



**THE 2015 SIEMENS
TECHNICAL SCHOLARS**

EXCELLENCE MEETS OPPORTUNITY



THE ASPEN INSTITUTE

SIEMENS | Foundation

**“The Siemens Technical Scholars’
inspiring stories show us how
the best technical education can
instill a love of learning and afford
incredible opportunity.”**

A NOTE OF INTRODUCTION

Since launching the Prize for Community College Excellence in 2010, the Aspen Institute has learned a lot about what enables community colleges to achieve exceptional student outcomes. Among the most important lessons: High levels of success for all students requires aligning the education students receive *during* college with what they aim to accomplish *after* college. Above all else, community college students want degrees that will help them secure and succeed in a job with good wages.

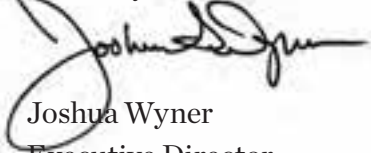
Attaining that goal increasingly depends on earning a college credential. The traditional pathway to a bachelor's degree and (for some) graduate education has led millions of students to successful careers. But that is not the only pathway to a rewarding career.

In an era of escalating higher education costs and constrained family budgets, hundreds of thousands of community college students are today enrolled in programs that deliver the skills needed for well-paying jobs in STEM industries such as advanced manufacturing, energy, information technology, and health care. The critical thinking and technical skills demanded by the best of these programs—which typically require two years of higher education—set students up for the kind of success that, in our popular culture, is often associated with longer degree pathways. Strong job growth, combined with expected openings left by retiring baby boomers, will create sustained opportunity in these fields.

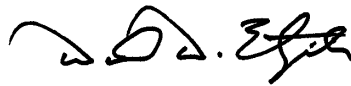
The Siemens Technical Scholars profiled in this publication demonstrate the incredible impact shorter-term, high-quality credentials can have. The Scholars' inspiring stories show us how the best technical education can instill a love of learning and afford incredible opportunity.

The Aspen Institute and the Siemens Foundation are proud to honor these students and the paths they have chosen, as well as support attainment of their educational and career goals. We hope their stories inspire other students to pursue similar educational paths and even more community colleges to offer the kind of rigorous and relevant training that enabled their success.

Sincerely,



Joshua Wyner
Executive Director,
College Excellence Program,
The Aspen Institute



David Etwiler
CEO, Siemens Foundation

THE 2015 SIEMENS TECHNICAL SCHOLARS

ANGEL ALVAREZ

Brazosport College, Instrumentation, Lake Jackson, TX

EMILY GRIMES

ANGELA MUNOZ

Brazosport College, Process Technology, Lake Jackson, TX

ALYSIA BILBO

JOHANN GARCIA

Indian River State College, Power Plant Technology Institute, Fort Pierce, FL

KYLE IDEKER

ANDERS HENNINGSGAARD

VINCENT HENNINGSGAARD

Lake Area Technical Institute, Energy, Watertown, SD

MARQIA BLACK

MERLYN SANTANA

Miami Dade College, Health Information Technology, Miami, FL

EDLESHIA LEVERETTE

Mississippi Gulf Coast Community College, Process Technology, Perkinston, MS

THE 2015 SIEMENS TECHNICAL SCHOLARS

BLAKE THURMAN
PATRICK MURRAY
JASON ASTELL
JOSHUA GREENBERG-LAMBERT

Renton Technical College, Precision Machining Technologies, Renton, WA

AMANDA PETERSON
DAYNA FITTERER
ERICA ORMBREK
IRIS GARCIA
MICHAEL MILLER

Renton Technical College, Surgical Technologist, Renton, WA

VICTORIA PAULSEN
JERMAINE GADDIS
FLORENCE CONTINO
STEPHANIE MOORE

Santa Fe College, Cardiovascular Technology, Gainesville, FL

MONICA NICHOLSON
STEPHANIE PITTMAN
MANUEL RIVERA
KARA SCHROEDER
AMANDA CAPRARO

Valencia College, Respiratory Care, Orlando, FL

THE HIGHEST VALUES WITH THE BEST OUTCOMES

U.S. jobs in the fields of science, technology, engineering, and math (STEM) are growing at more than double the rate of other jobs.¹ At the same time, the large-scale retirement of baby boomers is expected to thin the ranks of the STEM workforce.² Combined, the expanding demand for and reduced supply of STEM workers offers opportunities for individuals and challenges for our economy.

While bachelor's and graduate degrees in STEM fields represent important parts of the solution, having more people complete those degrees will not, by itself, meet the growing demand. Half of STEM jobs require less than a bachelor's degree—usually an associate's degree or a certificate—and pay an average of \$53,000 per year.³ Requiring just two years or fewer of coursework (usually at a community college), these credentials can lead to rewarding careers.

To raise the profile of middle-skill STEM jobs and the community colleges that deliver first-rate preparation for them, the Aspen Institute's College Excellence Program and the Siemens Foundation have partnered to create the Siemens Technical Scholars Program. We invited top community colleges

across the country—all 22 that have been named finalists for the Aspen Prize for Community College Excellence—to nominate exceptional students and graduates of their best middle-skill STEM programs. A selection committee of community college, technical education, and workforce experts evaluated each program in three performance categories: (1) achieving excellent student outcomes, (2) advancing social mobility, and (3) meeting essential workforce demands in their communities.

The Scholars selected—whose hard work and dedication have earned them this honor—will each receive a scholarship of between \$3,500 and \$10,000. Each Scholar has a unique story to tell, following their own path to success. Those profiled here offer a window into

“Half of STEM jobs require less than a bachelor’s degree—usually an associate’s degree or a certificate—and pay an average of \$53,000 per year.”

the motivations that lead students to pursue middle-skill STEM opportunities and the impact these programs can have on their lives.

The 10 programs profiled in this booklet also tell an important story. Contained within exceptional community colleges in diverse communities across our country, these programs offer rigorous education—both classroom and on-the-job training—that is intentionally aligned to the skill demands of good jobs. The job placement and salary results for graduates, as well as levels of employer engagement, reflect the value of these programs for students and employers alike.

For individuals and our economy to thrive, we must expand access to high-quality middle-skill STEM programs at

community colleges. Aspen and the Siemens Foundation look forward to doing our part in addressing this challenge, providing scholarships to more students in 2016 as part of the next Aspen Prize cycle. For now, we invite you to learn more about these exceptional individuals and the programs that prepared them in the pages that follow.

¹ U.S. Department of Commerce. (2011). *STEM: Good jobs now and for the future*. (ESA Issue Brief #03-11). Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration.

² Kochan, T. A., Finegold, D., & Osterman, P. (2012, December). Who can fix the “middle-skills” gap? *Harvard Business Review*.

³ Rothwell, J. (2013). *The hidden STEM economy*. Washington, DC: Brookings Institution.

BRAZOSPORT COLLEGE, INSTRUMENTATION

SCHOLAR: ANGEL ALVAREZ



LAKE JACKSON, TX

100%

Percent of 2014 graduates who were employed in a program-related area within six months of graduation

\$82,144

Median starting salary for 2014 graduates

Behind every facility that keeps our lights on, makes our drinking water safe, and processes and packages much of our food are instrument technicians: experts who design, install, repair, and troubleshoot the control systems and instruments that run these factories and plants. They also work in petrochemical facilities, monitoring flow, level, pressure, temperature, and chemical composition using instruments that produce major chemical compounds like dry cleaning solvent and PVC plastics.

At Brazosport College, students in the Instrumentation Program are trained on instruments used in local industry processing plants, by instructors with real-life experience working in the field. Instrumentation technology is rapidly advancing, so training is ongoing as facilities incorporate the new technology.

Upon graduation, the job outlook for students is excellent. The Texas Gulf Coast industries are some of the largest suppliers of petrochemicals in the world. They need instrument technicians to fill job vacancies created by a large number of retiring professionals, as well as jobs created due to new plant construction.



ANGEL ALVAREZ

EXPECTED GRADUATION YEAR: 2017

Driven by a desire to better himself, his family, and his community, Angel Alvarez enrolled at Brazosport College with the goal of becoming an instrument technician. “Brazosport College has a good reputation in the community,” he says. Angel’s dedication to excellence will surely enhance that reputation.

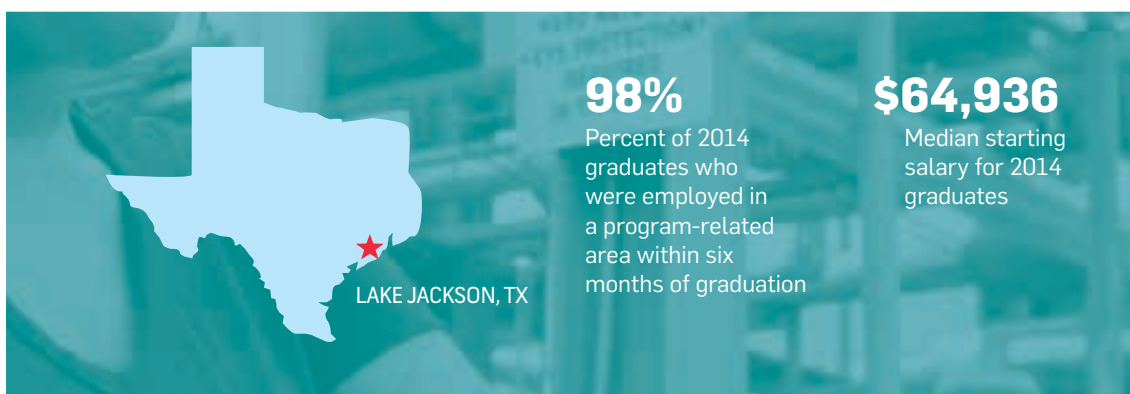
Described by program professors as their “strongest student,” Angel sees his education as the pathway to achieving a fulfilling career, and values the opportunity to set an example for his children. “I want to be able to provide my family with a better future,” Angel says. “That way, when my kids grow up one day, they can see that education is very important. When you have a passion for something, and you can get the education, you can enjoy your work.”

Angel balances night classes with a full-time day job. What he gets in return is the kind of rigorous education that the best community college programs provide, the kind that leads to strong job opportunities after graduation. “We do a lot of hands-on learning, but we also do a lot of theory. I want to be the technician who knows how to work with his hands, but also knows how to use his mind.”

Set to graduate in the fall of 2017, Angel hopes to bring his expertise to the local sector. Says Angel, “After I finish my degree, I definitely want to establish my career as an instrument technician. I want to build new chemical plants and also troubleshoot the existing plants that have been here for many years.” ●

BRAZOSPORT COLLEGE, PROCESS TECHNOLOGY

SCHOLAR: EMILY GRIMES



Production plants across the country manufacture countless goods we use every day: from plastic soda bottles to gasoline to pharmaceuticals. A central part of these facilities are process technicians, who operate the plants, troubleshoot problems, work with instrumentation to monitor flow, level, pressure, temperature, and chemical composition, and conduct lab analysis to make sure that everything is running efficiently and safely.

In Brazosport College's Process Technology Program, students receive practical, hands-on training using the same equipment used in local chemical plants, which happen to be the largest industry in Brazoria County, located on the Texas Gulf Coast south of Houston. The area's 20 petrochemical companies employ more than 14,000 individuals, and the program's students are well prepared to join the industry.

Students participate in co-op learning, where they are given real-time feedback from industry partners. Major industry partners like Dow and BASF review course design, and curriculums are shaped to fit industry needs. The program graduates well-qualified students and works to ensure that each one finds a job in their field.



EMILY GRIMES

EXPECTED GRADUATION YEAR: 2015

When Emily Grimes graduated from high school, she felt her choices were limited. As a young single mother, she had all but given up on the possibility of a college degree. After 10 years of waitressing and the birth of her second child, Emily knew she needed to find a career that would enable her to support her family. She knew she needed to go back to school.

A counselor at Brazosport College helped Emily rediscover her strengths in math and science. Soon after, she enrolled in the Process Technology Program. In addition to working as a waitress, Emily tutors her fellow students in the Brazosport College Math Center, sharing her vast knowledge of mathematics, physics, and chemistry.

Pursuing her dream of being the first in her family to go to college has not been easy for Emily. Despite many obstacles, she will graduate with her degree in December 2015 and is determined to find work as a process operator or process technician in one of many area plants. Later, she hopes to earn her Bachelor of Applied Technology in Safety, Health and Environment.

“I thought I had ruined my chances to go to college but my counselor encouraged me and gave me hope that I could do this. I didn’t need parents with a bunch of money to go to college. And when I got pretty good grades my first semester, I knew this was the best path to a career for me and a better life for me and my family.” ●

INDIAN RIVER STATE COLLEGE POWER PLANT TECHNOLOGY INSTITUTE

SCHOLAR: ALYSIA BILBO



82%

Percent of 2014 graduates who were employed in a program-related area within six months of graduation

\$50,000

Median starting salary for 2014 graduates

Created in partnership with Florida Power and Light and the International Brotherhood of Electrical Workers, the Power Plant Technology Institute at Indian River State College (IRSC) is preparing a new generation of well-trained technicians to maintain and operate nuclear power plant systems as a majority of the current workforce prepares to retire.

Nuclear power technicians perform various jobs within a power plant, including monitoring instruments and controls under the direction of engineers, reactor operators, and others to ensure that the sophisticated technical equipment is operated efficiently and safely.

At the Power Plant Technology Institute and IRSC's state-of-the-art Brown Center for Innovation and Entrepreneurship, students receive extensive hands-on training in the fundamentals of power plant systems, computer-aided schematic design, and electronics and circuitry. The Brown Center houses a dynamic flow loop, a highly-sophisticated two-story simulator that replicates key aspects of power plant operations. Students also participate in intensive paid internships at Florida Power and Light's St. Lucie Nuclear Power Plant.



ALYSIA BILBO

EXPECTED GRADUATION YEAR: 2015

A first generation college student, Alysia Bilbo has long prioritized higher education. While in high school, Alysia committed to dual enrollment classes, earning college credits with the aim to complete many of her core college degree requirements prior to entering college. “My dad and my mom both always stressed how important education was,” Alysia says.

Perhaps more impressive than her path to higher education is the determination she exhibited once in college. Alysia chose Indian River State College’s Power Plant Technology Institute, where she is the only female in her cohort.

“I didn’t realize how few women were actually in the nuclear power industry until I started my program,” she recalls. Being the

only woman in the program “challenges me even more; it makes me want to be better. Just because I’m a woman doesn’t mean I can’t do what a man can do.”

Entering a program that provides incredible opportunity, reflected in exceptional graduation rates and strong earnings potential, is not enough. Alysia hopes to leverage her specialty in radiation protection to become a leader in the evolving sector. “I hope to be a part of the next generation’s innovations for radiation protection and safety,” Alysia says. “I want to be able bring new technology and safety procedures into the field.” ●

LAKE AREA TECHNICAL INSTITUTE ENERGY

SCHOLAR: VINCENT HENNINGSGAARD



WATERTOWN, SD

100%

Percent of 2014 graduates who were employed in a program-related area within six months of graduation

\$51,927

Mean starting salary for 2014 graduates*

* Median starting salary not available

The electricity we use in our homes, schools, businesses, and factories is generated from a variety of energy sources, including wind, sun, nuclear, biodiesel, and fossil fuels—coal, oil, petroleum, and natural gas. Technicians who maintain and repair the production equipment in the energy plants that churn out that power are in high demand.

Lake Area Technical Institute's Energy Program faculty and staff work closely with industry to train students in classroom theory, hands-on labs, and on-the-job experiences. The 20-month credential includes instruction, site visits to power plants, and internships. Industry partners donate funds and cutting-edge equipment so that students have the opportunity to work directly with the tools and technology they will encounter on the job.

In the Energy Technology focus, students learn mechanical maintenance, repair, and overhaul at the plants. Those in the Energy Operations focus learn how to monitor and control power as well as how to isolate and identify process problems across the energy industry.

Many students in the program get jobs and are on the path to their career a few months before graduation. For the past three years, graduates of the Energy Program have earned the highest wages of all Lake Area Technical Institute graduates.



VINCENT HENNINGSGAARD

JOB TITLE: IT SPECIALIST, WESTERN AREA
POWER ADMINISTRATION

Vincent Henningsgaard grew up in a large family in rural Minnesota. After graduating from Canby High School, he joined his father as a heavy equipment operator until he decided to attend Benedictine College and graduated with a bachelor's degree in theology. But he still wasn't satisfied.

Always fascinated by the electrical industry as a kid, Vincent made a life-changing move and enrolled in the Lake Area Technical Institute's Energy Program (along with his brother, Anders), focusing on Energy Operations. Vincent says, "Lake Area was an obvious choice because of the reputation. The instructors really care that students are

able to succeed in the classroom and in the jobs that follow. They were so good about asking how things are going and helping you out, staying later to help me work through things."

The Energy Program gave him the knowledge and training needed to be successful on the job, and the program's industry connections were crucial to Vincent's professional development. Vincent completed an internship with Western Area Power Administration and was hired full-time upon graduation in 2015 as an IT specialist—supervisory control and data acquisition (SCADA) specialist. ●

MIAMI DADE COLLEGE HEALTH INFORMATION TECHNOLOGY

SCHOLAR: MERLYN SANTANA



MIAMI, FL

87%

Percent of 2014 graduates who were employed in a program-related area within six months of graduation

\$32,760

Median starting salary for 2014 graduates

Accurate medical records are critical to quality patient care. Health information about immunizations, prescriptions, examination results, symptoms, tests and treatments must be accurately and securely managed in both paper and electronic systems.

The responsibility for that work resides with health information technicians, who catalogue and keep track of those records and are a vital part of acute care facilities, extended care facilities, nursing homes, and doctors' offices.

Miami Dade College's Health Information Technology Program prepares students to become experts in health data collection and medical language and equips them with the skills they need to translate complicated data about patients into accurate records for physicians and even for research. With the increasing use of electronic health records, health information technology is one of the fastest growing and changing fields in the country. The U.S. Bureau of Labor Statistics projects a 22 percent growth in employment of health information technicians from 2012 to 2022. This highly demanding program places students in internship programs that result in high rates of full-time employment.



MERLYN SANTANA

JOB TITLE: HEALTH DATA ENTRY SPECIALIST,
LARKIN FAMILY MEDICINE

Merlyn Santana’s parents left Cuba decades ago, driven to provide their daughters with the opportunities they never had. Together, they instilled dreams of educational success in Merlyn and her sister. “I always wanted to go to college,” Merlyn says. “I was not going to let my parents down after they left everything behind to give us a better life and better education.”

To help support her family financially, Merlyn has balanced both work and academics since the age of 15. While studying to earn her Associate of Science in Health Information Technology at Miami Dade College, Merlyn also worked two jobs. She graduated from college—the first in her family—as a member of Phi Theta Kappa Honor Society and is now a credentialed registered health information technician (RHIT).

Her skill and determination have landed her a position as a health data entry

specialist at Larkin Family Medicine, where she helped the practice transfer 200 patient health records from paper to electronic storage. She is the lead specialist on health information counseling and trains her colleagues to use electronic health records. Merlyn sees endless opportunities in the field.

“The health care industry grows every day,” she says. “People need to go to the doctor, medical records need to be kept organized and shared, doctors need to get paid, and it is an ongoing cycle that needs constant monitoring and managing. This field will always be there and there will always be open doors.”

Merlyn believes education is the key to opportunity and continued hard work will help her fulfill her dreams. She is now considering a bachelor’s degree to help her become a certified registered health information administrator. ●

MISSISSIPPI GULF COAST COMMUNITY COLLEGE PROCESS TECHNOLOGY

SCHOLAR: EDLESHIA LEVERETTE



PERKINSTON, MS

94%

Percent of 2014 graduates who were employed in a program-related area within six months of graduation

\$40,000

Median starting salary for 2014 graduates

The Process Technology Program at Mississippi Gulf Coast Community College prepares students for a variety of high-demand, high-wage jobs in energy fields, including process technicians, refinery operators, offshore operators, chemical plant operators, power plant operators, research technicians, and water treatment operators.

Students gain real-world experience by training in modern labs and on cutting-edge equipment—like the Polaris HOT (Hands on Trainer) Unit which simulates the measurement and control of industrial processes. And because of the strong industry partnerships, program offerings and curricula are updated to meet the needs of the industry's ever-changing technology. Industry partner donations of \$1.5 million have also bolstered the program's educational offerings and training equipment. Since 2003, program enrollment has expanded from five students to more than 260 full- and part-time students.

Chevron, Shell, and Mississippi Power Company employ graduates at high rates. With the graying of the energy workforce, and industry growth, job openings are expected to continue to rise.



EDLESHIA LEVERETTE

EXPECTED GRADUATION YEAR: 2015

Edleshia Leverette refuses to settle. She wants a job that challenges her, that is constantly evolving—one that forces her to keep learning and to never stop getting better.

“I was making good money as a pipefitter but when my contract job came to an end, I felt like I had to explore trying something else,” she says.

Eager to expand her horizons, Edleshia followed the advice of a mentor to explore and enroll in Mississippi Gulf Coast Community College’s Process Technology Program. Since then, she has found the perfect fit. “The program is so hands on,” Edleshia says. “Teachers in the program have been in the field. They know everything you are going to do and they have all of this knowledge that I get to benefit from.”

Edleshia wants a better life for herself and for her family, so she works two part-time jobs while she pursues her degree. Her chosen program, Process Technology, is a difficult, highly-technical field that requires constant adaptation.

Edleshia embraces the challenge, though, and continues to push herself to do more and do better no matter what.

“I want to be successful. I don’t want to have just a job. I want to have a career. I want to do something that makes me happy every day. I want to set an example for my little sister and all the members of my family to let them know that anything is possible. The sky is NOT the limit.” ●

RENTON TECHNICAL COLLEGE PRECISION MACHINING TECHNOLOGIES

SCHOLAR: PATRICK MURRAY



Precision machinists play a critical role in making the parts and pieces that comprise a myriad of products from spacecraft and airplanes to car engines and dishwashers. Take the Boeing 737, assembled in Renton, Washington: It is made up of more than 300,000 parts—all of which must be developed from intricate blueprints using computer programming, applied mathematics, and complex machines to cut, weld, and groove each piece with extreme precision. A machinist must tap a deep knowledge of the properties of the materials being used (from plastic to steel) to ensure that each part is developed exactly to specifications—the safety of the craft depends on it.

At Renton Technical College's Precision Machining Technologies Program, students are trained in a fully-equipped machine shop facility with state-of-the-art equipment used in the industry today. They learn machining processes and procedures, properties of metals, programming, and operation of computer numerical control (CNC) machines. Equally important, graduates enter the area's robust job market with not only needed technical skills, but also the ability to troubleshoot problems and communicate effectively in the workplace.

Renton's service area is home to two-thirds of the state's manufacturing companies, and they are eager to place well-trained employees in available jobs. A recent industry report cites machinists and engineers as the most common aerospace occupations, and employers report these jobs are the hardest to fill.



PATRICK MURRAY

EXPECTED GRADUATION YEAR: 2016

After honorably serving his country in the military during two tours in Afghanistan, Patrick Murray enrolled and recently completed his first year in Renton Technical College's Precision Machining Technologies Program.

"I have always liked working with my hands," he says. "I like the idea of taking a block of material and a blueprint and turning it into a precision part." Patrick currently works at Neumeier Engineering as a full-time machinist, making airplane parts while also going to school.

Patrick is working on the computer numerical control (CNC) portion of Renton's program to complement his manual machinist training and prepare him to become a CNC programmer.

Patrick chose Renton because its Precision Machining Technologies Program is two years long—more intense than most others. He has appreciated his instructors' attention to the key soft skills needed to succeed on the job, including the importance of professionalism, and learning from performance review feedback.

"One of the programmers at my shop said that anyone can learn CAD/CAM software, but if you don't understand how to remove material you won't make a good part," Patrick says. "I wanted a year of manual machining to build a solid foundation, then have a year programming CNC. I wanted to slow down and learn everything so I can advance my career and set myself apart." ●

RENTON TECHNICAL COLLEGE SURGICAL TECHNOLOGIST

SCHOLAR: MICHAEL MILLER

RENTON, WA



89%

Percent of 2013 graduates who were employed in a program-related area within six months of graduation

\$45,154

Median starting salary for 2013 graduates

Operating room surgeons do not go it alone—they are backed by a team of nurses, anesthesiologists, medical students, and other staff. One of the most important members of that team is the surgical technologist: the person who makes sure the surgical team is scrubbed, sterilizes the operating room and equipment, disinfects the patient's incision sites, anticipates the surgeon's every move, handing him or her the right instrument at the right time, and overall ensures a safe and sterile operating environment, preventing potentially life-threatening infections.

In Renton Technical College's Surgical Technologist Program, students get intensive hands-on training in local hospitals, where they assist with 120 real surgical procedures—from brain surgery to cardiovascular surgery to Ob/Gyn surgery. In addition to the more than 500 hours they spend in surgery, students are evaluated on a weekly basis by mentors at their assigned hospitals, gaining real on-the-job feedback and guidance.

This rigorous program results in nearly all of its graduates getting placed in jobs, many of which lead to later careers as doctors, nurses, physician assistants and surgical assistants. The job outlook for graduates is only improving. Employment of surgical technologists is projected to grow 30 percent from 2012 to 2022, according to the U.S. Bureau of Labor Statistics.



MICHAEL MILLER

JOB TITLE: CERTIFIED SURGICAL TECHNOLOGIST,
MULTICARE TACOMA GENERAL HOSPITAL

Michael Miller's family never pressured him to go to college, but he knew from an early age that he would be responsible for paying for whatever form of higher education he chose after high school. Knowing that, Michael worked hard in high school. He ultimately earned two scholarships, allowing him to enroll in the surgical technology program at Renton Technical College.

"Renton gave me a great education to succeed in this career," he says. "You cannot learn everything in the classroom and this program had me on clinical rotations and in the operating room in a hospital where I could potentially work. And the last day of my rotation, I was offered a job."

Michael has taken his education further than many in his family, studying healthcare management at the University of Washington while working full-time as a certified surgical technologist at

Tacoma General Hospital. And he has only just begun.

"Being a surgical technologist has provided me with so much exposure within the hospital environment. I have built relationships with a lot of physicians here, and I think it is giving me the upper hand and helping me move along with my career choices. I am shadowing doctors, and I have clocked 2,000 hours in the hospital setting, in surgery each year," he says. Once he's earned his bachelor's degree, Michael plans to continue his education and pursue his dreams of someday becoming a doctor.

"Originally, I wanted to be a physician's assistant, but now that I realized that, I want to go further. I feel like there are so many opportunities, and I don't think I would have been able to get this type of experience just enrolling as pre-med at a four-year college straight out of high school." ●

SANTA FE COLLEGE CARDIOVASCULAR TECHNOLOGY

SCHOLAR: FLORENCE CONTINO



89%

Percent of 2014 graduates who were employed in a program-related area within six months of graduation

\$50,000

Median starting salary for 2014 graduates

Cardiovascular technologists are an integral part of the health team treating heart patients and conducting tests like echocardiograms and assisting with surgical procedures such as the insertion of stents or pacemakers.

The Cardiovascular Technology Program at Santa Fe College prepares students for careers in cardiac catheterization, vascular technology, and cardiac ultrasound. Students are trained through a rigorous curriculum in the classroom and practice procedures in on-campus labs. They gain eight months of experience interning in doctors' offices and medical facilities where they integrate their academic knowledge into a real world practice.

Graduates earn nationally recognized industry credentials and enter the workforce with the training to operate equipment to conduct tests, analyze results, and assist physicians or surgeons before, during, and after procedures. As the field continues to expand, the job outlook for cardiovascular technology is promising. The Bureau of Labor Statistics estimates that employment of cardiovascular technologists will grow by 39 percent between 2012 and 2022.



FLORENCE CONTINO

JOB TITLE: INVASIVE CARDIOVASCULAR SPECIALIST,
SARASOTA MEMORIAL HOSPITAL

Florence Contino has always put others first. Growing up on a Cherokee reservation, Florence was the sole caretaker for her seriously ill father and younger siblings. Despite an enormous amount of responsibility at home, she enrolled in the Cardiovascular Technology Program at Santa Fe College.

“I was going to go into nuclear medicine technology with a dual major in photography but when I started taking anatomy and physiology classes, I fell in love with the heart,” she says. “My father had had several heart attacks and two strokes and my grandmother died of a stroke.” Witnessing so many heart problems and how they had affected our family, I wanted to help people fix their problems and hopefully save their lives.”

She not only managed to excel in her own studies while working a full-time job, but also tutored her classmates so that they too could succeed. Today, Florence continues to care for her family, now looking after her ailing mother, and for others, as an invasive cardiovascular specialist at the nationally ranked Sarasota Memorial Hospital.

“I love what I do,” she says. “It is exciting, intense, and awesome at the same time. At Santa Fe, the program was really challenging but because of it they gave us everything we needed to succeed in this job. We had to give presentations on rare conditions, and we were trained in both invasive and non-invasive procedures so we are prepared for whatever comes our way. ●

VALENCIA COLLEGE, RESPIRATORY CARE

SCHOLAR: MANUEL RIVERA



95%

Percent of 2013 graduates who were employed in a program-related area within six months of graduation

\$44,572

Median starting salary for 2013 graduates

Respiratory therapists (RTs) care for the growing number of Americans struggling with lung problems like asthma, emphysema, and chronic bronchitis, and heart conditions. Patients range from premature infants whose lungs are underdeveloped to elderly patients with chronic heart and lung disease. RTs perform diagnostic tests for lung capacity, administer breathing treatments, record a patient's progress, and consult with physicians and surgeons on continuing care. They also provide emergency care to patients suffering from heart attacks, strokes, drowning, or shock.

Students at Valencia College's Respiratory Care Program are provided with a strong educational base for therapeutic techniques through challenging coursework. They also get hands-on experience in a cutting-edge simulation lab and in top major medical centers and doctor's offices in the area. Interaction with physicians and adult, pediatric, and neonatal patients offers diverse clinical experiences and students are taught how to effectively communicate with patients and other health professionals on the healthcare team. For many graduates the program is a stepping stone on the path to pursuing a bachelor of science degree, which affords additional career opportunities in management and advanced practice.



MANUEL RIVERA

EXPECTED GRADUATION YEAR: 2016

Manuel Rivera never planned to go to college. No one in his family ever had, and Manuel felt certain he simply wasn't "college material." His high school biology teacher even told him so.

Manuel was heading for the military, but a change in career choice came by way of personal tragedy. Manuel's infant son nearly drowned after a babysitter left him unattended in the bathtub.

The four-month-old was given a 10 percent chance of survival. Manuel credits his son's survival in part to the care he received from the respiratory therapists who were at his side during two weeks of hospitalization. During that time, Manuel connected with his son's medical team and developed a fascination with respiratory therapy and the machines that were keeping his child alive. "[The moment] they said he was going to make it and there was no brain damage, that is [when] I chose my profession. They were

there for my son and I said that I want to do that for someone else's kids," he says.

Manuel enrolled in Valencia's Respiratory Care Program and has thrived in the challenging program. "I've learned how to effectively communicate with patients not just technically but also emotionally," he says, adding, "I like that my professor challenges us, makes us work for it to learn everything. I didn't join the program to have someone make it easy for me. There are no shortcuts."

In addition to attending classes full-time, he interns 25-30 hours each week and takes care of his son. Once he completes his associate's degree in Respiratory Care, Manuel wants to continue his education in hopes of specializing in pediatrics, and then eventually become a physician assistant. He says, "I want to give my son a good future, and I want to be able to help him go to college." ●



SELECTION COMMITTEE

Many thanks to the 2015 Siemens Technical Scholars selection committee for their time and thoughtful consideration of applications.

JOHN COLBORN, Director, Skills for America's Future, The Aspen Institute

LARA K. COUTURIER, Program Director, Jobs for the Future

KAREN ELZEY, Vice President, Policy, Business-Higher Education Forum

KATHRYN JO MANNES, Workforce Consultant

MARYALICE MCCARTHY, Senior Policy Analyst, Education Policy Program,
New America Foundation

Data Sources

Institutions submitted labor market data based on data definitions provided by the Aspen Institute. Sources of data include state departments of education, state higher education coordinating boards, and surveys of graduates.

“We do a lot of hands-on learning, but we also do a lot of theory. I want to be the technician who knows how to work with his hands, but also knows how to use his mind.”

*ANGEL ALVAREZ,
BRAZOSPORT COLLEGE,
INSTRUMENTATION PROGRAM*

The Aspen Institute's College Excellence Program aims to advance higher education practices, policies, and leadership that significantly improve student outcomes. Through the Aspen Prize for Community College Excellence, the New College Leadership Project, and other initiatives, the College Excellence Program works to improve colleges' understanding and capacity to teach and graduate students, especially the growing population of low-income and minority students on American campuses. For more information, please visit www.aspeninstitute.org/policy-work/college-excellence.

The Siemens Foundation has invested more than \$90 million in the United States to advance workforce development and education initiatives in science, technology, engineering and math. Its mission is inspired by the culture of innovation, research and continuous learning that is the hallmark of Siemens' companies. Together, the programs at the Siemens Foundation are narrowing the opportunity gap for young people in the U.S. in STEM careers, and igniting and sustaining today's STEM workforce and tomorrow's scientists and engineers. For more information, please visit www.siemens-foundation.org.



THE ASPEN INSTITUTE

College Excellence Program
One Dupont Circle, NW
Suite 700
Washington, DC 20036

SIEMENS | Foundation

Siemens Foundation
300 New Jersey Avenue, NW
Suite 1000
Washington, DC 20001