

## Examples of Four-Year Plans for Chemistry Majors at Lewis & Clark

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### 1. Standard plans:

#### (a) Early start in Science

Year	Fall Semester	Spring Semester
1	General Chemistry I (CHEM 110) <sup>1</sup> Calculus I (MATH 131) Words or Numbers (CORE 120 or 121) Elective	General Chemistry II (CHEM 120) <sup>1</sup> Calculus II (MATH 132) Words or Numbers (CORE 120 or 121) Elective
2	Organic Chemistry I (CHEM 210) <sup>1</sup> General Physics I (PHYS 141 or 151) <sup>1,2</sup> Elective Elective	Organic Chemistry II (CHEM 220) <sup>1</sup> General Physics II (PHYS 142) <sup>1,2</sup> Elective Elective
3	Physical Chemistry (CHEM 320) Inorganic Chemistry Lab (CHEM 366) Elective Elective	Physical Chemistry (CHEM 310) Physical & Analytical Chemistry Lab (CHEM 365) Elective Elective
4	Chemistry Seminar (CHEM 405) Research (CHEM 480 or 499; optional) Chemistry Elective <sup>3</sup> Elective	Advanced Inorganic Chemistry (CHEM 420) Chemistry Elective <sup>3</sup> Research (CHEM 480 or 499; optional) Elective

#### (b) Later start in Science

Year	Fall Semester	Spring Semester
1	Foundations in Quantitative Reasoning (QR 101) <sup>4</sup> Words or Numbers (CORE 120 or 121) Elective Elective	Elementary Functions (MATH 115) <sup>4</sup> Words or Numbers (CORE 120 or 121) Elective Elective
2	General Chemistry I (CHEM 110) <sup>1</sup> Calculus I (MATH 131) Elective Elective	General Chemistry II (CHEM 120) <sup>1</sup> Calculus II (MATH 132) Elective Elective
3	Organic Chemistry I (CHEM 210) <sup>1</sup> General Physics I (PHYS 141 or 151) <sup>1,2</sup> Elective Elective	Organic Chemistry II (CHEM 220) <sup>1</sup> General Physics II (PHYS 142) <sup>1,2</sup> Elective Elective
4	Inorganic Chemistry Lab (CHEM 366) Physical Chemistry (CHEM 320) Chemistry Seminar (CHEM 405) Chemistry Elective <sup>3</sup>	Physical Chemistry (CHEM 310) Physical & Analytical Chemistry Lab (CHEM 365) Advanced Inorganic Chemistry (CHEM 420) Chemistry Elective <sup>3</sup>

<sup>1</sup> This course includes a laboratory that meets once a week.

<sup>2</sup> If taking the alternative PHYS 151/152 sequence, then PHYS 251, a Fall course, is also required.

<sup>3</sup> Chemistry electives may be taken in the third or fourth years, either as a single four-credit course or as two two-credit courses. Please see the College Catalog for a list of eligible courses.

<sup>4</sup> The sequence QR 101/MATH 115 is needed if ALEKS scores are not sufficiently high for placement in CHEM 110, PHYS 141 (or 151), and MATH 131.

## 2. Plans for pre-health students:

### (a) Early start in Science

Year	Fall Semester	Spring Semester
1	General Chemistry I (CHEM 110) <sup>1</sup> Calculus I (MATH 131) Words or Numbers (CORE 120 or 121) Elective	General Chemistry II (CHEM 120) <sup>1</sup> Calculus II (MATH 132) Biological Investigations (BIO 110) <sup>5</sup> Words or Numbers (CORE 120 or 121)
2	Organic Chemistry I (CHEM 210) <sup>1</sup> General Physics I (PHYS 141 or 151) <sup>1,2</sup> Biological Core Concepts: Mechanism (BIO 202) <sup>6</sup> Elective	Organic Chemistry II (CHEM 220) <sup>1</sup> General Physics II (PHYS 142) <sup>1,2</sup> Biology Elective <sup>7</sup> Elective
3	Physical Chemistry (CHEM 320) Inorganic Chemistry Lab (CHEM 366) Structural Biochemistry (CHEM 330) <sup>8</sup> Elective	Physical Chemistry (CHEM 310) Physical & Analytical Chemistry Lab (CHEM 365) Elective Elective
4	Chemistry Seminar (CHEM 405) Research (CHEM 480 or 499; optional) Chemistry Elective <sup>3,9</sup> Elective	Advanced Inorganic Chemistry (CHEM 420) Chemistry Elective <sup>3</sup> Research (CHEM 480 or 499; optional) Chemistry Elective <sup>3,9</sup>

### (b) Later start in Science

Year	Fall Semester	Spring Semester
1	Foundations in Quantitative Reasoning (QR 101) <sup>4</sup> Words or Numbers (CORE 120 or 121) Elective Elective	Biological Investigations (BIO 110) Elementary Functions (MATH 115) <sup>4</sup> Words or Numbers (CORE 120 or 121) Elective
2	General Chemistry (Chem 110) <sup>1</sup> Calculus I (Math 131) Biological Core Concepts: Mechanism (BIO 202) <sup>6</sup> Elective	General Chemistry (Chem 120) <sup>1</sup> Calculus II (Math 132) Biology Elective <sup>7</sup> Elective
3	Organic Chemistry I (CHEM 210) <sup>1</sup> General Physics I (PHYS 141 or 151) <sup>1,2</sup> Elective Elective	Organic Chemistry II (CHEM 220) <sup>1</sup> General Physics II (PHYS 142) <sup>1,2</sup> Elective Elective
4	Inorganic Chemistry Lab (CHEM 366) Physical Chemistry (CHEM 320) Chemistry Seminar (CHEM 405) Structural Biochemistry (CHEM 330) <sup>8</sup>	Advanced Inorganic Chemistry (CHEM 420) Chemistry Elective <sup>3</sup> Research (CHEM 480 or 499; optional) Chemistry Elective <sup>3,9</sup>

<sup>5</sup> Can also be taken in the Fall semester

<sup>6</sup> Can also be taken in the Spring semester

<sup>7</sup> A second 200 level or higher biology elective is required by some medical programs; contact the pre-health advisor for more details

<sup>8</sup> A Biochemistry course provides a good foundation for the MCAT. Metabolic Biochemistry (CHEM 335), a Spring course, is also an option.

<sup>9</sup> If Structural or Metabolic Biochemistry is taken, this counts as the chemistry elective

### 3. Plans with overseas programs:

#### (a) Spring overseas program

Year	Fall Semester	Spring Semester
1	General Chemistry I (CHEM 110) <sup>1</sup> Calculus I (MATH 131) Words or Numbers (CORE 120 or 121) Elective	General Chemistry II (CHEM 120) <sup>1</sup> Calculus II (MATH 132) Words or Numbers (CORE 120 or 121) Elective
2	Organic Chemistry I (CHEM 210) <sup>1</sup> General Physics I (PHYS 141 or 151) <sup>1,2</sup> Elective Elective	Organic Chemistry II (CHEM 220) <sup>1</sup> General Physics II (PHYS 142) <sup>1,2</sup> Elective Elective
3	Physical Chemistry (CHEM 320) Inorganic Chemistry Lab (CHEM 366) Chemistry Elective <sup>3</sup> Elective	<b>Overseas Program</b>
4	Chemistry Seminar (CHEM 405) Research (CHEM 480 or 499; optional) Chemistry Elective <sup>3</sup> Elective	Physical Chemistry (CHEM 310) Physical & Analytical Chemistry Lab (CHEM 365) Advanced Inorganic Chemistry (CHEM 420) Research (CHEM 480 or 499; optional)

#### (b) Fall overseas program

Year	Fall Semester	Spring Semester
1	General Chemistry I (CHEM 110) <sup>1</sup> Calculus I (MATH 131) Words or Numbers (CORE 120 or 121) Elective	General Chemistry II (CHEM 120) <sup>1</sup> Calculus II (MATH 132) Words or Numbers (CORE 120 or 121) Elective
2	Organic Chemistry I (CHEM 210) <sup>1</sup> General Physics I (PHYS 141 or 151) <sup>1,2</sup> Elective Elective	Organic Chemistry II (CHEM 220) <sup>1</sup> General Physics II (PHYS 142) <sup>1,2</sup> Elective Elective
3	<b>Overseas Program</b>	Physical Chemistry (CHEM 310) Chemistry Elective <sup>3</sup> Elective Elective
4	Inorganic Chemistry Lab (CHEM 366) Physical Chemistry (CHEM 320) Chemistry Seminar (CHEM 405) Chemistry Elective <sup>3</sup>	Physical & Analytical Chemistry Lab (CHEM 365) Advanced Inorganic Chemistry (CHEM 420) Research (CHEM 480 or 499; optional) Elective

#### 4. Plan for an American Chemical Society certified major

Year	Fall Semester	Spring Semester
1	General Chemistry (Chem 110) <sup>1</sup> Calculus I (Math 131) Words or Numbers (CORE 120 or 121) Elective	General Chemistry (Chem 120) <sup>1</sup> Calculus II (Math 132) Words or Numbers (CORE 120 or 121) Elective
2	Organic Chemistry I (CHEM 210) <sup>1</sup> General Physics I (PHYS 141 or 151) <sup>1,2</sup> Elective Elective	Organic Chemistry II (CHEM 220) <sup>1</sup> General Physics II (PHYS 142) <sup>1,2</sup> Elective Elective
3	Physical Chemistry (CHEM 320) Inorganic Chemistry Lab (CHEM 366) Chemistry Elective <sup>3</sup> Elective	Physical Chemistry (CHEM 310) Physical & Analytical Chemistry Lab (CHEM 365) Experimental Methods (PHYS 201) Elective
4	Chemistry Seminar (CHEM 405) Structural Biochemistry (CHEM 330) <sup>10</sup> Research (CHEM 480 or 499) <sup>11</sup> Elective	Advanced Inorganic Chemistry (CHEM 420) Research (CHEM 480 or 499) <sup>11</sup> Chemistry elective <sup>3</sup> Elective

<sup>10</sup> Metabolic Biochemistry (CHEM 335), a Spring course, is also an option

<sup>11</sup> Students must complete at least 4 credits of research; this can be completed in the Fall and/or Spring semester or through a summer internship