

## BS Chemistry (Fall 2023)

### REQUIRED CHEM COURSES

Course #	Name of the course	Cr.	Pre-Requisites***	Pre/Co-Requisites
<b>CHEM 113.4</b>	Gen Chem 1	4	Math 115 or equiv.	Chem 113.1
<b>CHEM 113.1</b>	Intro to Chemical Techniques (Lab)	1		Chem 113.4
<b>CHEM 114.4</b>	Gen Chem 2	4	Math 122 or equiv. Chem 113.4 & .1	Chem 114.1
<b>CHEM 114.1</b>	Quant and Qual. Analysis (Lab)	1		Chem 114.4
<b>CHEM 211</b>	Thermodynamics & Kinetics	4	Chem 114.4 & .1 Math 152 or 143	Phys 145.4 <sup>a</sup> & .1 <sup>a</sup>
<b>CHEM 212</b>	Quantum Chemistry and Spectroscopy	4	Chem 114.4 & .1 Math 152 or 143	Phys 146.4 <sup>b</sup> & .1 <sup>b</sup>
<b>CHEM 251.4</b>	Organic Chem 1	4	Chem 114.4 & .1	Chem 251.1
<b>CHEM 251.1</b>	Organic Chem Lab 1	1		Chem 251.4
<b>CHEM 252.4</b>	Organic Chem 2	4	Chem 251.4 & .1	Chem 252.1
<b>CHEM 252.1</b>	Organic Chem Lab 2	1		Chem 252.4
<b>CHEM 331.3</b>	Adv. Inorg. Chem	3	Chem 252.4 & .1 Math 151 or 142	Chem 331.1W
<b>CHEM 331.1W</b>	Physical Inorg. Lab	1		Chem 331.3
<b>CHEM 341.3</b>	Instrumental Methods	3	Chem 211, 252.4, 252.1 Phys 145.4 <sup>a</sup> & .1 <sup>a</sup>	Chem 341.1 Phys 146.4 <sup>b</sup> & .1 <sup>b</sup>
<b>CHEM 341.1</b>	Instr. Methods Lab	1		Chem 341.3
<b>CHEM 371</b>	Biochemistry	4	Chem 252.4 & .1 Biol 105 or Permission	
<b>CHEM 395W</b>	Senior thesis	3	Chem 211, 212, 251.4 & .1, 252.4 & .1	

<b>ELECTIVE 1</b>	One course from Chem 351, 352, 372, 378, 385	4	See below	See below
<b>ELECTIVE 2</b>	One lab course from Chem 376, 387, 388W	2	See below	See below
<b>ELECTIVE 3</b>	Two additional credits from Chem 291, 376, 387, 388W, 391.1 to .3, HMNS 291.1 to .3, 391.1 to 3	2	See below	See below
	<b>TOTAL</b>	<b>51</b>		

\*\*\* A grade of 'C' or better is required in all pre-requisite 100 and 200 level courses & 'C-' or better in all higher level pre-requisite courses.

<sup>a</sup>: Phys 121.4 & 121.1 can be accepted for Phys 145.4 & 145.1 on student's request.

<sup>b</sup>: Phys 122.4 & 122.1 can be accepted for Phys 146.4 & 146.1 on student's request.

331.1W and 395W are writing intensive courses. 395W is mandatory for BS degree

#### Elective Courses Information

Course #	Name of the course	Cr.	Pre-Requisites***	Pre/Co-Requisites
<b>Chem 291</b>	Intro to Chem Research	1	Chem 113.4 & .1 Permission	Chem 114.4 & .1
<b>Chem 351</b>	Advanced Organic Chem	4	Chem 252.4 & .1	Chem 211, 212
<b>Chem 352</b>	Phys. Methods of Structure Determination	4	Chem 252.4 & .1	
<b>Chem 372</b>	Biochemistry II	4	Chem 371	
<b>Chem 376</b>	Biochemistry Lab	2	Chem 371	
<b>Chem 378</b>	Physical Biochemistry	4	Chem 211 Phys 145.4 <sup>a</sup> & .1 <sup>a</sup>	Chem 371 Phys 146.4 <sup>b</sup> & .1 <sup>b</sup>
<b>Chem 385</b>	Directed study in Adv. Chem	4	Chem 211, 212 or 251.4, & permission	
<b>Chem 387</b>	Adv. Inorg. & Org. Lab	2	Chem 252.4 & .1, 331.3 & .1	Chem 351, 352 or 385

<b>Chem 388W</b>	Phys. & Biphys. Lab	2	Chem 211 & permission	Chem 212 or 378
<b>Chem 391.1-3</b>	Research	1-3	Chem 252.4 & .1 OR chem 211 & 212. Permission	
<b>HMNS 291.1-3</b>	Intermediate Science Honors Research	1-3	HMNS 102 & Permission of Dir.	
<b>HMNS 391.1-3</b>	Advanced Science Honors Research	1-3	3 credits of HMNS 291 & permission of Dir.	

### Required Cognate Courses

*Note that the Chem major has pre-requisites from Math, Bio, and Phys courses as shown in the table.*

**BIOL 105** (4 Cr) – General Biology: Physiology and Cell Biology

**Phys 121.4 & .1** OR **Phys 145.4 & .1** (5 Cr) - Principles of Physics I

**Phys 122.4 & .1** OR **Phys 146.4 & .1** (5 Cr) - Principles of Physics II

**Math 122** (4 Cr) – Pre-Calculus (possible to be waived by Math Dept through placement exam)

**Math 151 & Math 152** – 4 Credits each OR **Math 141, 142, & 143** – 3 credits each – Calculus

**Total Cognate Course credits: 22 to 27**