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WOMEN

IN TECHNOLOGY

Wendy Chin, MS; Vinitha Nithianandam, MS

OUR VISION

FOR STEM SUCCESS AT CCBC

We, Professors Wendy Chin and Vinitha Nithianandam, both who teach technology courses at the Community College of Baltimore County (CCBC), had a vision. This vision was to attract more women into the technology field and keep them enrolled in technology courses through graduation or transfer. We sought to do this by creating the CCBC Women in Technology Support Group. This group was founded in 2017. Our CCBC Women in Technology program was inspired by Virginia-based Women in Technology, and it brings female students with a shared love for science, technology, engineering, and mathematics (STEM) an opportunity to come together to participate in various events. These include free workshops and lectures, attendance at social events, and the ability to network with successful women in the profession. This grassroots effort is an ongoing process and continues to evolve and bring awareness, retention, advancement, and support to female students in academic pursuits and professional careers in the STEM fields.

WOMEN CONTINUE TO NEED ENCOURAGEMENT TO ENTER STEM FIELDS

Women make up less than 25 percent of the STEM workforce in the United States. Data from the US National Science Foundation shows that between 2006 and 2019, the number of women graduating with a degree in computer science declined. Some of the reasons females participate in STEM fields at lower rates than their male counterparts include lack of encouragement, active discouragement, and lack of female role models. There has been an increase in awareness of this ongoing role model issue. The incredible success of movies like Hidden Figures, which tells the story of several African American women working at NASA in the 1960s whose work in engineering and mathematics helped put the first humans into space, enables females to not only see how women have contributed to STEM, but to see themselves in that role.

Diversity in the workplace improves performance, morale, and the product. Individuals from different genders, races, backgrounds, and experiences bring different perspectives that can lead to innovative solutions. More women in STEM may mean anything from working in the cybersecurity field to mitigate cyberattacks such as ransomware to improving software that can service society and everything in between.

HIGHLIGHTS

OF CCBC'S WOMEN IN TECHNOLOGY GROUP ACTIVITIES

CCBC Women in Technology began in January 2017 with efforts from both Professors Chin and Nithianandam. We organized monthly meetings at both the Essex and Catonsville campuses and invited successful females from industry and government in the engineering/technology fields. Our guests were from high-tech companies, military, and government entities. They were invited to meet with CCBC female students to provide inspiration by sharing their experiences working in a male-dominated field. Listening to the stories of successful females in technology helped to motivate our female students.

The responses to the questions revealed that our attendees wished to meet monthly, host speakers, go on field trips, social events, and have a mentor. We averaged approximately 15–20 attendees when our meetings were held in person. Once we hosted hybrid events, our attendance increased to an average of 20–25 attendees. Our largest attendance was during the fall of 2021 when we hosted a student alumni panel that was held in a hybrid format. We had over 60 attendees, both male and female students, who attended either in person or via TEAMs. We had 4 female alumni and a moderator from our advisory board. This event was a great success.

In the fall of 2017, we invited guest speakers from the Million Women Mentors Programs, systems engineers from both Hewlett Packard and US CYBERCOM. We took a few students to the 4th Annual Women in Cyber Security Reception on October 17, 2017 at Columbus Center in Baltimore, MD. In 2018, we invited speakers from Lockheed Martin, Edwards Performance Solutions, IntelliGenesis, and Under Armour. We held a resume writing workshop, took 5 students to the Women's Leadership Conference in Virginia, and held a year-end celebration to recognize our mentors and celebrate our graduates.

The CCBC Women in Technology Group started a mentorship program is 2018. We had 4 industry mentors and 5 female CCBC faculty mentors. Each mentor met with their mentee monthly and provided guidance and support to the students. We shared our success with the CCBC Women in Technology program at the annual Cisco Regional Conference held at Towson University in October 2018

During the Women in Technology meetings, this questionnaire was distributed to all attendees:

WOMEN IN TECHNOLOGY:
INITIAL QUESTIONNAIRE +++

1. What do you wish to gain from this organization?

2. What mentoring opportunities are you most interested?

3. What activities interest you?
    a. Field trips
    b. Social activities/events
    c. Competitions
    d. Other – share your ideas here

4. Are you interested in training sessions, such as “Navigating in a Man's World" and/or similar topics?

5. Share any topics you would like to see added to our training opportunities.

6. Are Tuesdays at 2 PM a good time to meet for you? If not what is a good day/time to meet?

7. How often would you like to meet?
    a. Monthly
    b. Bimonthly
    c. Other

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HIGHLIGHTS

OF CCBC'S WOMEN IN TECHNOLOGY GROUP ACTIVITIES

We also received a grant from Cisco Corporation to host a weeklong summer camp titled IoT (Internet of Things) Hackathon for female high school students in the Baltimore area. Nine female students from local high schools participated and it was a great success. This 5-day summer camp allowed young women the opportunity to explore various topics within the STEM and cybersecurity fields. They actively engaged in hands-on activities, such as Raspberry-Pi, that linked research in IoT areas to practice. Camp attendees were introduced to all STEM-related programs offered at CCBC and careers in cybersecurity. The camp fostered a positive relationship between attendees and a network of young cybersecurity experts while expanding their knowledge in cybersecurity areas. Students presented their final project on the last day of the summer camp. Parents were invited to hear attendee project presentations and learn about their summer camp experience. Additionally, Kelly Schultz, Maryland Secretary of Labor, visited the summer camp and encouraged the students to study and stay in STEM fields.

In 2019, the Women in Technology Group invited female guest speakers from Rack Top Systems, CCBC's IT Department, Sekuva, and LYRASIS to share their career experiences. Also, 5 female students were selected to participate in CyberRange, a challenge on Cyber Intrusion Simulation, held in Baltimore City. We encouraged our students to participate in social events to broaden their network and to practice interacting with business professionals by taking them to multiple events. Our students attended the Women Center Leadership Conference in Virginia and multiple CAMI social events in Columbia, MD. We also held mock interview training by Silver Tree Consulting and held a year-end celebration for graduates and recognized mentors.

We hosted our second summer camp, IoT Hackathon 2.0 in the summer of 2019. Eight female high school students attended. In addition to the camp curriculum and being visited by CCBC department representatives, Dutch Ruppersberger, Maryland Representative in Congress, visited the IoT summer camp and encouraged students to choose to study in a STEM field. We also had a visit by 2 Under Armour young professionals who shared what it is like to work at Under Armour in the cyber/information technology field. During this summer we also launched the CCBC Women in Technology website and established a scholarship at CCBC. In the fall of 2019, we awarded 4 scholarships of $500 to CCBC students.

In 2020, we arranged a field trip to NASA Goddard Space Flight center with the cooperation of Dr. Nachimuthu Gopalswamy, a civilian astrophysicist. Mr. Damron, Cybersecurity Department Chair, Mr. Roberts, Outreach Coordinator, and 15 female students from CCBC participated in the field trip along with us. We also held a virtual resume writing workshop, focusing on writing a technology resume and also hosted 3 female executives from Penacity who shared their experience working in the technology field.

In 2021, we invited a cybersecurity graduate to speak with our students and share her experience and encourage the current students to stay in STEM. We also held a resume writing workshop and technology alumni panel. One of our alumna, Ms. Camilla Ngala Timfe, CCBC graduate from cybersecurity, was featured on Cisco's website! In November, Women in Technology hosted a student alumni panel held in a hybrid format. The forum topic was "How to Thrive and Succeed as a Woman in Tech." This forum was moderated by Ms. Angela Young, Senior Director of Business Development for Conviso. Over 60 students attended, both male and female. The panel consisted of 4 female cybersecurity alumni who were currently employed in industry. This event was a great success.

CCBC Alumni Panel Presenters:

Ms. Camilla Ngala Timfe, employed by Peraton Ms. Marie Camga, intern at Exelon Ms. Shenan Beaghan, employed by SOCStor Ms. Sara Nuff, employed by CyberCore Technologies

BRINGING MORE WOMEN

INTO STEM AND GROWING WOMEN IN TECHNOLOGY AT CCBC

Parents and teachers are key influencers on girls' major and career choices, and more education and support should be directed to encourage girls to take up careers in STEM. CCBC works with teachers and guidance counselors, and uses venues like the Baltimore County Public Schools Parent Newsletter and social media portals to incorporate messages aimed at attracting more young women into studying, and ultimately pursuing, careers in STEM disciplines.

When CCBC's Women in Technology began in 2017, we had few local or national resources. Today our group has evolved into a valuable and active entity at the college. It is successfully promoting technology education and career opportunities as well as providing role models for female STEM students. We also reach out to high school students in the Baltimore–Washington area. This organization continues to grow and evolve. We are working on a collaborative effort with the local Women in Cybersecurity group to form a partnership that will impact more female technology students. As our group grows, it is the intent to become a national example as to what support can do for underrepresented populations.

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