

STEM Education (MA)

This program is offered by the School of Education. It is available online and at the St. Louis home campus.

Program Description

The master of arts (MA) in STEM education provides students with expertise in teaching in the STEM fields of coding and robotics. Candidates learn how to develop learner-centered and content-centered projects and assessments. They also acquire STEM learning skills in coding. The program uses robotics to teach the STEM pedagogy.

Themes of the Master of Arts in STEM Education Degree Program

Candidates who pursue the master of arts in STEM education learn coding and assemble robots for use in teaching STEM concepts. The degree is aligned with the International Society for Technology in Education (ISTE) NETS-T standards for educators, which are:

- "Educators continually improve their practice by learning from and with others and exploring proven and promising practices that leverage technology to improve student learning.
- Educators seek out opportunities for leadership to support student empowerment and success and to improve teaching and learning.
- Educators inspire students to positively contribute to and responsibly participate in the digital world.
- Educators dedicate time to collaborate with both colleagues and students to improve practice, discover and share resources and ideas, and solve problems.
- Educators design authentic, learner-driven activities and environments that recognize and accommodate learner variability.
- Educators facilitate learning with technology to support student achievement of the ISTE Standards for Students.
- Educators understand and use data to drive their instruction and support students in achieving their learning goals."

Learning Outcomes

Those completing the MA in STEM education will:

- Be competent at teaching students how to code.
- Be competent in integrating robots into the curriculum.
- Know how to develop curriculum related to the STEM fields appropriate for the classroom.

Program Curriculum

Students pursuing the master of arts (MA) in STEM education are required to complete 33 credit hours. In particular, they take the following courses:

Design Core Courses (11 hours)

- EDTC 5460 Curriculum Design Technology Apps (3 hours)
- EDTC 5465 Instructional Design (2 hours)
- EDTC 5747 Professional Development in Educational Technologies (3 hours)
- EDTC 5637 Systemic Change Theory and Technology (3 hours)

Technology Core Courses (10 hours)

- EDTC 5250 Coding for Learners (2 hours)
- EDTC 5255 Physical and Virtual World Coding (2 hours)
- EDTC 5334 Constructivism and Technology (3 hours)
- EDTC 5705 STEM Pedagogy and Instruction (3 hours)

Technology Choice Courses (6 hours)

Choose 1 of 3:

- EDTC 5701 Operations and Methods of Teaching Robotics: Sensors (3 hours)
- EDTC 5702 Operations and Methods of Teaching Robotics: Robotic Arms (3 hours)
- EDTC 5703 Operations and Methods of Teaching Robotics: Drones and UAVs (3 hours)

Choose 1 of 2:

- EDTC 5770 Using Mobile Apps for Learning (3 hours)
- EDTC 5775 Developing Mobile Apps for Learning (3 hours)

Electives (6 hours)

At least 6 credit hours must be in courses with the EDTC prefix. While not required, it is recommended that you choose EDTC 5740 Designing Educational Technology Facilities for Educators (3 hours) or from one of the two sets of courses listed above.

Required (0 hours)

- EDTC 5995 Final Program Survey (0 hours)

Sequential Degree in STEM Education

A student who holds an MA, MS or an equivalent graduate degree from Webster University or another regionally accredited college or university (or its international equivalent) may earn a sequential MA in STEM education from Webster University.

Design Core Courses (11 hours)

- EDTC 5460 Curriculum Design Technology Apps (3 hours)
- EDTC 5465 Instructional Design (2 hours)
- EDTC 5747 Professional Development in Educational Technologies (3 hours)
- EDTC 5637 Systemic Change Theory and Technology (3 hours)

Technology Core Courses (10 hours)

- EDTC 5250 Coding for Learners (2 hours)
- EDTC 5255 Physical and Virtual World Coding (2 hours)
- EDTC 5334 Constructivism and Technology (3 hours)
- EDTC 5705 STEM Pedagogy and Instruction (3 hours)

Technology Choice Courses (6 hours)

Choose 1 of 3:

- EDTC 5701 Operations and Methods of Teaching Robotics: Sensors (3 hours)
- EDTC 5702 Operations and Methods of Teaching Robotics: Robotic Arms (3 hours)
- EDTC 5703 Operations and Methods of Teaching Robotics: Drones and UAVs (3 hours)

Choose 1 of 2:

- EDTC 5770 Using Mobile Apps for Learning (3 hours)
- EDTC 5775 Developing Mobile Apps for Learning (3 hours)

Required (0 hours)

- EDTC 5995 Final Program Survey (0 hours)

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Admission

Students who are interested in applying to this program should see the Admission section of this catalog for general requirements.

Admission Requirements

- Receipt of official transcripts from the baccalaureate granting institution.
- Undergraduate cumulative GPA of 2.5 or higher.
- Essay.

Send all admissions materials to:

Office of Admission
Webster University
470 E. Lockwood Ave.
St. Louis, MO 63119

Completed application files are reviewed by the coordinator of Educational Technology.

Advancement to Candidacy

Upon successful completion of 12 credit hours within the MA in STEM education, degree seeking students need to apply for advancement to candidacy. For specific details, please see your advisor.