen field. The completion of this project will establish ARC as a next-generation college with user friendly-technology; a hallmark STEM program in the region that cements its place as a first-choice institution.

**\$1  
Million  
for Interior  
Space  
Innovations**

**\$1.3  
Million  
for Equipment  
and Other  
Technology**

**\$1.2  
Million  
for High-Tech  
Classrooms and  
Modern Wet  
Labs**

#### **Data Analytics Software**

Purchase of new Data Analytics software will enable the math department to build a new introduction to data science curriculum. Data modeling and data science are used in everything from self-driving cars to recommended items to purchase that pop up on your computer. The new software and curriculum will help ARC prepare students for jobs both today and in the future.

#### **Fourier 300HD C-13**

The Fourier 300HD C-013 is a proton carbon only, high-resolution NMR (nuclear magnetic resonance) spectrometer to be purchased for use in ARC's chemistry courses. This \$300,000 instrument helps study chemical reactions in real time. NMR spectroscopy has applications in medicine, chemistry and other fields of scientific research.

#### **Universal Testing Machine**

The Universal Testing Machine (UTM) is a much-needed device in ARC's engineering program to prepare students for successful transfer and industry careers that require a high degree of analytical skill. At a cost of \$70,000, this machine tests the strength of materials and is used in every industry ranging from aerospace, automotive and biomedical to construction, metal and textiles testing.

# You Can Help **STEM** **Innovation**

## Transform Sacramento

You are invited to collaborate with the ARC Foundation and invest in Sacramento by providing the resources needed to ensure the STEM Innovation Center is outfitted as a state-of-the-art learning center to benefit students, employers and our community.

**“It is with great enthusiasm that we serve as co-chairs to lead the fundraising effort to provide a “margin of excellence” for the STEM Capital Campaign. We know that ARC transforms students’ lives.**

With private support to help fund cutting-edge equipment and innovative learning spaces it will greatly increase the capacity of the college to provide students the experiences they need to reach their goals in the STEM disciplines and meet the workforce demands of the Sacramento region.”

— **Marie B. Smith**  
Ed.D., Retired ARC President (1994-2005)

— **John Frisch**  
Senior Managing Director  
Newmark Cornish & Carey

Gifts can be pledged over a five-year period. Naming opportunities are available for larger gifts. All donors will be recognized and acknowledged for their support.

With your help, American River College can provide transformational STEM education programs that enhance academics, job skills, and promote transfer to four-year colleges. Together, we can ensure our region develops the skilled workforce needed to support our region’s economy and create growth and prosperity for all.

*For more information including  
naming opportunities, contact:*

**Kirsten DuBray**

Director of College Advancement

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DuBrayK@arc.losrios.edu



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