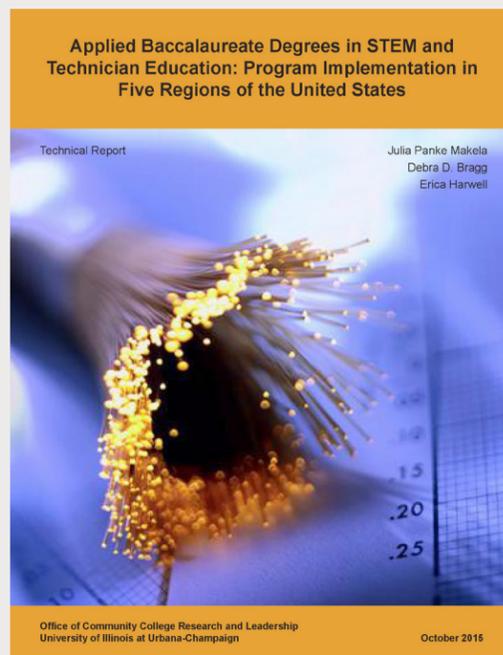


# New Research on Applied Baccalaureate Degrees: Implementation in Five Regions of the United States

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The Office of Community College Research and Leadership (OCCRL) was the recipient of a \$1.2 million research grant from the National Science Foundation (NSF) Advanced Technology Education (ATE) program. From August 2010 to October 2015, a team of researchers at OCCRL conducted studies on the implementation and evaluation of Applied Baccalaureate (AB) degree programs in science, technology, engineering, and mathematics (STEM) fields of study across the country.

Early work on this project included document review, website analysis, and online and telephone surveys of NSF ATE center and project grantees, to learn about their integration of AB degree programs at the community college and university levels. This initial research, led by Dr. Julia Panke Makela of the University of Illinois Career Center, produced a report titled, [Investigating Applied Baccalaureate Degree Pathways in Technician Education](#).

Building on these findings, OCCRL launched case study research that delved into AB degree program implementation, with the goal of providing in-depth information on program quality, significance, and effectiveness, in order to help inform future endeavors. This newest research brings together a collection of case studies conducted in five regions of the United States. Typically involving partnerships of higher education institutions and employers, each case describes the goals, roles, and

activities of critical stakeholders in implementing AB degree programs. Titled, [Applied Baccalaureate Degrees in STEM and Technician Education: Program Implementation in Five Regions of the United States](#), the report offers a total of 11 institutional case studies that are organized into five meta-cases involving community colleges, universities, and their employer partners. These cases describe the associate's of applied science (AAS) and applied baccalaureate (AB) degrees that are conferred in numerous STEM and technician education fields of study. The five cases are listed below.

Five Regional Cases	
North Dakota	Bismarck State College's Bachelors of Applied Science (BAS) in Energy Management
Maryland and Delaware	CyberWatch Center and Partners' AB degrees associated with CyberWatch Center: NSF-ATE Center; Prince George's Community College's Associate of Applied Science (AAS) in Information Security; University of Maryland–University College's Bachelor of Science (BS) in Cybersecurity; and Wilmington University's Bachelor of Science (BS) in Computer and Network Security.
Florida	Daytona State College's Bachelors of Science (BS) in Engineering Technology.
Ohio	Lakeland Community College, in Lake County, Ohio, and Partners' AB degrees associated with Lakeland Community College's Associate of Applied Science (AAS) in Biotechnology Science; and, in Cleveland, Ursuline College's Bachelors of Arts (BA) in Biotechnology.
Oklahoma	Oklahoma State University Institute of Technology and Partners' AB degrees associated with Oklahoma State University Institute of Technology's Bachelor's of Technology (BT) in Information Technology, Associate of Science (AS), and Associate of Applied Science (AAS) in Information Technology; Rose State College's Associate of Applied Science (AAS) in Networking and Cyber Security; and Tulsa Community College's Associate of Applied Science (AAS) in Information Technology.

The AB degree programs that are profiled in this report reside in Florida, Ohio, Oklahoma, South Dakota, and the 2-state region of Maryland and Delaware. These programs emphasize various areas of STEM and technician education, including biotechnology and biotechnology sciences; energy management; engineering technology; information technology; and, cybersecurity. Each case analyzes program implementation from the perspective of institutional context, program goals, key components (curriculum and instruction, support services, etc.), and intended outcomes.

This phase of the research on AB degree programs in STEM and technician education used case study

methodology, supplemented with participatory action research. The research design was similar to one used in Department of Education-funded research project called *Sharing What Works: Exemplary and Promising Career and Technical Education Programs* (Bragg, Bobik, Maxwell, & Palovik, 2002). This multi-year project for the Office of Career-Technical and Adult Education entailed the development of criteria and an evidence-based process for identifying and recognizing exemplary and promising programs, including postsecondary technical education programs. An extensive literature review and practitioner-expert input were used to identify four categories of criteria for promising and exemplary technical education programs of study.

## Four Categories of Criteria for Promising and Exemplary Technical Education Programs of Study

### Program Quality

Demonstrates clear goals, evidence-based, reflective of high expectations, and supportive of career pathways.

### Educational Significance

Uses state-of-the-art technology, innovative instructional methods, work-based learning, and culturally inclusive curriculum.

### Evidence of Effectiveness

Demonstrates student academic achievement and outcomes consistent with industry, state, and national standards.

### Replicability

Uses program and partnership designs that are feasible to implement by other institutions, partnerships, and employers.

In the original [Sharing What Works](#) project and in this study, practitioner-experts identified AB degree programs that would provide optimal insights into AB degree implementation, optimal sites for participatory field research. Thus, from the outset of this study, University of Illinois researchers worked alongside technical experts drawn from NSF-ATE projects and centers and from the advisory committee, which fostered active dialogue among site personnel and researchers and contributed to a deeper understanding of the current state and the potential of AB degrees.

Results of this report, along with other papers generated by the NSF-ATE research are available on the [OCCRL website](#). Results of this project are intended to assist postsecondary institutions to implement, enhance, and evaluate AB degree programs. Because college credentials, from certificates to degrees, have growing importance in the United States, knowing how to implement high quality AB degree programs, including knowing when these programs are and are not needed, is important. Partnerships between community college and four-year institutions that involve the articulation of applied associate coursework into AB degrees represents

a promising expansion of college access and completion in STEM education, including technician education, but only if these degrees prove to be beneficial to students and employers.

Individuals interested in learning more about AB degrees should also consider attending the [Community College Baccalaureate Association's \(CCBA\) 16th Annual International Conference](#) in Chicago, March 18–20, 2016. A central feature of this year's conference is the Applied Baccalaureate (AB) Design Lab where participants can attend dedicated sessions that extend from an introduction to AB degree programs, to implementation, to stakeholder analysis, to policy and accreditation, to evaluation and continuous improvement.

## References

- Bragg, D. D., Bobik, C., Maxwell, C., & Palovik, D. (2002). Enhancing America's workforce one exemplary program at a time: Highlights of 2000 and 2001 postsecondary exemplary CTE programs. Columbus, OH: National Center for Dissemination in Career and Technical Education, The Ohio State University.

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