Applied Biological Science Major Checklist (11/12/16)  NAME __________________

**General Ed Requirements:** (21 hours)
ENGL 101 (3) _____________  Tech Com I ENGL 279 (3) _____________  Tech Com II ENGL 289 (3) _____________
Gen. Ed. Goal 3 (3) _____________  Gen. Ed. Goal 3 (3) _____________
(SOC 100 and PSYC 101 recommended for pre-med)

**Applied Biological Science Major Requirements:**
**Math Requirement** (11 hours)
MATH 123 Calc I (4) _____________  MATH 125 Calc II (4) _____________ and
MATH 321 Dif Eq (3) _____________  or MATH 381 Probability and Statistics (3) _____________
(Math 321 recommended for Biomedical Engineering; MATH 381 recommended for Molecular Biology and pre-med;)

**Physics Requirement:** (7 hours required; 100 recommended for Pre-Health; 200 for Pre-BME)
PHYS 211 (3) _____________  PHYS 213 (3) _____________  PHYS 213L (1) _____________
PHYS 111 (3) _____________  PHYS 111L (1) _____________  PHYS 113 (3) _____________  PHYS 113L (1) _____________

**Chemistry Requirement:** (25 hours)
Gen Chem I&II  CHEM 112 (3) _____________  CHEM 112L (1) _____________  CHEM 114 (3) _____________  CHEM 114L (1) _____________
O Chem I & II  CHEM 326 (3) _____________  CHEM 326L (2) _____________  CHEM 328 (3) _____________  CHEM 328L (2) _____________
Biochem I & II  CHEM 464 (3) _____________  CHEM 464L (1) _____________  CHEM 465 (3) _____________

**Biology Core Curriculum Requirement:** (24 hours)
BIOL 111 Intro to ABS (1) _____________
BIOL 151 Gen Biol I (3) _____________  BIOL 151L (1) _____________  BIOL 153 Gen Bio II (3) _____________  BIOL 153L (1) _____________
BIOL 331 Microbiol (3) _____________  BIOL 331L (1) _____________  BIOL 371 Genetics (3) _____________  BIOL 371L (1) _____________
BIOL 446 Mol Cell (3) _____________  BIOL 480 Bioinformatics (3) _____________  BIOL 490 Seminar (1) _____________

**ABS Program Electives:** (19 hours required)

**Globalization Requirement:**  BIOL 311 Ecology (3) _____________ or CHEM 482 Environmental Chem (3) _____________

Students may take any approved ABS Program Electives (which includes all Chemistry courses).
See reverse side for a partial list of suggested courses.
16 additional ABS Approved Program Elective credits needed:
Area of Emphasis:
Pre-Health _____  Pre-Biomedical Engineering _____  Molecular Biology _____  Environmental Science _____
a. Course _____________, credits ___  b. Course _____________, credits ___
c. Course _____________, credits ___  d. Course _____________, credits ___
e. Course _____________, credits ___  f. Course _____________, credits ___

**Total ABS Program Elective Credits _____________

**Free Electives:** (13 hours or sufficient hours to equal 120 hours required for graduation)
a. Course _____________, credits ___  b. Course _____________, credits ___
c. Course _____________, credits ___  d. Course _____________, credits ___
e. Course _____________, credits ___

**TOTAL SD MINES Credits _____________ (120 required for Graduation)**
Suggested electives for ABS Emphases

**Pre-Med (Pre-Health) Emphasis:**

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**Math:** MATH 381 Prob and Statistics

**Recommended Program Electives:**

- BIOL 221/L Human Anatomy (3/1);
- BIOL 326/L Biomedical Physiology (3/1);
- BIOL 375 Current Bioethical Issues (3);
- BIOL 423/L Pathogenesis (3/1);
- BIOL 444 DNA Structure and Function (3);
- BIOL 470 Cancer Biology (3);
- BIOL 478 Microbial Genetics (3);
- BIOL 498 Undergrad Research;
- CP 497 Coop. Ed.

**Goal 3:** SOC 100; PSYC 101

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**Math:** MATH 381 Prob and Statistics

**Recommended Program Electives:**

- BIOL 221/L Human Anatomy (3/1);
- BIOL 326/L Biomedical Physiology (3/1);
- BIOL 375 Current Bioethical Issues (3);
- BIOL 423/L Pathogenesis (3/1);
- BIOL 444 DNA Structure and Function (3);
- BIOL 470 Cancer Biology (3);
- BIOL 478 Microbial Genetics (3);
- BIOL 498 Undergrad Research;
- CP 497 Coop. Ed.

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**Biomedical Engineering Emphasis:**

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**Math:** MATH Calc III (4); MATH 321 Dif Eq.

**Recommended Program Electives:**

- BME 408/508 Introduction to Biomedical Engineering (3)
- BIOL 326/L Biomedical Physiology (3/1)
- MET 232 Properties of Materials (3);
- EM 215 Statics (3) or
  - EM 216 Statics & Dynamics (3);
- ME 216 Intro Solid Mechanics (3);
- ME 211 Intro to Thermo (3);
- ME 221 Dynamics of Mechanisms (3);
- ME 316 Solid Mechanics (3);
- ME 331 Thermo Fluid Dynamics (3);

**Alternatives:**

- CBE 218 CE Fluid Mechanics (3)
  - (for ME 331, MET 442);
- CBE 222 CE Process Thermo (3)
  - (for ME 231, MET 320);
- MET 320 Metallurgical Thermo (4) (for ME 211);
- MET 422 Transport Phenomena (4) (for ME 331)

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**Molecular Biology Emphasis:**

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**Math:** MATH 381 Prob and Statistics

**Recommended Program Electives:**

- BIOL 221/L Human Anatomy (3/1);
- BIOL 326/L Biomedical Physiology (3/1);
- BIOL 375 Current Bioethical Issues (3);
- BIOL 423/L Pathogenesis (3/1);
- BIOL 431 Industrial Microbiology (3);
- BIOL 444 DNA Structure and Function (3);
- BIOL 470 Cancer Biology (3);
- BIOL 478 Microbial Genetics (3);
- BIOL 498 Undergrad Research/Scholarship;
- CP 497 Coop. Ed.;
- CHEM 3XX, 4XX (any course)

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**Environmental Science Emphasis:**

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**Math:** MATH 381 Prob and Statistics

**Recommended Program Electives:**

- AES 403 Biogeochemistry (3)
- BIOL 311 Ecology (3)
- BIOL 311L Ecology Lab (1)
- BIOL 333 Aquatic Ecology and Watershed Management (3)
- BIOL 333L Aquatic Ecology Lab (1)*
- BIOL/AES 406 Global Environmental Change (3)
- CHEM 332/L Analytical Chemistry (3/1)
- CHEM 482 Environmental Chemistry (3)
- GEOL 361 Oceanography I (3)
- GEOL 416/416L Introduction to GIS (3)

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