Integrative Science, Technology, Engineering, and Mathematics (I-STEM) Education is defined as: technological/engineering design based teaching and learning approaches to intentionally integrate content and practices of science and/or mathematics education concurrently with content and practices of technology/engineering education. Integrative STEM education is equally applicable at the natural intersections of learning within the continuum of content areas, educational environments, and academic levels. (Wells & Ernst, 2012).

Doctor of Philosophy (PhD)
Integrative STEM Education

Admission Requirements
Master’s degree (3.3 graduate GPA min.); GRE scores; 2 writing samples; Faculty interview (F2F or Internet audio); 3 letters of recommendation; Resume

Degree Requirements
Approved Plan of Study (POS); 90 semester hours (SH), inclusive of coursework from master’s degree and others as outlined below; Dissertation; Residency (12 SH of coursework taken in each of two consecutive semesters, which could include one full summer); Qualifying and Preliminary Examinations. The Integrative STEM Education coursework for this degree (shown below) is available via synchronous web-based, audio/video delivery. Graduate coursework from other universities may be transferred in or taken online or conventionally from Virginia Tech (subject to approval by the student’s graduate committee).

Integrative STEM Education Core Courses (15+ SH)
EDCI 5804: STEM Education Foundations (3 SH – Fall Semester)
EDCI 5814: STEM Education Pedagogy (3 SH – Fall Semester)
EDCI 5824: STEM Education Trends and Issues (3 SH – Spring Semester)
EDCI 5834: STEM Education Research (3 SH – Alternate Spring Semesters)
EDCI 5844: STEM Education Seminar (3 SH – Fall and Spring Semesters)
EDCI 5854: Biotechnology Literacy by Design (3 SH – Alternate Spring Semesters)
EDCI 5774: Readings in STEM Education (3 SH – Fall and Spring Semesters)
EDCI 5964: Field Studies in [I-STEM] Education (3 SH – Fall and Spring Semesters)

Education Electives
Learning Sciences, Educational Foundations, Educational Administration, etc.

Research & Dissertation Courses
15+ SH of coursework and 30+ SH of EDCI 7994 (dissertation), as approved by the graduate student’s committee

For more information
John G. Wells, Integrative STEM Education (540) 231-8471 <jgwells@vt.edu>

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