I. ASCRC Symbolic Systems Request (3/5/14)
Use to request or renew the general Group III Exception: Symbolic Systems for degree programs or options. Please complete a separate form for each degree requesting the exception.

Degree or Degree Option*  | Bachelor of Science in Biochemistry, Health Professions option  
*For options include all degree requirements followed by the option requirements.

Dept/Program  | Biochemistry Program
Approved Symbolic System(s)  | M162 (M171 may be substituted)

II. Endorsement/Approvals
Complete the form and obtain signatures before submitting to Faculty Senate Office

Please type / print name  | Signature  | Date
Requestor  | Bruce E. Bowler  | [Signature]  | 9/10/14
Phone / Email  | x6114/bruce.bowler@umontana.edu  | [Signature]  | 9/10/14
Program Chair  | Bruce E. Bowler  | [Signature]  | 9/10/14
Dean  | [Signature]  | 9/10/14

III: Justification Please explain why the program of study requires over 48 credits for a first baccalaureate degree:
Biochemistry is an interdisciplinary science that requires foundational courses in biochemistry, biology, chemistry, physics and mathematics as well as upper division courses in biochemistry, biology and chemistry for a student to become proficient in the field. Students take 86 credits. This load meets the 48 credit threshold for a Symbolic Systems exception.

IV. Degree Requirements: (1) List all courses required for the major and the credits earned. Courses that apply toward the 48-credit threshold include all requirements for the primary major and designated pre-requisite courses  (2) Subtract general education credits fulfilled by these requirements. Example: If a major requires PHSX 205N-208N (totaling 10 credits), only 4 credits apply towards the 48 credit threshold since 6 credits are needed to fulfill general education group XI (Natural Sciences).

Lower Division Core
Biochemistry
BCH 110 - Intro Biology for Biochemists  | 3 Credits
BCH 111 - Intro Biol for Biochemists Lab  | 1 Credit
BCH 294 - Seminar/Workshop  | 1 Credit

Biology
BIOB 260 - Cellular and Molecular Biology  | 4 Credits
BIOB 272 - Genetics and Evolution  | 4 Credits

General and Organic Chemistry
CHMY 141N - College Chemistry I  | 5 Credits
CHMY 143N - College Chemistry II  | 5 Credits
CHMY 221 - Organic Chem I  | 3 Credits
CHMY 222 - Org Chem I Lab  | 2 Credits
CHMY 223 - Organic Chem II  | 3 Credits
CHMY 224 - Org Chem II Lab  | 2 Credits

Physics
PHSX 205N - College Physics I  | 4 Credits
PHSX 206N - College Physics I Laboratory  | 1 Credits
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>PHSX 207N</td>
<td>College Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PHSX 208N</td>
<td>College Physics II Laboratory</td>
<td>1</td>
</tr>
</tbody>
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**Upper Division Core**

- **Biochemistry**
  - BCH 480 - Advanced Biochemistry I: 3 Credits
  - BCH 482 - Advanced Biochemistry II: 3 Credits

- **Microbiology**
  - BIOM 360 - Gen Microbiology (equiv to 260): 3 Credits
  - BIOM 361 - Gen Microbiology Lab (equiv 261): 2 Credits

- **Analytical Chemistry**
  - CHMY 311 - Analytical Chem-Quant Analysis: 4 Credits
  - CHMY 421 - Advanced Instrument Analysis: 4 Credits

- **Inorganic Chemistry**
  - CHMY 401 - Advanced Inorganic Chemistry: 3 Credits

- **Physical Chemistry**
  - CHMY 360 - Applied Physical Chemistry: 3 Credits

- **Mathematics**
  - M 162 - Applied Calculus: 4 Credits
  - M 274 - Intro to Differential Equation: 3 Credits

**Ethics**

- CHMY 302E - Chem Lit and Science Writing: 3 Credits

**Advanced Electives**

- BCH 486 - Biochemistry Research Lab: 3 Credits
- BCH 490 - Undergraduate Research: 1 To 10 Credits
- BLOB 301 - Developmental Biology: 3 Credits
- BIOM 375 - General Genetics: 3 Credits
- BIOM 410 - Immunology: 3 Credits
- BIOM 411 - Immunology Laboratory: 2 Credits
- BIOM 425 - Adv Cell & Molecular Biology: 3 Credits
- BIOM 440 - Biological Electron Microscopy: 2 Credits
- BIOM 496 - Genomics: 3 Credits
- BIOM 490 - Adv Undergrad Research: 1 To 10 Credits
- BIOM 350 - Intro Neuroscience: 3 Credits
- BIOH 365 - Human AP I for Health Prof: 4 Credits
- BIOH 370 - Human AP II for Health Prof: 4 Credits
- BIOH 405 - Hematology: 3 Credits
- BIOH 462 - Principles Medical Physiology: 3 Credits
- BIOM 400 - Medical Microbiology: 3 Credits
- BIOM 410 - Microbial Genetics: 3 Credits
- BIOM 411 - Exprmntl Microbial Genetics Lab: 1 Credits
- BIOM 427 - General Parasitology: 2 Credits
- BIOM 428 - General Parasitology Lab: 2 Credits
- BIOM 435 - Virology: 3 Credits
- CHMY 371 - Phys Chem-Qntm Chem & Spectrscopy: 4 Credits
- CHMY 397 - Teaching Chemistry: 1 Credits
- CHMY 402 - Advanced Inorganic Chem Lab: 2 Credits
- CHMY 403 - Descriptive Inorganic Chem: 3 Credits
- CHMY 442 - Aquatic Chemistry: 3 Credits
- CHMY 465 - Organic Spectroscopy: 3 Credits
- CHMY 466 - FT-NNR Optn for Undergrd Rsrch: 1 Credits
- CHMY 485 - Laboratory Safety: 1 Credits
- CHMY 490 - Undergraduate Research: 1 To 9 Credits
- CHMY 494 - Seminar/Workshop: 1 To 9 Credits
- CHMY 498 - Internship/Cooperative Educ: 1 To 6 Credits
- PHAR 421 - Medicinal Chem I: 3 Credits
- PHAR 422 - Medicinal Chem II: 3 Credits

**Total Credits (Excluding General Education Credits):** 86
### V. Option Requirements:

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<tr>
<th>Total Credits (Excluding General Education Credits):</th>
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**Please note:** Programs granted a symbolic systems exception to the general education modern and classical languages requirement will have to reapply every four years to keep the exception. The application will require an up-to-date accounting showing that the 48-credit threshold is exceeded.