APPENDIX

Faculty Approved Changes since Summer 2009

Changes in 2010-2011 Advising Manual

BASIC SCIENCES

030.101 Introductory Chemistry I (3)
030.102 Introductory Chemistry II (3)

Changed to

BASIC SCIENCES

510.101.1.1 Introduction to Materials Chemistry (3)

or

030.101 Introductory Chemistry I (3)
030.102 Introductory Chemistry II (3)

Changes in 2011-2012 Advising Manual

UPPER LEVEL MATERIALS SCIENCE ELECTIVES

Changed to

UPPER LEVEL MATERIALS SCIENCE ELECTIVES

- Independent research can only count toward three (3) credits of this requirement.

BASIC SCIENCES

25 credits

510.101.1.2 Introduction to Materials Chemistry (3)

or

030.101 Introductory Chemistry I (3)
030.102 Introductory Chemistry II (3)

Changed to
BASIC SCIENCES

22 credits
Introduction to Materials Chemistry (3)

Computer Programming (3)
Students must complete one of the following courses, or equivalent (with permission):
- 510.408 Mathematical and Computational Methods
- 600.107 Introduction to Programming in Java
- 600.120 Intermediate Programming
- 500.200 Computing for Engineers and Scientists

Changed to

Computer Programming (3)
- 510.202 Computation and Programming for Materials Scientists and Engineers
  (offered Spring, 2012 and following springs)

SCIENCE AND ENGINEERING ELECTIVES (6)
- One course of upper level engineering, natural sciences or mathematics
- Upper level is 300 or higher
  Science Elective I (upper level) (3)
  Science Elective II (3)

Changed to

SCIENCE AND ENGINEERING ELECTIVES (6)
- Two courses of 200-level or above in engineering, natural sciences or mathematics
  Science Elective #1 (3)
  Science Elective #2 (3)

UNRESTRICTED ELECTIVES
- 6 credits of unrestricted electives

Changed to

UNRESTRICTED ELECTIVES
- 9 credits of unrestricted electives

A student who has taken both 030.101 and 030.102 may count one of them toward one unrestricted elective.

1. Updated the program educational objective based on the relevant section in the self-study report for the Nov. 2011 ABET site visit and the department webpage.

2. New biomaterials/nanomaterials senior design course numbers and descriptions have been added in the course list. Future biomaterials concentrators or nanotechnology concentrators will use these new course numbers in lieu of the standard senior design.

3. Course description has been removed for Biocompatibility, which is not going to be offered as a separate course for the next 4 years.


5. Added "students can substitute Cell Biology+Biochemistry for Mol & Cells".

6. Added “students can substitute LADE+an upper-level mathematics course for LA+DE”.

7. Added an update about the pending change from the current “tracks” to approved “concentrations”:

   The department has recently submitted proposals to JHU and the State of MD to formally convert the tracks to the Biomaterials Concentration and the Nanotechnology Concentration within the Materials Science and Engineering undergraduate program. Once approved, the tracks will be re-named as concentrations, and successful completion of the Biomaterials Concentration and Nanotechnology Concentration can be formally noted on the student's transcript.

8. This expected formal change (in 2014) has been noted in several places, and the previous “track” requirements have been replaced by new “concentration” requirements: 3 electives for the concentration, a dedicated lab course, and a required year-long (bio or nano) senior design project (see Item 1 above).

   The "Sample Curriculum for Biomaterials Track" has been changed accordingly (see 4th year suggestions) to reflect the new concentration requirements.

   The short paragraph that implied an easy route to achieve "double tracks" has been removed.

Changes in 2015-2016 Advising Manual
Removed Mol Cell (4), Circuits (4) and Statics (4) from the “Basic Engineering” category (see Sci. Eng. Electives below). Merged the rest under “Basic Engineering” (computation course and the new “Leadership and Management in MSE”) with the “Basic Science” category:

The new category is then

(Required) Basic Science and Engineering
28 credits

Existing Basic Science courses
+
510.202 Computation and Programming for MSE (3)
660.3## Leadership and Management for MSE (3)
(e.g., junior fall semester)

Petitions can be made to use equivalent courses to substitute for these two.

All other requirements in the Advising Manual remain the same.

Total credits required for degree is now 126
(Most students would reach 127, because the Mols Cell, or Statics, is 4 credits, see below).

Sci. Eng. Electives:

Now it requires 9 credits (previously 6)

We require that at least one of the 3 courses must be from another department in WSE (to ensure the exposure to another engineering field).

580.221 Molecules and Cells (4) or its equivalent is required for the biomaterials concentration

530.201 Statics and Mechanics of Materials (4) is an option for Nano Concentration and standard track
(This gives some students the flexibility to choose a more useful course, under the guidance of his/her faculty advisor)

Introductory language courses, even if not w/ H or S designator, can substitute for H designated courses.

HUMANITIES (H OR S)

• Letter grade of C- or higher (or S if the grade system is S/U)

Independent Research and Senior Design can now be carried out in a team setting; more to come in the next revision.
FALL 2015 – SPRING 2016 CHEMISTRY OPTIONS

for Materials Science and Engineering Majors

<table>
<thead>
<tr>
<th>AP Score</th>
<th>Credit Earned</th>
<th>Course Equivalent</th>
<th>Enrollment Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>8</td>
<td>030.101/030.105</td>
<td><strong>F15</strong>: 030.205 (Section 03 available for freshman with Chem AP score of 5 only) 030.101/030.105 and 030.102/030.106 (also 510.101) <strong>F15</strong>: 510.101/030.105 <strong>Sp16</strong>: 030.106 (with this option, they forfeit 4 AP credits) <strong>F15</strong>: 030.103 <strong>F16</strong>: 030.205 (with this option, forfeit 4 AP credits) <strong>F15</strong>: No chemistry course; <strong>Sp16</strong>: 030.103 (with this option, forfeit 4 AP credits) <strong>F15</strong>: 030.101/105; <strong>Sp16</strong>: 030.102/106 (with this option, forfeit 8 AP credits)</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>030.101/030.105</td>
<td><strong>F15</strong>: 510.101/030.105 <strong>Sp16</strong>: 030.106 <strong>F15</strong>: 030.103; <strong>Sp16</strong>: No chemistry course <strong>F15</strong>: No chemistry course; <strong>Sp16</strong>: 030.103 <strong>F15</strong>: 030.101/105 <strong>Sp16</strong>: 030.102/106 (with this option, forfeit the 4 AP credits)</td>
</tr>
</tbody>
</table>

Spring enrollment in 030.102/106 is only available to students who complete 030.101/105 at JHU.

**COURSE KEY**

510.101: Materials Chemistry (fall only)
030.101: Introductory Chemistry I (3 credits, fall and summer only)
030.105: Introductory Chemistry lab I (1 credit, fall and summer only)
030.102: Introductory Chemistry II (3 credits, spring and summer only)
030.106: Introductory Chemistry lab II (1 credit, spring and summer only)
030.103: Chemical Equilibrium & Reactivity w/ lab (fall and spring)
030.205: Introductory Organic Chemistry I (fall and summer only)
030.225: Introductory Organic Chemistry lab I (fall, spring, and summer)

Course Equivalency Note:

Students may not receive credits for both 030.103 and 510.101.