# Iowa Department of EducationSTEM Endorsement Worksheet

**Endorsements 975 K-8 STEM, 976 5-8 STEM and 977 K-12 STEM Specialist**

**For 5-8 STEM, be the holder of a 5-12 science, mathematics, or industrial technology endorsement or 5-8 middle school mathematics or science endorsement.**

1. Completion of 12 semester hours of college-level science.

| **Course #** | **Course Title** | **Institution** | **Semester Hours** | **Year Completed** |
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1. Completion of 12 semester hours of college-level math (or the completion of Calculus I) to include coursework in computer programming.

| **Course #** | **Course Title** | **Institution** | **Semester Hours** | **Year Completed** |
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1. Completion of a minimum of three semester hours of coursework in content or pedagogy of engineering and technological design that includes engineering design processes or programming logic and problem-solving models and that may be met through either of the following:
	* Engineering and technological design courses for education majors;
	* Technology or engineering content coursework.

| **Course #** | **Course Title** | **Institution** | **Semester Hours** | **Year Completed** |
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1. Completion of a minimum of six semester hours of required coursework in STEM curriculum and methods to include the following essential concepts and skills:
	* Comparing and contrasting the nature and goals of each of the STEM disciplines;
	* Promoting learning through purposeful, authentic, real-world connections;
	* Integration of content and context of each of the STEM disciplines;
	* Interdisciplinary/transdisciplinary approaches to teaching (including but not limited to problem-based learning and project-based learning);
	* Curriculum and standards mapping;
	* Engaging subject-matter experts (including but not limited to colleagues, parents, higher education faculty/students, business partners, and informal education agencies) in STEM experiences in and out of the classroom;
	* Assessment of integrative learning approaches;
	* Information literacy skills in STEM;
	* Processes of science and scientific inquiry;
	* Mathematical problem-solving models;
	* Communicating to a variety of audiences;
	* Classroom management in project-based classrooms;
	* Instructional strategies for the inclusive classroom;
	* Computational thinking;
	* Mathematical and technological modeling.

| **Course #** | **Course Title** | **Institution** | **Semester Hours** | **Year Completed** |
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1. Completion of a STEM field experience of a minimum of 30 contact hours that may be met through the following:
	* Completing a STEM research experience;
	* Participating in a STEM internship at a STEM business or informal education organization; or
	* Leading a STEM extracurricular activity.

| **Course #** | **Course Title** | **Institution** | **Semester Hours** | **Year Completed** |
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**K-12 STEM Specialist.**

1. The applicant will have met the requirements for a standard Iowa teaching license and a teaching endorsement in mathematics, science, engineering, industrial technology, or agriculture.
2. The applicant will hold a master’s degree in math, science, engineering or technology or another area with at least 12 hours of college-level science and at least 12 hours of college-level math (or completion of Calculus I) to include coursework in computer programming.

(3) Content. Completion of the engineering and STEM coursework required for the K-8 or 5-8 STEM endorsement, three additional semester hours in STEM leadership, and an internship/externship professional experience or prior professional experience in STEM for a minimum of 90 contact hours.

| **Course #** | **Course Title** | **Institution** | **Semester Hours** | **Year Completed** |
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21.3(1) Adding an endorsement. To add an endorsement to an existing license, the applicant will follow one of these options:

a. Option 1. Receive the Iowa education institution’s recommendation that the current approved program requirements or state minimum requirements for the endorsement have been met.

b. Option 2. Apply for a review of transcripts, out-of-state licensure, or approved assessment score reports by the board of educational examiners’ staff to determine whether Iowa requirements have been met. Applicants will have achieved a C- grade or higher in the courses that will be considered for an endorsement. The methods course can be waived if the practitioner holds an endorsement in the same content area at a different level and teaches in the new content area successfully while holding a Class B license.