MacEwan UNIVERSITY

BACHELOR OF SCIENCE
PHYSICAL SCIENCES MAJOR
2016/17 Academic Year

REQUIRED JUNIOR LEVEL COURSES[1,2] — 18 CREDITS

6 CREDITS
- ☐ CHEM 101: University Chemistry I
- ☐ CHEM 102: University Chemistry II

6 CREDITS
- ☐ EASC 101: Introduction to Physical Earth Science
- ☐ EASC 102: Physical Earth Science[3]
- ☐ EASC 103: Historical Geology[3]

6 CREDITS
- ☐ PHYS 124: Physics for Life Sciences I *and* PHYS 126: Physics for Life Sciences II
- ☐ PHYS 144: Mechanics and Waves *and* PHYS 146: Electromagnetism and Radiation

GENERAL SENIOR LEVEL COURSES — 42 CREDITS

Please see planning notes on the back of this page for critical information about the structure of this major.

CHEMISTRY COURSES[4]

- ☐ PHSC 200: Physical Science Field Skills[5]
- ☐ CHEM 211: Analytical Chemistry I
- ☐ CHEM 213: Analytical Chemistry II
- ☐ CHEM 232: Inorganic Chemistry
- ☐ CHEM 241: Biophysical Chemistry
- ☐ CHEM 252: Forensic Chemistry
- ☐ CHEM 261: Organic Chemistry I
- ☐ CHEM 263: Organic Chemistry II
- ☐ CHEM 270: Environmental Chemistry
- ☐ CHEM 291: Applied Spectroscopy
- ☐ CHEM 311: Advanced Chemical Analysis
- ☐ CHEM 320: Introduction to Geochemistry
- ☐ CHEM 322: Introduction to Biogeochemistry
- ☐ CHEM 333: Organometallic Chemistry
- ☐ CHEM 341: Structural Bioinformatics
- ☐ CHEM 353: Advanced Forensic Chemistry
- ☐ CHEM 362: Advanced Organic Chemistry
- ☐ CHEM 364: Medicinal Chemistry
- ☐ CHEM 370: Advanced Environmental Chemistry
- ☐ CHEM 441: Molecular Modelling
- ☐ CHEM 495: Special Topics in Chemistry[6]
- ☐ CHEM 498: Independent Research[6]

EARTH AND PLANETARY SCIENCES COURSES[4]

- ☐ PHSC 200: Physical Science Field Skills[5]
- ☐ EASC 206: Geology of the Solar System
- ☐ EASC 219: Mineralogy
- ☐ EASC 221: Introduction to GIS
- ☐ EASC 225: Introduction to Geomorphology
- ☐ EASC 226: Introduction to Soil Science
- ☐ EASC 230: Invertebrate Paleontology
- ☐ EASC 238: Geology of Natural Resources
- ☐ EASC 270: The Atmosphere
- ☐ EASC 271: The Oceans
- ☐ EASC 320: Introduction to Geochemistry
- ☐ EASC 321: Structure and Tectonics
- ☐ EASC 322: Introduction to Biogeochemistry
- ☐ EASC 324: Quaternary Environments
- ☐ EASC 330: Petrology
- ☐ EASC 334: Planetary Surface Imaging
- ☐ EASC 373: Anthropogenic Climate Change
- ☐ EASC 375: Paleoclimatology
- ☐ EASC 495: Special Topics in Earth and Planetary Science[6]
- ☐ EASC 498: Independent Research[6]

PHYSICS COURSES[4]

- ☐ PHSC 200: Physical Science Field Skills[5]
- ☐ PHYS 200: Introduction to Relativity
- ☐ PHYS 208: Quantum Aspects of Physics
- ☐ PHYS 212: Revolutions in Physics: The Structure of the Universe
- ☐ PHYS 224: Fluids and Heat
- ☐ PHYS 226: Optics and Sound Waves
- ☐ PHYS 244: Mechanics
- ☐ PHYS 250: Introduction to Biophysics
- ☐ PHYS 252: Physics of the Earth
- ☐ PHYS 261: Physics of Energy
- ☐ PHYS 301: Nuclear Physics
- ☐ PHYS 302: Particle Physics
- ☐ PHYS 308: An Introduction to Semiconductors and Superconductors
- ☐ PHYS 320: Origin of the Elements
- ☐ PHYS 324: Origins of Planetary Systems
- ☐ PHYS 332: Computational Physics
- ☐ PHYS 372: Quantum Mechanics
- ☐ PHYS 390: Advanced Physics Laboratory
- ☐ PHYS 495: Special Topics in Physics and Astrophysics[6]
- ☐ PHYS 498: Independent Research[6]

➢ **Important! Please see the back of this page for planning notes.** ➢

IMPORTANT PLANNING NOTES

1. Twelve credits from the prerequisite junior level courses can be used toward a student's core requirements. Additional credits will be placed in a student's options.

   – The Physical Sciences major requires students to take a high number of junior level credits. Physical Sciences majors must plan their options carefully to ensure that they do not exceed 48 junior level credits, which is the maximum number of junior level credits permitted in a Bachelor of Science degree.

2. Students are required to consult with the MacEwan University Academic Calendar to ensure they meet the prerequisites for all Chemistry, Earth and Planetary Sciences, and Physics courses they enrol in.

3. Students who choose Earth and Planetary Sciences as one of their primary disciplines, and wish to pursue weather and climate studies should take **EASC 102**. Students who wish to pursue geology or planetary studies should take **EASC 103**.

4. The structure of the Physical Sciences major is as follows:

   If a student chooses a minor in one of the Physical Sciences disciplines:
   a. Students must choose two primary disciplines from Chemistry, Earth and Planetary Sciences, and Physics, and may choose the third discipline as their minor.
   b. All senior credits in the third discipline will count only toward the minor.
   c. Student must use only courses from their primary disciplines to complete the major's requirements, with a minimum of 18 senior level credits taken in each discipline.
   d. Students must have 12 credits at the 300- or 400-level in their primary disciplines, with at least three credits from each primary discipline.

   If a student chooses a minor other than in one of the Physical Sciences disciplines:
   a. Students must choose two primary disciplines from Chemistry, Earth and Planetary Sciences, and Physics.
   b. Student must take 18 senior level credits in both of their primary disciplines to complete the major's requirements. An additional six senior level credits must be taken in the third discipline.
   c. Students must have 12 credits in their primary disciplines at the 300- or 400-level in their primary disciplines, with at least three credits from each primary discipline.

   If a student chooses no minor:
   a. Students must choose two primary disciplines from Chemistry, Earth and Planetary Sciences, and Physics.
   b. Student must take 18 senior level credits in both of their primary disciplines to complete the major's requirements. An additional six senior level credits must be taken in the third discipline.
   c. Students must have 12 credits in their primary disciplines at the 300- or 400-level in their primary disciplines, with at least three credits from each primary discipline.
   d. The 18 credits normally assigned to a minor will be considered options. Therefore, a student must complete 39 credits of options to be eligible for graduation.
   e. Students must plan their options very carefully, as they can use a maximum of six senior level credits in any Physical Sciences discipline within their options. Students also cannot exceed the 48 credit junior level maximum, and they must complete 72 credits of Science courses.

5. **PHSC 200** is a Physical Sciences course that covers material relevant to Chemistry, Earth and Planetary Sciences, and Physics. It can be used toward a student's Chemistry, Earth and Planetary Sciences, or Physics requirements, but while it may be applied to any of these requirements, students can only receive credit for the course one time.

   – Because the Physical Sciences major is not a discipline-specific major, **PHSC 200** can count toward a student's major. If it is taken outside the student's major, it will count toward that student's maximum of six major/minor credits in their options.

6. Students may take any of **CHEM 495**, **CHEM 498**, **EASC 495**, **EASC 498**, **PHYS 495** and **PHYS 498** for credit a maximum of two times each, as long as the course topic is different each time they take it.

*This planning sheet should be used only as a **guide** for course planning and it should be used in conjunction with the Bachelor of Science Degree Planner. Remember: not all courses listed are offered each year and course offerings are subject to change. In the event of a discrepancy between the information presented on this sheet and that available on myStudentSystem, the information on myStudentSystem will be considered accurate.*