TOPIC: Maryland Center for Computing Education

COMMITTEE: Education Policy and Student Life

DATE OF COMMITTEE MEETING: Tuesday, January 16, 2018

SUMMARY: With guidance from the USM Office of Academic and Students Affairs, campuses of the USM (especially UMBC and UMCP) have been working with a collaborative group of computer science educators and non-profit organizations to enhance the professional development of teachers in computer science. The group includes the Maryland State Department of Education (MSDE), Code.Org, Code-in-the-Schools, and the Computer Science Teacher Association as well as community colleges and local school districts in Maryland. To ensure Maryland's P-12 students have access to computer science courses in elementary, middle and high schools, and to enhance the preparation of students who may wish to focus on computer science in colleges, the state needs much better prepared elementary and secondary education teachers. Governor Hogan responded to this need by proposing legislation, the Achieving Computer Science Collaborations for Employing Students Statewide (ACCESS) Act of 2018. The proposed legislation (attached) would require MSDE to adopt content standards for computer science education.

In addition, the legislation would formally establish the Maryland Center for Computing Education (MCCE). With coordination through the USM Office of Academic and Student Affairs, leadership and engagement of the campuses, and collaboration with MSDE and other partners, the Center will assist local schools and partner organizations to increase student exposure to computer science and computational thinking by supporting existing teachers and developing education supports and resources. The framework and proposed goals for MCEE are attached.

By Board of Regents Policy IV-1.00 (Policy for the Establishment and Review of Centers and Institutes in the University System of Maryland), any center that is multi-institutional must have chancellor approval, and the establishment of any center that is not based at an institution must have BOR approval. Therefore, in preparation for the final approval steps in the legislative process, we seek endorsement for the naming of the Maryland Center for Computing Education at the USM.

ALTERNATIVE(**S**): This is an information item.

FISCAL IMPACT: This is an information item.

CHANCELLOR'S RECOMMENDATION: This is an information item.

COMMITTEE ACTION: Information Only   DATE: January 16, 2018

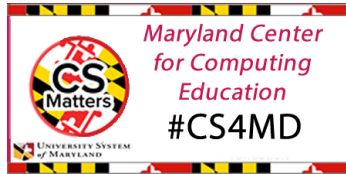BOARD ACTION: DATE:

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Maryland Center for Computing Education (MCCE)

The **MCCE** is designed to expand access to high-quality Pre-Kindergarten-12 (P-12) computing education by strengthening educator skills and increasing the number of computer science teachers in elementary and secondary education. It also serves as a focal point for broader collaborative initiatives to increase the availability and quality of P-12 computing education across the state, including stakeholder meetings and partnerships; teacher certification efforts; standards and curriculum development; innovative pedagogical research and practices; training and awareness for administrators, students, and parents; and coordinating with related national efforts.

The **MCCE** is housed at the University System of Maryland, and was founded in partnership with the University of Maryland, Baltimore County, and the University of Maryland, College Park. The long-term vision is for a collaborative Center that has connections with USM campuses, school systems, nonprofits, industrial partners, and other government agencies for a strong public-private partnership. The MCCE Advisory Board will include representatives of multiple stakeholders and institutions, to foster a strong community-centered vision.

Building on several national-level computing initiatives (including the White House's CS for All initiative, the NSF-funded Expanding Computing Education Pathways Alliance, and the P-12 Computing Education Framework initiative), the **MCCE** leverages the existing partnership between the University of Maryland, Baltimore County (UMBC), the University of Maryland, College Park (UMCP), the University System of Maryland (USM), the Maryland State Department of Education (MSDE), and other stakeholders. The **MCCE** was created at the unanimous recommendation of the Maryland CS Education Steering Committee, which includes P-12 educators and partners, MSDE members, higher education representatives, business partners, and other key stakeholders. At the September 2016 meeting, the steering committee reaffirmed its commitment to its 15-year goals, identified the need for a centralized clearinghouse for continuing efforts, and endorsed the formation of the **MCCE.** Working in collaboration with the progress of national computing education projects and partners, Maryland is well-positioned to establish a comprehensive approach to meeting the needs of educators and expanding options for Maryland's future knowledge economy. The centralized infrastructure provided by **MCCE** will increase access, equity, and efficiency of computing education.

MCCE Activities

To support the Maryland Computing Education 15-Year Goals, the initial primary focus of the **MCCE** is to increase the number of qualified P-12 teachers who teach computational thinking in STEM courses and a full range of computer science courses, leading to multiple postsecondary options in computer science, information technology, and cybersecurity. The **MCCE** assists local school systems and other partner organizations to increase student exposure to computing and computational thinking by supporting existing teachers, creating a pool of new computer science teachers, and developing educator supports and resources.

Other key goals and activities include:

- **Collaborative Advocacy.** Providing a focal point for continuing the Maryland CS Education Steering Committee and state-level collaborations to improve standards, curriculum, course availability, teacher preparation, national visibility, and funding support for CS education.
- **Assessing Progress.** Measuring and tracking progress towards the Steering Committee's 15-year goals, leveraging the Maryland Longitudinal Data Center.
- **Increasing Diversity.** Broadening participation by increasing gender, racial, and socioeconomic diversity in computing, as well as increasing accessibility to students with disabilities by providing quality teacher preparation.
- **Developing Quality Content.** Improving P-12 computing curriculum and providing quality teacher preparation.

Maryland Computing Education 15-Year Goals

	2017-18 1-2 Years	2019-2020 3-4 Years	2021-2026 5-10 Years	2027-2030 11-14 Years	2031 Final 15 Year Goals
Student Access and Participation	CS course listings and annual CS education event in every system. Gender, race, and socioeconomic gaps measured and targeted.	CS course offerings in every high school. AP-level course in 50% of high schools in each system.	CS course offerings, including AP, taught by trained teachers in every high school. Gaps have been reduced by 50% from baseline.	Rigorous computing courses and content offered in every P-12 school.	CS is offered to every student throughout their P-12 education. Gaps have been reduced by 90% from baseline.

Professional Training	Trained teachers and guidance counselors in 50% of high schools.	Trained teachers and guidance counselors in every high school.	At least three undergraduate and three graduate programs offering CS certification.	Training universally available. All P-12 pre-service programs require a CS course.	All secondary CS teachers are certified in CS. Offerings are continually updated.
Curriculum and Standards	P-12 CS framework and standards adopted in Maryland, consistent with national standards.	Curriculum materials identified for every grade level.	P-12 CS curriculum in every school system aligned with state CS standards.	Graduation requirements include CS. All P-12 CS standards implemented in all schools.	Review board established and in effect to continually update P-12 standards.

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