

## Additional License Requirements: 9-12 Chemistry Endorsement

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### Licensure Requirements (Additional License)

- 1 MTLE: Chemistry Content Knowledge
- 2 MTLE: Pedagogy, Secondary 5-12
- 3 MTLE: Basic Skills Test

*If you are already licensed in Minnesota only the content knowledge test in the new licensure field is required.*

### Education Courses

GED 7825	Educational Psychology, 4cr
GED 7815	Schools and Society, 4cr
GED 7862	Education and Cultural Diversity, 4cr
GED 7872	Exceptionality, 2cr
GED 7867	Theory to Practice, 4cr

TYPICALLY SATISFIED  
BY INITIAL  
LICENSE

GED 7871	Teaching Literacy in the Middle and Secondary School/5-12, 4cr
GED 7875	Teaching in the Secondary School, 4cr
GED 7874	Teaching Science in the Middle and Secondary School/5-12, 4cr
GED 7790	Advanced Practicum, 1-3cr

### Chemistry 9-12 Courses

CHEM 1130	General Chemistry I, 4cr
CHEM 1140	General Chemistry II, 4cr
CHEM 3240	Analytical Chemistry, 4cr
CHEM 3450	Organic Chemistry I, 4cr
CHEM 3550	Physical Chemistry, 4cr
CHEM 3820	Biochemistry, 4cr
CHEM 5840	Advanced Inorganic Chemistry, 4cr

#### ***Choose one of the following courses:***

CHEM 3460	Organic Chemistry II, 4cr
CHEM 3560	Physical Chemistry II, 4cr
CHEM 3300	Instrumental Methods, 4cr
CHEM 3560	Biochemistry II, 4cr

***Also required: a course with a research component. A Hamline course that fulfills the research requirement is CHEM 5960, though there may be other chemistry courses that also fulfill the requirement.***

### Physics Courses

PHYS 1150 or 1230	General Physics I, 4cr
PHYS 1160 or 1240	General Physics II, 4cr

### Math Courses

MATH 1170	Calculus I, 4cr
MATH 1180	Calculus II, 4cr

**Recommend:** MATH 3200 Applied Modeling and Statistics