

Advanced Chemistry Lab Electives

10-19-2017

FALL	SPRING
	<p>CHEM 4111W Instrumental Methods of Chemical Analysis Lab (2 cr.)</p> <p>One lecture and one 4-hour lab per week</p> <p>Prerequisite: Chem 4101 (Modern Instrumental Methods of Chemical Analysis, with prereqs 2101 and 2111)</p>
	<p>CHEM 4223W Polymer Lab (2 cr.)</p> <p>One lecture and one 4-hour lab per week</p> <p>Prereq: Chem 4221, Intro Polymer Chem (Fall, with prereqs Chem 2302 and 4501) OR</p> <p>Chem 4214, Polymers (Spring, with prereqs MatS 3011 and ChEn 3101 or 4101 or MatS 4001)</p>
<p>CHEM 4311W Advanced Organic Chem Lab (4 cr.)</p> <p>One lecture and two 5-hour labs per week</p> <p>Prereq: Chem 2311 (Organic Lab)</p> <p>-----</p> <p>CHEM 2312H Honors Organic Lab (5 cr.) counts in place of both 2311 and 4311W</p> <p>Prereq or coreq: 2301, Chem or ChemE or BioC major, instructor's consent</p> <p>2 lectures a week plus lab (open about 33 hrs/week)</p>	<p>CHEM 4311W Advanced Organic Chem Lab (4 cr.)</p> <p>One lecture and two 5-hour labs per week</p> <p>Prereq: Chem 2311 (Organic Lab)</p>
<p>CHEM 4423W Foundations of Chemical Biology Lab (2 cr.)</p> <p>One lecture and one 4-hour lab per week</p> <p>Prereqs: [Chem 2302 or 2304], 2311 (Organic Lab), and 2111 (Intro Analytical Lab)</p>	<p>CHEM 4423W Foundations of Chemical Biology Lab (2 cr.)</p> <p>One lecture and one 4-hour lab per week</p> <p>Prereqs: [Chem 2302 or 2304], 2311 (Organic Lab), and 2111 (Intro Analytical Lab)</p>
<p>CHEM 4511W Advanced Physical Chem Lab (3 cr.)</p> <p>One lecture and one 4-hour lab per week</p> <p>Prereqs: Chem 4501 (Thermo, Stat Mech, Kinetics) and 4502 (Quantum Mechanics, Spectroscopy), Chemistry major</p>	
	<p>*CHEM 4711W Advanced Inorganic Chem Lab (3 cr.)</p> <p>Two lectures and two 4-hour labs per week</p> <p>Prereq: Chem 4701 (Inorganic Chemistry, with prereqs or coreqs 2311 & either 4501 or 4502), Chemistry major</p>

* **Summer schedules:** Chem 4711W (Advanced Inorganic Chemistry Lab) was offered during the summers of 2013-2017 (two 1 hour 40 min. lectures and two 6-hr labs for each of 8 weeks). Check class schedules for future summers.

Advanced Chemistry Lab Electives (continued)

For CLA chemistry majors (B.A.), 2 advanced chemistry lab courses are required. CLA students can substitute for one advanced chemistry lab either Chem 2094 or 4094W (Directed Research).

For CSE chemistry majors (B.S.), 3 advanced chemistry lab courses are required. CSE students can substitute for *one* advanced chemistry lab *either* Chem 4094W (Directed Research) *or* one of the upper level labs in other Departments listed below.

BIOC 4025W Laboratory in Biochemistry, 2 cr.; Fall, Spring, Summer; Prereq BIOC 3021 or 4331 or equivalent; one lecture and one 4-hour lab per week

CHEN 4401W Senior Chemical Engineering Lab, 3 cr.; Fall; Prereq (see course description for required courses), upper div ChEn major or Dept consent; 3 lectures, one 4-hour lab, plus one 3.5 hour period per week

MATS 3801 Characterization Lab, 4 cr.; Fall; Prereq MATS 3011 and MatS upper div or Dept. consent; 2 lectures and one 3-hour lab per week

PHYS 3605W Modern Physics Lab, 3 cr.; Fall, Spring; Prereq or concurrent PHYS 2503 (Physics III) or 2503H; one lecture and one 3-hour lab per week

Recent syllabi are posted here (click "Syllabi"):

<http://advise.chem.umn.edu/>

Quick class schedules and course descriptions are posted here:

<http://z.umn.edu/twostop>