

STEM Endorsements

A licensure subcommittee of the Governor's STEM Advisory Council, consisting of science, math, and industrial technology practitioners, administrators, and representatives from higher education, the Department of Education, and the Board Of Educational Examiners (BOEE) met to recommend teacher licensure rules to support implementation of Iowa's STEM initiative.

The committee recommends the creation of both a K-8 and a 5-8 STEM teaching endorsement that can be added to a current Iowa teaching license. To obtain either endorsement, applicants would be required to complete coursework in three areas: **content, pedagogy, and practical experience**. In the **content** area, for K-8, the applicant would have completed a total of at least 24 hours of science, technology, engineering, or math content with at least three semester hours of engineering and technological design coursework. For 5-8 the applicant would have completed at least twelve hours of college level science AND at least twelve hours of college level math AND have completed at least six semester hours of coursework in engineering and technological design. In the area of **pedagogy**, applicants for both K-8 and 5-8 would complete coursework in STEM Curriculum and Methods. The content of these methods courses is clearly defined and is aligned with current best practice in STEM education. All K-8 and 5-8 applicants would complete a STEM **practical experience** of at least 30 hours that could be met by (a) completing a STEM research experience (b) participating in a STEM internship at a STEM business or informal education organization or (c) leading a STEM extracurricular activity.

The committee recommends the creation of a K-12 STEM Specialist/Coach. To obtain this endorsement, the applicant must have a teaching license with an endorsement in math, science, or engineering **AND** must hold or be eligible to obtain a master's degree in a STEM content area. The applicant would be required to take a minimum of nine semester hours of coursework in STEM Curriculum and Methods. The content will be similar to the methods content in the K-8 and 5-8 endorsements but would add a stronger emphasis on assessment of STEM curriculum, engaging subject matter experts from the community, and the design and implementation of STEM experiential learning. The applicant must also complete an internship/externship professional experience for a minimum of 90 contact hours or have prior professional experience in STEM.

Currently, the BOEE has a number of Career and Technical (CT) licenses available; however, there is not a CT in the area of engineering. Therefore, the committee recommends the creation of a Career and Technical License in the area of Engineering. To be eligible to receive this career and technical license, the applicant must have completed a baccalaureate degree in engineering AND demonstrated career and technical competence in engineering by completion of a minimum of 4,000 hours of practical, hands-on experience in engineering AND completed coursework in foundations of career and technical education, methods and strategies of STEM instruction, and assessment of STEM programs and students.

For a person who already holds a teaching license and has engineering experience, the committee recommends the creation of a 5-12 engineering endorsement could be added to their current teaching license. To be eligible to add the endorsement, the applicant must have completed a baccalaureate degree in engineering AND demonstrated career and technical competence in engineering by completion of a minimum of 4,000 hours of practical, hands-on experience in engineering AND completed coursework in foundations of career and technical education, methods and strategies of STEM instruction, and assessment of STEM programs and students.

Actions and Next Steps:

The recommendations described above went to the Board of Educational Examineers for an initial reading on May 3, 2013. The board response was favorable and they asked the committee to send the proposed endorsements to all of the colleges of teacher preparation for review and comment. The proposed endorsements were sent to the point of contact at each college of teacher preparation on May 10. On May 13, a survey was also sent to each college asking them to indicate if they plan to offer one or more of the endorsements. For the colleges who plan to offer one or more of the endorsements, the BOEE asked the college to indicate how soon the first graduates with STEM endorsements could be expected. The committee looks forward to bringing the results of that survey to the executive council in the fall of 2013.