New Molecular Biology Major, as of February 2015

- 1 unit of organismal biology (Biology of Microbes, Biology of Plants, Biology of Animals, or Intro to Human Anatomy). Note that we have requested that MB 131 become a pre-requisite for Intro to Human Anatomy so that you have access to the course without taking BE 105, BE 106, or BE 107 first.
- 1 unit of MB 131, Introduction to Molecular and Cellular Biology or MB 111, FYE Introduction to Molecular and Cellular Biology.
  - IB HL of 6 or 7 satisfies this requirement.
  - BY 131 or BY 232 satisfies this requirement
- 1 unit of MB 201, Laboratory in Molecular and Cellular Biology and Genetics.
  - Students who have completed BY 131 cannot take this course
  - Requirement waived for students who have completed BY 131 – BY 231 or BY 232
- 1 unit of MB 231, Genetics. MB201 is a pre-requisite.
  - Students who have completed BY 131 but not BY 231 place into this course
  - BY 231 or BY 232 satisfies this requirement
- 1 unit of 300-level lecture/discussion-based MB elective. These are intended for sophomores and juniors.
  - Can be satisfied by old BY 300- or 400-level courses with BY 231/232 Genetics as a pre-requisite
- 1 unit of 400-level lecture/discussion-based MB elective. These are intended for seniors and juniors.
  - Can be satisfied by old BY 300- or 400-level courses with BY 231/232 Genetics as a pre-requisite
- 2 units of 300- or 400-level laboratory-rich electives. These can be satisfied through mentored research with an MB professor. Selected non-MB courses can meet one of these two units (see list), but one of these units must be satisfied by an MB course offering.
Can be satisfied by old BY 300- or 400-level courses with BY 231/232 Genetics as a pre-requisite, and which have a laboratory component: BY 499, 475, 466, 453, 409, 391, 380, 359, 309.

List of courses outside MB that can satisfy one (but not two) of these units:
Biochemistry I; Biochemistry II; Advanced human anatomy; Human physiology; Advanced exercise physiology; Mathematical biology; Neuroscience 1; Plant physiology; Population genetics; Techniques in molecular ecology and systematics.

1 unit of elective in the biological sciences; can be satisfied by any MB course for majors (not MB 100), or BY course for majors (not BY 100), or BE course for majors (not BE 100), or by selected courses in Biochemistry, Mathematics, Neuroscience, Anthropology, or Human Biology and Kinesiology (see list). MB 112 (FYE Microbiology & Biophysics) satisfies this requirement.

List: any MB course other than MB 100 or MB 111; any BE course other than BE 100; Any BY course other than BY 100; Biochemistry I; Biochemistry II; Human anatomy; Advanced human anatomy; Human physiology; Advanced exercise physiology; Mathematical biology; Neuroscience 1; Human evolution; Human Biological Variation.

1 unit of senior capstone in Molecular Biology, MB 497, which will be offered twice each year, once in the Fall and once in the Spring. Satisfied by MB 499 senior thesis in 2015-2016. Satisfied by MB 497 only from 2016-17 forward.

4 units of Chemistry (CH 107, CH 108, CH 250, and CH 251)

2 units from selected courses in Mathematics, Computer Science, or Physics (Calculus 1, Calculus 2, Statistics (MA 117 or MA 217), Computer Science 1, Computer Science 2, or Physics for the physical sciences). May be satisfied by AP or IB credit recognized by the registrar.

Must attend Molecular Biology Day as a senior

Must participate in Departmental assessment activities such as the senior exit survey and examination

Must complete the senior seminar requirement (see last page)

Note that there was an administrative error regarding Molecular Biology this Fall – you must either complete the Biology – MCB track major or the 2015 Molecular Biology major described above. If you are a senior and this causes you any problems, make an appointment to talk with your advisor as soon as possible, and we’re sure things can be worked out to everyone’s satisfaction.
### Table 1. Department of Molecular Biology courses

<table>
<thead>
<tr>
<th>Course number</th>
<th>Course name</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>MB 100   Studies in Molecular Biology</td>
</tr>
<tr>
<td>2</td>
<td>MB 101   The Science and Ethics of Genetics</td>
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<tr>
<td>3</td>
<td>MB 109   First Year Experience Microbiology and Cellular Biophysics</td>
</tr>
<tr>
<td>4</td>
<td>MB 111   First Year Experience Introduction to Molecular and Cellular Biology</td>
</tr>
<tr>
<td>5</td>
<td>MB 112   Investigations in Molecular Biology</td>
</tr>
<tr>
<td>6</td>
<td>MB 131   Introduction to Molecular and Cellular Biology</td>
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<tr>
<td>7</td>
<td>MB 199   Research Ethics in the Sciences</td>
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<tr>
<td>8</td>
<td>MB 201   Laboratory in Molecular and Cellular Biology and Genetics</td>
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<tr>
<td>9</td>
<td>MB 209   Introduction to Mentored Research in Molecular Biology</td>
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<tr>
<td>10</td>
<td>MB 210   Introductory Special Topics in Molecular Biology</td>
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<td>11</td>
<td>MB 230   Human Evolution</td>
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<tr>
<td>12</td>
<td>MB 231   Genetics</td>
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<tr>
<td>13</td>
<td>MB 301   Special Topics in Molecular Biology</td>
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<tr>
<td>14</td>
<td>MB 302   Independent Study in Molecular Biology</td>
</tr>
<tr>
<td>15</td>
<td>MB 305   Advanced Genetic Analysis</td>
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<tr>
<td>16</td>
<td>MB 310   Advanced Cell Biology</td>
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<tr>
<td>17</td>
<td>MB 320   Microbiology and Molecular Genetics</td>
</tr>
<tr>
<td>18</td>
<td>MB 350   Special Topics in Laboratory Research in Molecular Biology</td>
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<tr>
<td>19</td>
<td>MB 355   Laboratory in Advanced Genetics</td>
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<tr>
<td>20</td>
<td>MB 360   Laboratory in Molecular Microbiology</td>
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<tr>
<td>21</td>
<td>MB 399   Mentored Research in Molecular Biology</td>
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<tr>
<td>22</td>
<td>MB 401   Advanced Special Topics in Molecular Biology</td>
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<td>23</td>
<td>MB 405   Stem Cell Biology</td>
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<tr>
<td>24</td>
<td>MB 410   Molecular and Cellular Virology</td>
</tr>
<tr>
<td>25</td>
<td>MB 450   Advanced Special Topics in Laboratory Research in Molecular Biology</td>
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<tr>
<td>26</td>
<td>MB 455   Laboratory in Advanced Cell Biology</td>
</tr>
<tr>
<td>27</td>
<td>MB 497   Senior Capstone in Molecular Biology</td>
</tr>
<tr>
<td>28</td>
<td>MB 498   Advanced Mentored Research in Molecular Biology</td>
</tr>
<tr>
<td>29</td>
<td>MB 499   Senior Thesis in Molecular Biology</td>
</tr>
</tbody>
</table>

#### Timeline for choosing a major

- Chose the new major, or the old MCB major before March 1, 2015. After that, you will be “locked in.”
- E-mail your advisor and Kelley to let us know your decision.
- If we do not hear from you before March 1, 2015, you will major in Molecular Biology (the new major described here)
The Old Biology - Molecular and Cellular Biology track

I. **One** of the following introductory organismic biology courses
   a. BY 105, BY 106, BY 107, now BE 105, 106, and 107
   b. We will also accept HK 204

II. **Introduction to Molecular and Cellular Biology**, BY 131 or 2 units of BY 232
   a. Can be satisfied by MB 131 & MB 201 or by MB 111 & MB 201

III. **Genetics**, BY 231 or 2 units of BY 232
   a. The BY 131 – 231 requirement can also be satisfied by
      i. BY 131 – MB 231
      ii. Or MB 131 – MB 201 – MB 231
      iii. If you have completed BY 131, you place into MB 231, but if you have not
           completed BY 131, you must take the three course sequence MB 131 – MB 201
                – MB 231

IV. **Four** units in **Chemistry**
   a. CH 107, CH 108, CH 250, CH 251

V. **Two** of the following mathematics courses:
   a. MA 117, MA 125-6 (only counts as one unit toward the requirement), MA 126, MA 127,
      MA 129, MA 217, BY 220/BE 220, BY 256/MA 256, EV 228, AP or IB credit, recognized
      by the registrar, in calculus or statistics

VI. **Six** approved biology electives
   a. Three must be Biology (BY) courses with BY 231 (or BY 232 or BY 361) as a pre-
      requisite. Students can petition the department to count up to two units of BY 309, BY
      409, or BY 499 toward this requirement provided that they completed BY 231 prior to the
      independent study and the supervising professor agrees.
      i. Can be satisfied by any MB course at the 300 or 400 level
   b. One unit of elective credit may be CH 241 or CH 382
   c. One unit of elective credit may be GY 300, PY 299, SC 301, AN 201, AN 202, AN 301,
      HK 204, HK 206, HK 304, HK 321, PY 297, or PY2 98.
   d. One unit must be an approved senior capstone course
      i. MB 499 Senior Thesis or MB 497 for 2015-16.
      ii. MB 497 only for 2016-17 onward
   e. Any BY course except BY 100 and BY 104 may count as an elective. Any BE course
      except BE 100 and BE 104 may count as an elective. Any MB course other than MB
      100 and MB 101 may count as an elective.
   f. BY 101 and MB 109 (FYE) counts as one unit of lower-level elective
   g. BY 220 counts as EITHER an elective or a unit of math. BY 256/MA 256 counts as
      EITHER an elective or a unit of math. Neither course can itself satisfy BOTH a unit of
      biology elective credit and a unit of math.
   h. Only two units of BY 309, BY 409, BY 499, MB 209, MB 399, MB 498, or MB 499 can
      count toward the major.
      i. It is possible to petition the department to ask for other courses to count as electives.

VII. **Research Seminar Participation, as announced at the Fall Majors’ Meeting**

VIII. **Senior capstone experience, as announced at the Fall Majors’ Meeting**

VII and VIII for 2014-15 will be the same as that for Molecular Biology majors
The minor offered by the Department of Molecular Biology consists of 6 units.

- 1 unit of MB131 or MB111 (Introduction to molecular & cellular biology)
- 1 unit of MB201, Laboratory in Molecular & Cellular Biology & Genetics
- 1 unit of MB231, Genetics
- 3 units that have MB231 as a pre-requisite

Senior Seminar Requirements for Seniors majoring in Biology-MCB or Molecular Biology, 2014 & forward

During the last two semesters, in order to fulfill the requirements for the major (and in order to graduate), seniors must fulfill the seminar participation required by the Senior Capstone Experience. This requirement is different from last year’s. In order to fulfill this requirement, seniors must:

1. Attend four research seminars. These will be announced by email and using flyers in the Biology Department.
2. Prior to each research seminar, read a publication by the seminar speaker, or a related publication, which will be distributed one week prior to the seminar.
3. Write a question to ask the author about the work in the publication. Submit this question to A) your advisor and B) the staff assistant Kelley.Mathers@coloradocollege.edu in the text of an email PRIOR TO the seminar.
   a. We encourage you to meet with each other to discuss the publication.
   b. We encourage you to bring a copy of your question to the seminar, so that you may ask the speaker your question.
4. At each seminar, sign in.
5. If the seminar speaker is invited to have lunch or another gathering with students, it is in your best professional interests to attend such gatherings.
6. The paraprofessional Kristen Wells will reconcile the sign-in sheet with the questions submitted on time to Kelley, to keep track of student progress fulfilling this requirement. Ultimately, however, it is up to each senior to ensure that they fulfill this requirement in order to complete their major and graduate.