Mentoring for NSF ATE Proposals

Prof. Karen Wosczyna-Birch, National Center for Next Generation Manufacturing

Dr. Karen Wosczyna-Birch has been a champion of engineering and technology education for over 30 years. Since 1995, has served as the State Director of the CT College of Technology (COT) where her leadership has been instrumental in creating nationally recognized seamless pathway programs in engineering and technology between all 12 Connecticut public community colleges (now merged to CT State Community College) with 10 universities and technical and comprehensive high schools. She is also the Executive Director and Principal Investigator of the National Center for Next Generation Manufacturing (NCNGM), a National Science Foundation (NSF) Center of Excellence and a Professor Emeritus in Applied Technology at Connecticut State Community College Tunxis. She has received over $40M in funding from the NSF, including the Computer Science, Mathematics, and Physics Scholarship Program of Central Connecticut S-STEM grant and two grants for international partnership. Karen has implemented strategies resulting in an increase in the enrollment of underrepresented populations in STEM programs at the community colleges.

Karen has received numerous awards for her accomplishments as a professor and for her passion for increasing the diversity of the STEM population including the 2016 Distinguished Service Award from the international honor society Epsilon Pi Tau (EPT), the 2018 CT Women of Innovation Award in the Postsecondary Academic Innovation & Leadership Category, the 2012 New England Board of Higher Education Excellence Award for the State of CT and most recently, the 2020 High Impact Technology Exchange Conference's Innovative Program of the Year Award and the 2021 International Technology Engineering Educators Association (ITEEA) Special Recognition Award and 2025 ITEEA Prakken Professional Cooperation Award. In 2014, she was invited to the White House College Opportunity Summit recognizing leaders like Karen for their commitment to STEM education. She also serves on numerous local and national boards including the Connecticut Technical Education and Career System, Charter Oak State College Academic Council, and Charter Oak State College Business & Technology Committee, and Massachusetts Institute of Technology's TechAMP Advisory Board and Curriculum Committee.

Ms. Wendy Robicheau, National Center for Next Generation Manufacturing

Wendy Robicheau is the Assistant Director for the National Center for Next Generation Manufacturing, funded by the National Science Foundation Advanced Technological Education Program. She began working on NSF ATE grants for the Connecticut State Colleges & Universities System in 2012. Her work on these grants has grown her passion for making students, parents, educators and counselors aware of the educational and career pathways that are possible in STEM fields with an emphasis on advanced manufacturing. She has organized and participated in numerous local, national, and international initiatives over the years where she has both shared and learned about addressing STEM workforce needs and has also published and presented papers for these conferences. Wendy has her M.S. in Student Development in Higher Education from Central Connecticut State University.

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Overview

The Mentor Up Program, funded by the National Science Foundation Advanced Technological Education (NSF ATE) program, provides an annual mentoring program for a cohort of community colleges teams submitting NSF ATE proposals. This project grant aligns with the NSF ATE program objective to provide leadership opportunities for faculty at two-year institutions and supports the national priority of educating the skilled technical workforce for the industries that keep the United States globally competitive. From March to the NSF ATE proposal submission deadline, typically in early October, teams of community college faculty, administrators, and grants staff participate in activities to better understand the components and requirements of NSF ATE proposals.

Mentor Up activities include virtual mentoring and webinars as well as a virtual 2.5-day workshop where two-year faculty who are teaching technician education learn the strategies and NSF requirements for writing and submitting competitive proposals. For community colleges awarded NSF ATE grants, results include improved student access to education and acquisition of skills needed to enter the workforce as STEM graduates whose contributions will advance the nation's economic goals for meeting emerging workforce needs. Mentor Up also provides a pre-application mentoring option to help protentional cohort participants determine workforce needs in their technology sector and demonstrate their industry partnerships, a keystone for NSF ATE projects. Program participants complete pre-surveys and post-surveys, which show overall confidence in preparing NSF ATE proposals and understanding of the NSF ATE program and proposal requirements. Results are used for impacts of the program as well as continuous improvement of activities.

Program format

Recruiting for Mentor Up begins in October for the next year's cohort. The leadership team and mentors distribute program and application information through applicable technology and education conferences, social media, and websites. A Pre-Application Mentoring component was added in the fourth year of the program to assist potential participants develop their proposal and one-page project summary that is required for the full cohort application. The leadership team and mentors have found that local workforce needs and industry partners are better defined in the summaries that were developed under the Pre-Application Mentoring component, which is critical as the aspects must be strong for an NSF ATE proposal.

Full cohort applications are due in April of the cohort year. Once teams are accepted and introduced to their mentors, virtual mentoring begins immediately. Participating teams are provided with pre-workshop questions. These questions focus on gathering information and identifying people who need to be involved in the proposal development and submission process. Participants are also provided with a program timeline and the NSF ATE solicitation for review. These materials provide a framework to guide key points that need to be addressed during mentoring sessions and milestones until submission.

The virtual 2.5-day workshop is held in June and focuses on the strategies and NSF requirements for writing and submitting competitive proposals. While the faculty on the teams is required to participate, with the virtual format, administrators and grants office staff are also invited to participate allowing for all who may be involved at the institution to understand requirements, especially those pertaining to the ATE solicitation. The following agenda is presented by former NSF ATE program officers and former and current NSF ATE Principal Investigators who serve as the mentors for the program. They are experienced in their own technology discipline as current or former faculty members and the NSF ATE proposal development and submission process and the merit review process.

Day One (All Times in Eastern Time)
11:00 - 11:10AM - Introduction of Team
11:10 - 11:45AM - Introduction of College Teams (1 minute each)
11:45 - 12:15 PM - Session 1: ATE Basics (30 minutes including Q&A) - ATE Solicitation and PAPPG, Components of ATE Proposal, Results of Prior Support
12:15 - 12:45 PM - Session 2: Rationale (30 minutes) - Presentation on alignment of projects with workforce needs, Using abstracts from awarded projects to determine workforce needs
12:45 - 1:15 PM - Break
1:15 – 2:00 PM - Session 3: Goals, Objectives, Activities, Deliverables (45 mins) - Presentation and Examples, Quiz and Q & A
2:00 – 2:45 PM - Hands on: PIs create outline list of goals and objectives (Breakout Rooms)
2:45 - 3:00 PM - Session 4: The 1-Page Summary (15 minutes) - Brief Presentation: Preparing the Overview, Intellectual Merit, Broader Impacts
3:00 - 3:20 PM - Session 5: The Review Process and reminder on Mock Panels (20 minutes)
3:20 - 3:35 PM - Day One

Day Two
11:00 -12:00PM - Session 6: Mock Panels - Mock panels meet and discuss Proposal One - Monitored by Mentors (If time permits discuss Proposal Two)
12:00 -12:30PM - Mock panels report out on panel reviews, strengths, and concerns
12:30 - 12:45 PM - Reporting on reviewer comments on Proposals One and Two
12:45 - 1:30 PM - Break
1:30 - 1:45 PM - Session 7: Timetables/Timelines
1:45 – 2:15 PM - Session 8: Management plan (30 minutes) - Presentation of what goes into the management plan, Q & A
2:15 – 3:00 PM - Session 9: Budget Presentation (45 minutes) – The Budget, What's Allowed, Do's and Don'ts, Indirect Rate (IDR) and the impact on budget, Q&A about Budget
3:00 – 3:30 PM - Summary and Preparation for Day Three

Day Three
11:00 –11:30AM - Session 10: Evaluation plan (30 minutes)
11:30 – 12:10PM - Session 11: Sustainability and Dissemination plan (40 minutes total)
12:10 – 12:55PM - Session 12: Research.gov and ATE Central, Mentor Connect (45 mins)
12:55 – 1:10PM - Timeline until Submission
1:10 – 1:25PM - Last Questions/Webinar Announcements/What Happens After Submission
1:25 – 1:40PM - Post workshop Online Evaluation Survey

Following the workshop, four webinars are held throughout July and August on Research.gov and Proposal Forms, Evaluation, Budget, and the IRB. Webinars focus on topics that are common areas of confusion among participants or topics that needs more time for explanations. Participants completing 80% of their proposal draft by early September are also invited to send it to a different mentor or member of the leadership team for a full review and written or verbal feedback. Virtual mentoring continues through the NSF ATE submission deadline.

Project results

The project has served five annual cohorts from 2021 – 2025 with a total of 68 teams participating. Out of those teams, 47 submitted proposals. For the 2021 - 2024 cohorts, 26 grants were awarded. The 2025 proposal decisions are pending. Over the course of the project, mentees have from previous cohorts have kept in communication with mentors regarding progress of funded projects and advice on additional proposals. Mentor Up's external evaluator is conducting a longitudinal study to determine long-term impacts of participation in the program. Annually, the external evaluator evaluates the program based on pre and post workshop surveys and observations and meetings with project leadership and mentors. Below are the pre- and post-survey results for the 2025 Program cohort.

	2025 Data	
	Pre-test (11 responses)	Post-test (14 responses)
I feel confident in managing the NSF submission process (Fastlane, grants.gov, research.gov)	Post-Test Only	86%
I feel confident understanding the tasks that need to be accomplished prior to submission day.	27%	86%
I feel confident in my ability to write a quality rationale for a proposal.	36%	78%
I feel confident in my ability to write goals, objectives and deliverables for a successful proposal.	27%	78%
I feel confident in my ability to outline the activities to accomplish the goals and objectives.	18%	93%
I feel confident in my ability to write a time table for a successful proposal (with appropriate formatting ,etc).	18%	64%
I feel confident in my ability to write a management plan for a successful proposal.	18%	92%
I feel confident in my ability to write a complete and correct budget for a successful proposal.	27%	57%
I feel confident in my understanding of indirect rates and their impact on the budget in a successful proposal.	Post-Test Only	57%
I feel confident that I understand what reviewers are looking for in assessing the intellectual merit of a proposal.	Post-Test Only	88%
I feel confident that I understand what reviewers are looking for in assessing the broader impacts of a proposal.	Post-Test Only	86%
I feel confident that I can prepare a successful overview for a proposal.	Post-Test Only	93%
I feel confident that I understand evaluation and can either prepare or secure a quality evaluator to prepare an evaluation plan.	Post-Test Only	67%
I feel confident that I understand what Is needed for sustainability and dissemination in a successful proposal.	Post-Test Only	72%
I feel confident that I understand what is required in terms of IRB (Institutional Research Board) approval for a successful proposal.	Post-Test Only	77%
The level of knowledge exhibited by the presenters regarding the ATE proposal preparation was (insufficient 1, to exceptional 5)	Post-Test Only	86%
The usefulness of the grant development resources (not useful 1, to very useful 5)	Post-Test Only	87%
The organization of the virtual workshop presentations and activities was (not useful 1, to very useful 5)	Post-Test Only	93%

Fig. 1. 2025 Mentor Up Program Evaluation Data

The external evaluator noted that “all measures show increased confidence among all the participants in their knowledge and skills to prepare and submit a grant proposal. The leadership team clearly had a quality structure thought through but was willing to adapt to participants’ needs. The success and feelings of confidence and support were positive for the project. Among the most meaningful interactions were those with the mentors which help to gain confidence in the submission process.” [1]

Acknowledgements

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References

[1] J. Sando, “Mentor Up External Evaluation Report 2025,” Aug. 2025.