



2017 Annual Report

Center for Women in Technology
University of Maryland, Baltimore County
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Baltimore, MD 21250

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Message from the Director

This has been another exciting and eventful year for CWIT. The Scholar Programs housed in CWIT continue to thrive and grow. Our CWIT Scholars have been succeeding in ways both new and familiar. We graduated 25 Scholars in 2016-2017 including ten CWIT Scholars, eight Cyber Scholars, and seven T-SITEs. Our Affiliates programs have also continued to grow, with over 170 students participating as CWIT Affiliates and 100 as Cyber Affiliates. We continue to be blessed with the energy and commitment of our CWIT Student Council. Its officers have done much to increase Scholar ownership in the Program and expand the CWIT tradition of leadership. My sincere thanks go to the 2016-17 officers:

President: Hannah Corcos, C11 Mechanical Engineering

Vice President: Hannah Aris, C13 Chemical Engineering

Secretary: Sydney Menikheim, C12 Chemical Engineering

Treasurer: Nsikan Jacob, Affiliate Computer Engineering

Affiliates Representative: Manika Sachdeva, Affiliate Computer Science

Freshman Representative: Jay McIntyre, Affiliate Computer Science

We have been surely blessed in the new staff who have joined us this year. Our new Associate Director Danyelle Ireland started in September 2016, bringing experience as a Program Analyst for the Division of Data, Assessment, and Research of the Office of the DC State Superintendent of Education and as a Program Coordinator at the Cesar Chavez Public Charter Schools in Washington DC. She has a BA in African American Studies and Family Studies at UMCP and a PhD in Educational Psychology from Howard University. Her doctoral dissertation research on “The Roles of Social Identities in the Achievement Motivation and Retention of Black Undergraduate Women in Computing Disciplines” is directly relevant to the mission of CWIT. Danyelle has primary responsibility for industry relations, program assessment, and our grant programs, including the T-SITE Scholars program and our new Pathways Project for Transfer Students. Our new Assistant Director Erica D’Eramo started in August 2016, bringing experience as Director of New Student Programs at Cedar Crest College and the Engineering Transfer Support Program Lead at the University of Michigan. She has a B.A in Business, Organizations, and Society from Franklin and Marshall College and a M.A. in Higher Education from the University of Michigan. Erica has primary responsibility for our CWIT Scholars Program and CWIT Living Learning Community. Both Danyelle and Erica have celebrated their one-year anniversaries with CWIT and it’s already hard to imagine CWIT without them.

CWIT continues to be fortunate in the strong support of the UMBC administration, particularly from the President, Provost, and COEIT Dean and Chairs and their staffs. Their dedication and leadership have been critical to the continued successes of CWIT and UMBC. We particularly look forward to working with new COEIT Dean Keith Bowman in the coming year and beyond.

Penny Rheingans

Director, Center for Women in Technology

CWIT Vision and Mission

Vision

The Center for Women in Technology (CWIT) is dedicated to increasing the representation of women in computing and engineering fields. CWIT efforts begin with nurturing a strong group of Scholars, grow to building community resources for other women in these majors, extend to fostering a healthy gender climate and computing and engineering pedagogy in College of Engineering and Information Technology (COEIT) departments, and finally expand into outreach efforts to increase interest in technical careers. A successful program for female-friendly computing and engineering education at UMBC will help make UMBC a destination for women (and allies) interested in technical careers and serve as a national model for other universities.

Mission

- Sustain and strengthen a vital Scholar program for undergraduates committed to increasing the representation of women in computing and engineering fields.
- Foster a supportive community for all women in computing and engineering at UMBC.
- Improve the gender climate in COEIT.
- Broaden the pipeline of talented women interested in computing and engineering with K-12 outreach programs.

CWIT's Relationship to UMBC

CWIT supports UMBC's commitment to diversity at all levels and its efforts to create a campus community rich in intellectual, cultural, and ethnic diversity. CWIT helps the University achieve its regional and national mission by identifying those areas in science, technology, and engineering where women are significantly underrepresented, attracting well-qualified female students to UMBC through special scholarship initiatives such as the CWIT Scholars Program, and working with departments and other campus partners to help make UMBC a welcoming place for women in engineering and information technology. CWIT also supports the University in its efforts to attract private and public funding to achieve its mission.

CWIT Internal Advisory Board

The CWIT Internal Advisory Board supports the work of CWIT and provides mission-based guidance towards strategic governance.

2016-2017 Internal Advisory Board Members

- **Cathy Bielawski**, Director, College of Engineering and Information Technology, Undergraduate Student Services
- **Dale Bittinger**, Associate Vice Provost, Enrollment Management
- **Lee Blaney**, Assistant Professor, Chemical, Biochemical, and Environmental Engineering
- **Stacy Branham**, Lecturer, Information Systems
- **Natalie Brianas**, Associate Director, Corporate Relations, Office of Institutional Advancement

- **Marie desJardins**, Associate Dean, College of Engineering and Information Technology and Professor, Computer Science & Electrical Engineering
- **Damian Doyle**, Director of Enterprise Infrastructure and Support, Division of Information Technology
- **Katherine Gibson**, Lecturer, Computer Science & Electrical Engineering
- **Megan Hanks**, STEM Communications Manager, Office of Institutional Advancement
- **Anupam Joshi**, Professor and Chair, Computer Science & Electrical Engineering; Director, Center for Cybersecurity
- **Erin Lavik**, Professor and Graduate Program Director, Chemical, Biochemical, and Environmental Engineering
- **Patrice McDermott**, Vice Provost for Faculty Affairs, Office of the Provost
- **Jess Myers**, Director, Women's Center
- **Jill Randles**, Assistant Vice Provost and Assistant Dean, Office of Undergraduate Education
- **Christine Routzahn**, Director, The Career Center
- **Maria Sanchez**, Lecturer, Mechanical Engineering
- **Carolyn Seaman**, Associate Professor and Director of Undergraduate Programs, Information Systems
- **Anne Spence**, Professor of the Practice, Mechanical Engineering

2016-2017 Internal Advisory Board Committees

- **Affiliates Committee:** Cindy Greenwood, Cathy Bielawski, Damian Doyle, Jill Randles, Maria Sanchez
- **Assessment Committee:** Danyelle Ireland, Lee Blaney, Marie desJardins, Damian Doyle, Christine Routzahn, Carolyn Seaman
- **Marketing and Recruiting Committee:** Erica D'Eramo, Dale Bittinger, Megan Hanks, and Natalie Brianas

Plans, Objectives, Activities, and Accomplishments

Action Plan for 2016-2017

- Navigate staffing transition with new Associate Director, Assistant Director -- CWIT Scholars, and Office Assistant. Bring new staff up to speed.
- Continue to refine and assess the CWIT Affiliates Program Model and coordinate these efforts with developing the elements of the Cyber Affiliates Program and model.
- Design and implement a specific Cyber recruitment plan.
- Strategically submit at least one grant proposal to replace expiring projects.
- Institutionalize the Climate Survey as part of the COEIT strategic planning process (in collaboration with the Dean's office).
- Increase CWIT visibility to external audiences through papers, presentation, and promotion of the CWIT Sponsors program.

Accomplishments 2016-2017

CWIT Objective 1: Scholar Programs Accomplishments

Sustain and strengthen a vital Scholar program for undergraduates committed to increasing the representation of women in computing and engineering fields.

CWIT Scholars Program – This scholarship program identifies high-achieving high school seniors annually and provides four years of financial aid and programmatic support to pursue a bachelor’s degree at UMBC in chemical/biochemical/environmental engineering, computer engineering, computer science, mechanical engineering, information systems, and business technology administration with a technical focus. The Fall 2017 incoming cohort will include 12 students, bringing the total number of current CWIT Scholars to 55 and the total number of CWIT Scholars since 2002 to 186.

- Ninety-two percent of all CWIT Scholars entering between 2002 and 2012 either have graduated in a COEIT major or are currently continuing their studies in COEIT or a STEM major.
- In May 2017, eight CWIT Scholars completed their bachelor’s degrees and have graduate school enrollment plans or full-time jobs. All of them graduated in four years.
- The average cumulative GPA of C12, C13, C14, and C15 CWIT Scholars combined is 3.54.
- Concerted efforts to increase the diversity of the CWIT applicant pool resulted in an increase in the percentage of applicants from underrepresented groups (from 15% in FY15 to 29% in FY17). Students from underrepresented groups will comprise 33% of the Fall 2017 incoming class. Additionally, 16% of C16 Scholars are from out of state.

Cyber Scholars Program – This scholarship program is open to high-achieving new freshmen and transfer students, as well as continuing UMBC students with an interest in cybersecurity. The first cohort of Cyber Scholars began in the fall of 2013 with nine students and this year the program grew to 27 scholars. The fall 2017 incoming class (Y5 cohort) consists of eight students; six computer science majors and two information systems majors. Two of the Y5 scholars are new freshmen, two are new transfer students, and four are continuing UMBC students. Three Cyber Scholars graduated in December 2016 and six in May 2017, so the 2017-2018 total number of Cyber Scholars is twenty-seven.

- Ninety-eight percent of Cyber Scholars either have graduated in a COEIT major or are currently continuing their studies in COEIT.
- The average cumulative GPA of Y1, Y2, Y3, and Y4 Cyber Scholars combined is 3.56.
- Ninety-two percent of Cyber Scholars in the first four cohorts have completed internships and/or research experiences relevant to their areas of interest.

While the first five cohorts are impressive, we still have room for improvement in our applicant pools. The overall number of applicants has reached sufficient levels, but the diversity and strength of those applicants are areas for growth. Continuing our Cyber 101 overnight program for high school senior girls and visiting high schools to talk about our program were some steps taken in the past year to help build the strength of the applicant pool. There were also three Cyber Associates who lived on the CWIT Living-Learning Community floor and received the same level of staff support as the Cyber Scholars (one-on-one meetings, participation in the Cyber Practicum each semester, etc.), without a scholarship award. One of these Associates transferred to a community college at mid-year to better prepare for the computer engineering major. The other two Associates have returned to live on the CWIT LLC in leadership roles. Six new Cyber Associates will join the program in Fall 2017.

Transfer Scholarships in IT and Engineering Program (T-SITE) – The T-SITE Scholars program is open to high achieving transfer students from Maryland community colleges, with an emphasis on women and underrepresented minorities, with financial need and COEIT majors. This program, is currently funded by a five year S-STEM grant from the National Science Foundation to support a total of 25 students entering in four cohorts from 2016-2020. A previous grant served 28 students entering in four cohorts from 2012 - 2016. Under the new grant, T-SITE is focused on serving new transfer students majoring in one of four computing majors at UMBC (computer engineering, computer science, information systems, and business technology administration). In addition, the maximum scholarship amount is increased to \$7,000 from \$6,700. The program structure and activities have not changed. In 2016-2017, 18 students benefited from scholarships and programmatic support administered by CWIT within the existing infrastructure of the Scholars programming. In Fall 2017, four additional T-SITE Scholars (T6 cohort) will enter, bringing the total number of students served under T-SITE to 36.

- Forty-four percent of T-SITEs have been women and 50% underrepresented minorities.
- T-SITE Scholars in the first five cohorts came to UMBC with an average transfer GPA of 3.55 and 64 credits completed.
- One hundred percent of all students in the first five cohorts were retained in engineering or computing majors.
- The average time to graduation for T-SITEs is three years after transferring to UMBC.
- Nineteen of 28 T-SITE Scholars in the first four cohorts have graduated and 15 were employed prior to graduation.
- Ninety-seven percent of T-SITE scholars in the first five cohorts have engaged in an internship or research experience.
- T-SITE Scholars have completed internships with employers such as IBM, General Electric, Exelon, NSA, and Northrop Grumman, as well as undergraduate research experiences at the University of Pittsburgh, Worcester Polytechnic Institute, and University of Arizona.

The T-SITE Scholars program is achieving its intended results and having positive impacts on the experiences of transfer students in computing and engineering at UMBC. Outcomes of the T-SITE Scholars program were presented at the 2017 annual conference of the American Society for Engineering Education.

Ireland, D. T., & Rheingans, P., & Blaney, L., & desJardins, M., & LaBerge, E. F. C., & Martin, S., & Seaman, C., & Slaughter, G., & Spence, A. M. (2017, June), Board # 61 : T-SITE: A UMBC Community of Transfer Scholars in Computing, Information Technology, and Engineering Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. <https://peer.asee.org/27891>.

Scholar Awards and Honors – CWIT would like to recognize the following Scholars who have received honors and awards this academic year:

Department of Computer Science & Electrical Engineering:

Outstanding Achievement in Computer Science: Sophia Haire (CWIT Scholar)
 Edward LaFemina (CWIT Scholar)

Outstanding Achievement in Computer Engineering: Anastasia Raffucci (T-SITE Scholar)

Department of Information Systems

Outstanding Seniors: Nicole Dawson (CWIT Scholar)
Haley Sweeton (CWIT Scholar)

Outstanding Senior in Network Administration Certificate Program: Haley Sweeton (CWIT Scholar)

Graduating with an Honors College Certificate: Shannon Donelan (CWIT Scholar)
Katherine Geisler (CWIT Scholar)
Alicia Goldstein (CWIT Scholar)

Scholar Events –A robust calendar of mandatory and suggested events, intended to foster the academic and professional development of Scholars, was created and distributed to CWIT, Cyber and T-SITE Scholars at the start of each semester. In addition, events were posted in CWIT’s myUMBC group, and a Google calendar was created and shared with the Scholars. Email and the Google calendar continued to be the primary means of communication with the Scholar community about events, opportunities to serve, and select Career Center and other campus partner announcements. The calendar included monthly CWIT family meetings, cohort meetings, *Pick Your Classes* events each semester, and tailored events exclusively for Scholars, such as the *New Scholars Reception* and opportunities to volunteer with outreach events. The *CWIT Showcase* also took place, in which 17 students presented sessions ranging from “Using Cognitive Computing to Improve Cybersecurity” to “Going Abroad as a STEM Major” and “‘With a Name Like Smuckers, it Has to Be Good’: A Look Into How Engineering Mixes with Food.” While participation is required for some Scholar events, a norm has been established that all enrichment events are attended by most Scholars. Affiliates are also invited to attend most Scholar events, allowing CWIT’s reach to extend beyond only the Scholar community.

Men in CWIT – Men in CWIT meetings, initiated in 2012, continued throughout the FY17 year. During the summer of 2016, the Scholars who identified as men in CWIT and CWIT Assistant Director reviewed the goals and purpose of the group to extend from monthly meetings to learn about issues into two monthly meetings to learn about gender topics in COEIT and create projects that have a positive impact on the COEIT student environment. Additionally, the group decided to change the name “Men in CWIT” to “Allies in CWIT” to represent the inclusive membership of the group.

Allies in CWIT Mission Statement

Positively influence the gender climate in COEIT at UMBC through educating allies of women in computing and engineering fields. We have identified three goals key to this aspiration:

1. Learning about issues and skills affecting the gender climate in COEIT.
2. Understanding your own privilege and understanding your identity in the group.
3. Taking action and implementing the skills and techniques learned.

Scholar Mentoring

Faculty Mentoring – All first-year CWIT, Cyber, and T-SITE Scholars are matched with a UMBC faculty member in their major during the summer before their first semester. A faculty mentor luncheon was held during the month of September. This initiative is intentionally held later in the semester so that the freshmen students could have conversations that are more meaningful because they had already been in classes for several weeks. First-year CWIT Scholars, Cyber Scholars, and T-SITE Scholars were encouraged to meet with their faculty mentor monthly to discuss broad

academic & career plans, curriculum expectations, setting an academic plan, and more. Faculty mentors were invited to various CWIT events throughout the year.

Faculty Mentors 2016-2017

CWIT - C15

CMSC

Dr. Adam Bargteil

Dr. Marie desJardins

Dr. Tim Finin

Dr. Katherine Gibson

Dr. Cynthia Matuzsek

CMPE

Dr. Tinoosh Mohsenin

CBEE

Dr. Lee Blaney

Dr. Erin Lavik

Dr. Claire Welty

ME

Dr. Maria Sanchez

Dr. Anne Spence

Cyber - Y4

CSEE

Dr. Tim Finin

Dr. Rick Forno

Dr. Katherine Gibson

Dr. Anupam Joshi

Dr. Chris Marron

Dr. Charles Nicholas

Dr. Mohamed Younis

IS

Dr. Vandana Janeja

Dr. George Karabatis

Dr. Sreedevi Sampath

T-SITE - T5

CMSC

Dr. Penny Rheingans

IS

Dr. Carolyn Seaman

Industry Mentoring – In fall 2016, twenty-six industry professionals generously gave of their time to serve as mentors as part of our Industry Mentoring Practicum (IMP). Each fall, CWIT, Cyber and T-SITE scholars enroll in a five to six session practicum that is offered in collaboration with UMBC’s Career Center. Several of this year’s mentors participated in these sessions - in addition to working with their assigned mentee. At the practicum sessions, mentors shared valuable information about their own career paths, lessons learned along the way, and practical tips for professional success in tech industries This year’s mentors were from Asymmetrik, Ltd. (Ryan Blace), GE Aviation (Steve Schrantz and Holly Murry), GE Healthcare (Ed Belsinger, Kina Limbasiya, and Zozscha Bomhardt), Harris Corporation (Frank Morgan), HireVue (Joan Worthington), Leidos (Emily Toy), Loyola University Maryland (Patricia Malek), National Security Agency (Matthew Seligman), Northrop Grumman (Robyn DeWees and Susan Wilson), Patterson High School Academy of Engineering (Sharon Ball), PayPal Credit (Jeff Hoelster), Praxis Engineering Technologies (Tarisa Holbrook), Quotient, Inc. (Rebecca Bartlett), Red Arch Solutions, Inc. (Rithy Chhay), T. Rowe Price (Blake Kizer, Luthe Petry, Pankaj Upadhyay, and Paula Fetterman), Tenable Network Security (Katie Hirsch), The Whiting-Turner Contracting Company (Julia Rigdon), and UPS (Saija Chirayath). Additionally, three Scholars in chemical engineering were matched with online mentors through MentorNet, a national nonprofit dedicated to fostering a pervasive culture of mentoring women and minorities in science, technology, engineering and math (STEM) fields.

Industry mentors attended a training session and met their mentees at the first practicum meeting. The practicum is offered as pass/fail no credit experience through the Career Center. The use of the StrengthsFinder Assessment was continued this year as a way for students to learn how to better understand their talents and utilize that in shaping their career plan. A Blackboard site was used again and focus group data showed that scholars liked having the course materials in one place. They also reported that they liked how the assignments were spaced over the practicum sessions and that they all became part of the career plan. The industry mentors were invited to attend five of the IMP sessions to have more meaningful interactions with the Scholars.

Here’s what some of our Scholars had to say about the 2016 IMP experience:

“I liked having the chance to update my resume and cover letter, as well as look at UMBCworks to see what internship opportunities were available.”

“The Industry mentor meeting paper was useful, as it helped me to organize my thoughts before meeting with my mentor.”

“I liked the Values and Workplace Culture Assignment because it caused me to think about a lot of factors and components of the workplace culture that I would otherwise have not thought about.”

Peer Mentoring – Upper-class CWIT Scholars volunteer to serve as peer mentors (or “BigWITs”) to the incoming freshmen CWIT Scholars (or “LilWITs”). T-SITES will also serve as BigWITs to new T-SITES this fall. Cyber Scholars were matched with Cyber Scholars further along in the program. Based on the success of changes implemented from previous years, the peer mentoring matches for the new CWIT Scholars were made about three weeks after the fall semester began. BigWIT and LilWIT matches were made based on major, gender identity, and specific interests described in the their application. At the beginning of the Fall semester, a BigWIT LilWIT Kick-Off event brought the new matches together in a space to meet, collaborate on a team building challenge and to interview one another. The BigWITs shared ideas for activities to do with their LilWITs, and planned their first meetings. Anecdotal data from the Scholars collected in individual meetings, reveals that they would prefer more structure within these relationships, so there are plans to create more events specifically centered on the BigWIT/LilWIT pairs. Additionally, matches

will be sent to Scholars 2-3 weeks before the semester starts to allow LilWits the opportunity to ask questions before arriving to campus.

Living Learning Community – The CWIT Living-Learning Community (LLC) is located in Chesapeake Hall. The CWIT LLC promotes academic excellence, peer mentoring, career exploration, leadership opportunities and social support for students in computing and engineering, with a special emphasis on the needs of women who may feel isolated due to their low enrollment in such programs nationwide. This past year, the CWIT LLC housed a total of 47 Scholars and Affiliates. All 13 of the freshman CWIT Scholars lived on the floor and continued the noticeable increase in cohesiveness between the Scholars and Affiliates community. The Cyber Scholars and Associates also lived on the floor, which helped to build community across programs. The Resident Assistant, Kwame Robertson, helped arrange successful community building events, including monthly Sunday Night Dinners, movie nights, volleyball games, and weekly engaging emails to keep students updated on all events.

We continue the Engagement Team initiative. These engagement teams consisted of: (1) Academic Team (A-Team): helping feel like they have a place to go if they are having trouble with anything related to academics, (2) Social Team (Fun & Co.): helping everyone feel welcome and connected to one another, and (2) Retriever Connection (R-Connect): helping make sure everyone knows about events or programs taking place on the larger UMBC campus. The CWIT-LLC Resident Assistant worked with each of the engagement teams throughout the year, and each of them hosted three to four programs during the academic year. The programs included everything from study socials to attending UMBC concerts and attending an Orioles game. The returner program will be enhanced for the upcoming academic year into a Peer Assistant role, with three students returning to live in the CWIT-LLC for their sophomore year. The Peer Assistant role has a job description, expectations, Leadership Development Plans for each member, and monthly meetings to collaborate with the RA, Community Director and CWIT Assistant Director.

CWIT First-Year Experience Course – In collaboration with the Office of Undergraduate Education, the FYE 101 course is generally connected to the Scholars' mathematics courses. All freshman CWIT Scholars, freshman Cyber Scholars, transfer Scholars in both Cyber and T-SITE who are new to UMBC, and freshmen on the CWIT LLC are required to enroll in FYE 101. The two sections of this FYE 101 course were taught by CWIT's Assistant Directors and designed based on the curriculum and learning outcomes specified for UMBC Introduction to Honors University (IHU) sections. Additionally, the FYE 101 course focuses specifically on engineering and computing major issues and career goals. Once again, the StrengthsFinder Assessment was used in the curriculum, which was rated highly in the end of semester evaluations. For a third year, two simultaneous sections of FYE 101 were taught in fall 2016– one for the CWIT and Cyber freshmen Scholars, and the other for students living in the CWIT-LLC and other women in COEIT. Based on feedback from students, the sections for Fall 2017 are to be divided by majors rather than by CWIT affiliation to alleviate students perceiving a difference in the way Scholars and Affiliates are valued in our community.

CWIT Leadership Seminar– To help enhance the sophomore experience and help students better understand leadership, this Spring semester, the CWIT sophomore Scholars participated in a Leadership Seminar. The Leadership Seminar took place six times during the semester and utilized the StrengthsFinder Assessment, Imposter Syndrome Exercise, and True Colors Workshop. Topics included understanding self, communication, working in teams, values, and ethics. Anecdotal conversations at the end of the seminar indicated that students felt the experience was valuable and a positive experience in leadership skills building and cohort development. This Seminar will continue next year and will continue to be assessed.

Cyber Practicum – Cyber Scholars and Affiliates participated in the Cyber Practicum for the first time in 2013-2014 with enrollment of 16 students and in 2016-2017, 34 were enrolled in both the fall and spring semesters. The purpose of this course is to give students a broad overview of the cybersecurity field through weekly speakers from various companies, agencies, and organizations. This year's speakers included representatives from Northrop Grumman, Exelon, T. Rowe Price, Splunk, BAE Systems, the Johns Hopkins Applied Physics Lab, and more. Speakers have included senior leaders in the field as well as younger professionals in order to give students a variety of perspectives. The practicum is supported by the Career Center and does not bear academic credit, but shows up as pass/fail on students' transcripts. All Y4 Cyber Scholars and Associates took the class both fall and spring semesters, in addition to Affiliates who opted to enroll in the class for one or both semesters. Feedback about the practicum, collected through individual meetings and reflection papers written by participants, suggests that students benefited from this class, enjoyed the variety of talks and activities, and felt that it helped them to narrow their own areas of interest within the broad field of cybersecurity. Students indicated that they would like more opportunities for interactive sessions such as workshops and demonstrations of specific hands on applications and skills directly related to cybersecurity.

CWIT Student Council – This was the seventh year for the CWIT Student Council, recognized as an official UMBC student organization. The Council serves as the voice for the CWIT Scholar and Affiliates community by planning community-building and social events, and also provides peer leadership within the College of Engineering and Information Technology through mentoring and collaboration. One of the main goals of the Council is to raise awareness for CWIT as a support center for all women in the college. This year the Executive Board raised money via successful bake sales and selling CWIT 2016 t-shirts. The Board utilized those funds to meet their goal of collaborating more with other technical organizations to plan educational and community-building events for all students in the college. They coordinated and co-sponsored with AICHE and TBP a CWIT outing to an Orioles Game in April and ended the year by hosting the sixth-annual CWIT Spring Formal.

Parents for Women in Information Technology (PWIT) – The Parents for Women and Information Technology (PWIT) organization has continued to support CWIT and Cyber Scholars this year and has extended their support to the T-SITE Scholars. Meeting on campus twice a semester, they plan fundraising and ways to support Scholars. They provided end of the semester gift bags in the fall, snacks during Scholar Selection Day in February, and planned the annual end of the year picnic in May. The picnic was attended by over 200 CWIT, Cyber, and T-SITE students (Scholars and Affiliates) and family members. PWIT also presented each of the graduating CWIT, Cyber, and T-SITE Scholars with an Amazon gift certificate and an honor cord to be worn at graduation. After presenting to the incoming Scholar families during the New Scholar Retreat in July, PWIT Committee membership will more than double from six parents to 16 parents.

CWIT Alumni – While we do have a contact list we use to communicate with alumni, it needs to be updated with correct names, position titles, and contact information in order to be more accurate and effective. The primary challenge to updating this list is having staff with time available to dedicate to working on this task. Each year, CWIT staff members communicate with our alumni regarding upcoming CWIT event invitations, mentoring opportunities, soliciting alumni updates for the CWIT newsletter, and distributing the finished newsletter each semester. The most effective form of communication with many of the CWIT, Cyber, T-SITE, and SITE alumni has been through our CWIT @ UMBC Alumni Facebook group. Alumni engagement within the community continued this year, with alumni participating in our Women in Technology events, Scholar Selection Day, and serving as industry mentors. The alumni continue to contact CWIT with their career and life updates for our database and for the "Alumni News" section of the CWIT Newsletter. This year, to celebrate UMBC's 50th anniversary, we hosted our first-ever CWIT

alumni event on September 17, 2016. The alumni event was funded through a grant from the Office of Institutional Advancement to increase the number of alumni-focused events as part of UMBC50. While 35 alumni submitted an RSVP for the event, only about 15 of them and their guests attended the event. We hope to see more alumni engagement in 2018 for CWIT's 20th anniversary.

CWIT Objective 2: Community Building

Foster a supportive community for all women in ITE at UMBC.

CWIT Affiliates Program – Over the past six years, the CWIT Affiliates program has grown from 17 to over 170 participants in the 2016-2017 academic year. With the help of a small amount of grant funding from both the Business Higher Education Forum and the UMBC College of Engineering & Information Technology, we had two student assistants to help with the Affiliates program. We will continue to utilize the help of the student assistants to grow the program in 2017-2018. We also continued our traditional events, such as our Women in Technology (WIT) event series through which we connect students with industry professionals. In the fall, events Affiliates participated in included a Welcome Ice Cream Social, Breakfast with Your Major, a Peer Mentor Matching event, and bi-weekly Affiliates workshops on a variety of topics. The spring included a Welcome Back Pizza & Cupcakes event, additional workshops, and opportunities for mentoring pairs to meet.

While the overall number of CWIT Affiliates continues to increase each year, the level of engagement of these students varies since participation is voluntary. A challenge remains with how to offer a meaningful experience to an ever-growing number of students with a relatively flat level of resources, both in terms of staffing and budgets. A grant through COEIT helped over the past year by providing funding for a one-day Affiliates Retreat in August 2016 and a half-day Affiliates Conference in November 2016.

Cyber Affiliates Program – The purpose of the Cyber Affiliates Program is to connect and support women and other underrepresented students in computing majors who have an interest in cybersecurity. In the four years of its existence, the Cyber Affiliates Program has grown from 38 students to more than 100 students during this past year. These affiliates were invited to participate in most of the CWIT Affiliates activities as well as the Cyber Practicum alongside the Cyber Scholars. In addition, a mini-grant from the Business Higher Education Forum (BHEF) provided funding for a variety of activities in 2016-2017. Through this grant, Cyber Affiliates participated in the National Cyber League, an online series of cyber competitions, in both the fall and spring semesters. We also were able to send students on two bus trips, one to tour the Cybersecurity Operations Center at Northrop Grumman and one to get a behind-the-scenes tour of the Cyber Defense Exercises, a cyber competition among military academies, which is hosted in part by NSA employees. Also through the BHEF grant, we provided funding for 11 students to take certification exams, with three taking the CompTIA A+ exams and eight taking the CompTIA Security+ exam. The grant also covered materials for our Cyber Ambassadors (our group of current Scholars and Affiliates who help plan workshops and events), including polo shirts for the group to wear while staffing events and postcards to promote some of our high school outreach events, among other items.

New Affiliates Initiatives – With the implementation of the Affiliates Committee of the CWIT Advisory Board came new ideas for improving and developing the Affiliates programs within our resource constraints. In past years, we had no processes in place to recognize the contributions of especially active and engaged Affiliates. All students who signed up and/or engaged in our activities are considered Affiliates. Through the work of the Affiliates Committee, a new system of recognition was developed to be launched in Fall 2017. Activities in which Affiliates engage

were assigned to one (or more) of four categories: Community Building, Academic Success, Professional Development, and Outreach, Volunteering, & Planning. To participate in the first three of these categories, students will attend events with these designations. The fourth category requires more of a time commitment, such as participating in our peer mentoring program, serving on an event planning committee, participating in outreach events for K-12 girls, etc. Students may earn recognition through engagement in activities across the categories, receiving items such as a CWIT Affiliates t-shirt for those reaching a base level of involvement up to a certificate of recognition presented at an end-of-year event for those reaching the highest levels of involvement. We hope that, in addition to recognizing those who are already engaged, this new system will encourage students to participate in a variety of our events and activities.

Affiliates Peer Mentoring Program – For the sixth year, the opportunity to be matched with a peer mentor was offered to all new women (and allies) entering the college as freshmen or incoming transfer students. A total of 58 mentoring matches were made. Once matches were made, mentors and mentees met each other face-to-face at a social event that included community building activities and some basic training about how to maximize the mentoring relationship. Participants also received an electronic copy of a training manual, which included information about the program structure and expectations, typical transition issues that new students face, and a list of recommended activities for mentor pairs to engage in during the academic year. While some mentor interactions continue to dissipate as the academic year progresses, several students have shared stories with staff in CWIT about their positive and long-lasting mentoring relationships.

Women in Technology Events (WIT) – This year two WIT events were held for Scholars, Affiliates, and other UMBC students. A total of 90 Scholars and Affiliates attended the *Fall Women in Technology (WIT)* event along with 36 industry representatives from Johns Hopkins Applied Physics Lab, GE Healthcare, NSA, Whiting-Turner, Deloitte Consulting, Exelon, Tenable Network Security, Northrop Grumman, Under Armour, and more. This was the seventh year of this event, which offers time for industry participants to provide concrete feedback to attendees about their networking skills. The 7th Annual Spring into Leadership event had 163 registrants including 101 students (Scholars, Affiliates, and graduate students), 45 industry professionals, and 17 UMBC faculty and staff. This year's *Spring into Leadership* speaker was Dr. Felicia Jones, Director of Engineering, NASA Goddard Space Flight Center.

BRAID Initiative – CWIT continued collaboration with the CSEE and IS Departments on the Building Recruiting and Inclusion for Diversity (BRAID) Initiative. BRAID is a joint initiative led by the Anita Borg Institute (ABI) and Harvey Mudd College (HMC) with funding from Facebook, Google, Intel, and Microsoft, to work with computer science departments to increase the percentage of their undergraduate majors that are female and students of color. The general concept is that each participating department will commit to implementing a number of approaches that have demonstrated success at other institutions (introductory course changes, community building, outreach, and promoting joint majors) and to providing data for a research study documenting the progress made across departments. The set of participating departments is: ASU, Missouri S&T, NJIT, UC-Irvine, UI-Chicago, UMBC, UM College Park, U Nebraska, U North Texas, U South Carolina, UT El Paso, U Vermont, UW-Milwaukee, and Villanova. The project is being lead by Maria Klawe, president of HMC and Telle Whitney, CEO of ABI. The research is being led by Linda Sax, Professor, GEIS, UCLA.

In the first year of the BRAID project, 2014-2015, the majority of the commitments and accomplishments related to the curriculum and outreach initiatives were led by CWIT, with the exception of the NSF-funded CS Matters project, which was led by Dr. Marie desJardins in the CSEE Department. In 2016-2017, the Chairs reconfirmed their commitments that included the same CWIT initiatives. The BRAID project provided a final \$30,000 to send fourteen

undergraduate women (and allies committed to CWIT's mission) to the Grace Hopper Celebration for Women in Computing in 2016. CWIT staff organized the selection process, information sessions with students before and after the conference, prepared travel reimbursements, and managed the booth in the exhibit hall for 2016 GHC sponsors. CSEE and IS split the cost of a Bronze sponsorship for 2016 GHC.

The CWIT Associate Director worked with Dr. Anupam Joshi to prepare the BRAID annual report in June 2016 for the initiative, which was required for continued funding. Data collected from attendees and included in the 2016 annual report document the positive impact of attending GHC. An additional year of BRAID funding was confirmed for 2017-2018 and 36 undergraduate students have been selected to attend the 2017 GHC.

CWIT Objective 3: Gender Climate

Improve the gender climate in COEIT.

Gender Climate Assessment – Since 2009, data collection efforts related to gender climate assessment have been both intentional and opportunistic:

- three administrations (2009, 2012, and 2016) of a locally-developed, online college-wide climate survey,
- collaboration with the National Center for Women and Information Technology (NCWIT) to assess gender climate in computing majors at UMBC, including the administration of a climate survey to students in the CSEE Department (spring 2011) and participation in a two-year NCWIT consultation related to the retention and recruitment of women in the CSEE and ME departments (spring 2013-2015),
- individual interviews with computer science and computer engineering seniors (spring 2012)
- focus groups with computer engineering majors enrolled in the capstone course (spring 2013-2017),
- focus groups with cross sections of students within COEIT to better understand the context and nature of concerns raised on the climate survey (spring 2017).

In May 2017, five focus group discussions were conducted by the CWIT Associate Director with the assistance of Sophia Haire (research assistant and CWIT Scholar spring 2017 graduate in computer science). Sixteen students across all four COEIT departments participated in these discussions, which lasted approximately one hour each. The focus group protocol was successfully piloted in spring 2016 and included a set of common questions about experiences with faculty and students in their major as well as some questions identified during meetings with the chairs of each department. The recordings from these focus groups were transcribed and are available for inclusion in the analysis of the 2016 climate survey data. We plan to continue integrating the survey and departmental focus group processes within the Dean's office for use by the leadership team as a tool to track metrics associated with the new COEIT strategic plan. CWIT will continue to collaborate with the Dean's Office, rather than leading ongoing, climate initiatives.

Focus Group Topics – The following topics were explored in the focus group interview protocol:

- Student background (e.g. path to COEIT major, perceptions of the major)
- Atmosphere (e.g. typical student in the major, fit within major)
- Role Models (e.g. identifying role models within the department)
- Interactional Support (e.g. feeling supported, respected by peers)
- Discrimination (e.g. observation or direct experience with discriminatory language or behavior)

- Long-Term Impacts (e.g. career outlook, perceptions of how gender, race, etc. impact prospects)
- Courses (e.g. perceptions of inclusivity within the classroom, availability of ethics/diversity education)
- Next Steps (e.g. suggestions for how to improve the undergraduate experience within the college, what students like most / wish they could change).

CWIT Objective 4: K-12 Outreach

Broaden the pipeline of talented girls interested in ITE with K-12 outreach programs.

Cyber 101 2016 – The second annual Cyber 101 overnight event for high school girls was held on September 25-26, 2016. Seventeen seniors and seven juniors from ten counties in Maryland as well as Pennsylvania and the District of Columbia attended the event. The program was marketed to girls who are interested in computing and wanted to learn more about cybersecurity. Two of the 24 attendees applied to the CWIT and/or Cyber Scholars Programs and a third applied and was selected as an Affiliate to live on the CWIT living-learning community floor for the 2016-2017 school year. We look forward to continuing this event in 2017, making improvements based on feedback from attendees, and continuing to build a pipeline to our programs of well-prepared girls who are interested in computing. The student planning committee, which has been instrumental in planning and facilitating this event, was made up of students who all (but one) graduated in May 2017. Successors were chosen, but having an all new planning committee will be one challenge in the coming year.

Bits and Bytes 2017 – The purpose of this overnight program is to increase high school junior girls’ knowledge of engineering and computing careers, UMBC, and COEIT majors. Programs like this are also proven to increase girls’ confidence and enthusiasm and as such broaden the STEM pipeline. Participants spent the night in the UMBC residence halls with current CWIT and Cyber Scholars and Affiliates, ate in the dining hall, and learned about how to prepare to be strong applicants for college and STEM programs in particular. The program was mostly student-run by a committee of Scholars with help from other Scholars and Affiliates during the event.

Thirty high school junior girls interested in computing and/or engineering careers attended. The strategy in selecting participants is to take a recruiting/outreach approach. This means that the committee selects participants based on their academic achievement, but also look for high achieving students who do not have access or previous experience with engineering or computing. This year’s participants came from ten counties in Maryland, plus two students from Pennsylvania.

Additional Recruiting Activities – The Assistant Directors actively recruited applicants for the CWIT and Cyber Scholars programs during the fall and spring semesters, and over the summer. They participated in several UMBC Admissions Visit Days and high school visits. In addition, Scholars participated in student panels, staffed information tables, and helped interview prospective Scholars at various information and recruiting events sponsored on campus for prospective students.

As a transition year with new staff, diversity focused recruitment was limited but continued inclusive processes and talent selection during Scholar Selection process was successful with 29% of applicants and 32 % of CWIT offers were students from an underrepresented population. Students from underrepresented groups will comprise 33% of the Fall 2017 incoming class. Erica D’Eramo joined Admissions Counselors on three high school visits. The goal was to increase the diversity of the applicant pool of the CWIT and Cyber Scholars programs and to promote UMBC’s

computing and engineering majors to students outside of the geographic area of the current applicant pool.

This year's Cyber Scholar first-year student applicant pool consisted of 78 total applications, 41% of which were from women and 36% were from underrepresented minority (African American, Hispanic, and Native American) students. While these are significantly better numbers than in the first few years of the program, a goal remains to diversify and strengthen the applicant pool even more. Only two of these incoming freshmen will become Scholars in Fall 2017, both women and one an underrepresented woman. Fifteen incoming freshmen also applied to become Cyber Associates (students who receive the benefits and take on the responsibilities of a Scholar, but do not receive scholarships). Three of the 15 were students who applied to be Cyber Scholars, but were not selected and 12 were new applicants beyond the original Scholar pool of 78 students. Of these 15 applicants, 53% were women and 47% were underrepresented minority students. Of the six of these students who were selected as Associates, five are women and three are underrepresented minority students. Cindy Greenwood completed four high school visits in 2016-2017 with a goal of increasing that number for the 2017-2018 school year.

Additionally, Erica D'Eramo planned and implemented the third annual BEST of CWIT recruiting event in October. BEST of CWIT brought together 50 high school girls from high schools across four states to learn about UMBC and the CWIT program. Sessions were offered by current Scholar and Affiliates. Prospective families had a chance to interact with faculty, staff and current students. We will be hosting our fourth annual BEST of CWIT in October 2017.

Grant Funded Projects

In 2016-2017, CWIT currently had two active NSF S-STEM grants, a continuing Cyber Affiliates Grant, and a new NSF I-USE grant. The CWIT staff collaborate with College faculty and other UMBC partners on the following currently funded grant projects:

New Awards in 2016-2017:

- **I-USE: Developing, Implementing, and Evaluating a Post-Transfer Pathways Program for Computing and Engineering Majors.** \$1,117,095. National Science Foundation Proposal, 9/1/2016-8/31/2020. PI: Penny Rheingans. Co-PIs: Danyelle Ireland, Carolyn Seaman, Lee Blaney, Anne Spence. Sr. Personnel: Laila Shishineh, Catherine Bielawski.

Continuing Awards:

- **A Diverse Community of Transfer Scholars in Computing and Information Technology, \$632,488.** National Science foundation; Award DUE-1458343. 4/15-3/20. PI: Penny Rheingans; CoPIs: Danyelle Ireland, Carolyn Seaman, EF Charles LaBerge. Continues T-SITE Scholars program for computing majors.
- **Transfer Scholarships in IT and Engineering (T-SITE), \$599,977.** National Science Foundation, Award DUE-1154300, 3/12-2/17. PI: Penny Rheingans. CoPIs: Marie desJardins, Anne Spence, Lee Blaney, Carolyn Seaman; Senior Personnel: Gymama Slaughter, Danyelle Ireland. Scholarship Information at: www.cwit.umbc.edu/tsite
- **Expanding Experiential & Applied Learning through UMBC's Cyber Scholars & Affiliates Program Model. \$12,000.** USM Foundation, 2/15-12/16. PI: Anupam Joshi; Co-PI: Cindy Greenwood.

Future Initiatives – We are pursuing grant funding for projects in the following new areas of interest:

- Developing a model for diversity education in computing and engineering curricula
 - Integrating concepts of social equity and self-awareness with technical content
 - Building capacity among students to promote inclusion and positive engagement in their classrooms and peer settings
- Understanding the mechanics of mentoring for undergraduate computing and engineering majors (focus on women and underrepresented minority students)
 - Investigating three dimensions: industry, faculty, and peer mentoring
 - Adapting CWIT mentoring program model to other institutions and testing scalability

Action Plan for 2017-2018

- Continue to implement the CWIT and Cyber Affiliates Program Model and increase student participation through an incentivized tiered engagement program.
- Strategically submit at least one grant proposal in order to grow in the aforementioned new research directions.
- Continue collecting focus group data on the COEIT climate and undergraduate student experience; design student-focused programs that are responsive to identified needs within COEIT.
- Expand the Men in CWIT program to the Allies in CWIT program, promoting actionable steps students can take as Allies of women in computing and engineering in COEIT.
- Increase the number of applications with diverse racial backgrounds, with a focus on recruiting talented and passionate students into CWIT and Cyber Scholar and Affiliate Programs.
- Increase CWIT visibility to external audiences through papers, presentation, and promotion of the CWIT Sponsors program (e.g. paper on the CWIT Scholars model accepted for the 2018 Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium; collaboration with the UMBC Office of Institutional Advancement on strategic corporate sponsorship to sustain new Affiliates initiatives).

Resources

Faculty and Staff

- Penny Rheingans, Director, (30%)
- Danyelle Ireland, Associate Director (started September 2016, full-time, 100% state-funded)
- Erica D’Eramo, Assistant Director-CWIT Scholars (started August 2016, full-time, 100% state-funded)
- Cindy Greenwood, Assistant Director-Cyber Scholars (started January 2013, full-time, Funding from Northrop Grumman Cyber Scholars gift will be completely used by December 2018)
- Erin Poandl, General Administrative Assistant (September 2016 - June 2017, 19 hour contingent position, Foundation funded for three years; Funding from Northrop Grumman Cyber Scholars gift)

Resources and Expenditures

CWIT staffing and programming are supported by a combination of state and foundation funding.

Personnel and Office Operating Costs (Approximately \$198,161 and \$23,890 annually): Three CWIT positions are completely funded by state budgeted funds – the CWIT Director, Associate Director, and Assistant Director for CWIT Scholars. A percentage of the Associate Director’s salary is charged to current grant funded projects in which she had a coPI role during the past year (in this past year it amounted to **\$1,692** in salary and **824** in fringe benefits from the S-STEM and I-USE projects). **\$164,698** has been charged to the CWIT operating account for salaries with an additional **\$912** charged for fringes.

Foundation funding for the CWIT Assistant Director for Cyber Scholars position and our part-time administrative support position are funded by the Northrop Grumman Cyber gift. These funds, which support their salaries, will be depleted by the end in December of 2018 respectively.

Last year **\$20,900** in state funds was allocated to operating costs, with actual spending for operating expenses (office supplies, mail and phone, CWIT Scholars portion of programming) at approximately **\$23,890**. A final reconciliation of the CWIT operating and revolving accounts is underway to ensure that all expenditures that should be re-allocated to grants or reimbursed from either the CWIT or Cyber Foundation accounts have been moved off these accounts.

The base UMBC revenue included **\$165,321** of state funding. As previously explained, support for Cindy Greenwood and our half time administrative assistant are supported from additional funds from the Northrop Grumman Cyber gift and Scholar related expenses are prorated based on the number of Scholars in each program and paid for from corporate gifts and grants. The grant revenue and expenditures reported include T-SITE and Cyber USM Foundation projects (all listed earlier in this report).

CWIT has many opportunities for funding through grant, donations and corporate contributions and would like to thank the highlighted donators for their continued support:

- CWIT worked with corporate relations staff in the Office of Institutional Advancement to develop sponsorship opportunities for companies. In fiscal year 2017, Northrop Grumman renewed their sponsorship of CWIT and Cisco became a new sponsor, both at the \$3,000 level.
- \$30,000 from BRAID initiative (Anita Borg Institute) for student travel to Grace Hopper Conference. Since this funding is only used for student travel reimbursements to GHC, it is not counted as corporate revenue available for general CWIT programming and operating expenses.

CWIT would like to thank UMBC’s Vice President of Institutional Advancement and his staff for their significant contribution of resources in terms of personal time and funding. CWIT staff will continue to work closely with OIA in the coming year to secure new sponsors through the new CWIT Sponsors Program. Sponsorships are \$3,000 with additional opportunities for funding specific events (\$1,000 each).

Space

The CWIT suite, located in ITE 452, includes the offices of the Director, Associate Director, and Assistant Director-CWIT Scholars. The suite also includes a small reception area that was reconfigured into a meeting area for CWIT community members to gather and meet. The space includes a small table, chairs and a computer workstation. The creation of this useful space has resulted in Scholars and Affiliates stopping by between classes, use of the space to do group work and student organization and event planning meeting. The office configuration is conducive to CWIT efforts to build community. Office space for the Assistant Director-Cyber Scholars Program has been provided by the Department of Information Systems (ITE 449).

Opportunities and Challenges

CWIT is poised to ensure the quality of its expanding scholars programs while turning attention to synergistically building both the CWIT and Cyber Affiliates programs. The staff is positioned to serve as a resource to the COEIT Dean, Chairs, and UPDs about specific gender and diversity issues. The staff are prepared to serve as internal consultants who can provide plausible solutions that are grounded in research and best practices for increasing the recruitment and retention of women in computing and engineering. CWIT is prepared to contribute to achieving the goals set forth in the new COEIT strategic plan that are related to increasing graduation rates and fostering diversity and a climate of inclusive excellence. The coming year presents ongoing opportunities and challenges for the CWIT staff that are similar to those reported last year.

Opportunities

The CWIT, Cyber, and T-SITE Scholars present tremendous opportunities for UMBC, CWIT, UMBC students, and regional employers. The need for highly qualified individuals in technical fields far exceeds the actual number of graduates in the state. Furthermore, the diversity of available technology graduates is extremely limited, compromising the effectiveness and robustness of innovation. The Scholars of these programs serve as model students and advocates for attracting not only more, but also more women and underrepresented students, to computing and engineering majors and cyber careers.

The CWIT and Cyber Affiliates Programs present an ongoing opportunity to realize our CWIT vision and mission across the College and beyond our scholars programs. Interest and participation in both of the Affiliates programs continues to increase among COEIT students. The Affiliates Programs are a viable way to offer elements of the CWIT Scholars' programs (community, information, networking events, academic success tools, peer mentoring) to women and underrepresented groups in the college. Continuing to refine (and assess) the Affiliates Model so more women and students from underrepresented groups (and interested allies) are actively engaged and are solidly connected to our community is a high-value, financially-sustainable way to improve the gender climate and retention for women and other underrepresented students in the long-run.

Actively focusing our research and programming efforts on improving the climate for women and other underrepresented groups in COEIT is our third opportunity for the coming year. We will continue to monitor data about participation in each undergraduate major in the college and serve as a resource to the Dean and Chairs for actions that will ultimately improve the climate and retention of women and other underrepresented groups in COEIT. Whatever changes occur as a result of our efforts have the potential to improve the learning climate for all students in the college. The continued support and commitment of the COEIT Dean, Chairs, and UPDs will be needed to maintain momentum for positive climate change.

Challenges

Our biggest challenge for the coming year will be effectively achieving our multiple goals in the face of a very limited staff. In particular, growing and enriching the Affiliates Program really requires the focus of a dedicated staff person. We have outgrown our current model of distributing responsibility for elements of the Affiliates Program among the various CWIT staff members. As we aim to increase the number of programs specifically for the growing number of Affiliates, we need a dedicated staff member to move the Affiliates Program to the next level. Additionally, we have had difficulty retaining employees in our Administrative Assistant position. The set of diverse skills required are especially difficult to find in a candidate willing to accept a part-time contingent position. In the last year, we have lost three occupants of

that position to more attractive positions elsewhere. A full-time position would be more sustainable, providing stability and better support for CWIT initiatives.

Our next biggest challenge continues to be financial resources. We have been fortunate to receive state funds augmented with variable amounts of corporate gifts each year. There is not sufficient predictable dedicated funding for supporting the whole set of core of Scholar and Affiliate activities. There are no dedicated funds for staff professional development, dissemination activities, and computer or equipment replacement. The Northrop Grumman grant that supports the Cyber Scholarships, Cyber Scholar and Affiliate programming, and CWIT staff (Assistant Director and part-time administrative assistant) will be depleted by the end of the 2018. It is important that stable continuing funding for the Cyber Scholars and Affiliates Programs be identified while maintaining support for CWIT Scholar and Affiliates programming.

Our final major challenge is managing our current and future grant portfolio and identifying additional grant writing opportunities that are closely aligned with our mission, priorities, and capacity. One of our major grant-funded projects (T-SITE) will continue to consume considerably more staff time than is being compensated by the grant or was allowable in the grant solicitation. Our new Pathways project has required almost a complete replacement of the leadership team from that of the proposal. For such a complex program with so many moving parts, this has been quite a challenge but has given us the opportunity to build new partnerships across UMBC and beyond. As we move forward, we need to continue spending time carefully researching opportunities and engaged identifying partners and potential projects that are not “add-ons”, but rather that are means to strategically enhance our existing programs or infrastructure, or that contribute to our mission or the College’s and university’s priorities.