

University of  
Lethbridge



Faculty of Arts & Science

## Program Planning Guide

**Department:** Physics and Astronomy

**Calendar Year:** 2013/2014

**Name:** \_\_\_\_\_

**ID:** \_\_\_\_\_

**Bachelor of Science**  
**Physics**

**Major in Physics:**

[www.uleth.ca/artsci/physics-astronomy](http://www.uleth.ca/artsci/physics-astronomy)

**Faculty of Arts and Science Student Program Services:**

[www.uleth.ca/artsci/advising](http://www.uleth.ca/artsci/advising)  
[artsci.advising@uleth.ca](mailto:artsci.advising@uleth.ca)  
(403) 329-5106  
SU060

**Current and Past Program Planning Guides:**

[www.uleth.ca/ross/ppgs](http://www.uleth.ca/ross/ppgs)

**Academic Calendar:**

[www.uleth.ca/ross/academic-calendar](http://www.uleth.ca/ross/academic-calendar)

**Co-operative Education:**

[www.uleth.ca/artsci/coop](http://www.uleth.ca/artsci/coop)

This is a planning guide and not a graduation check or guarantee of course offerings. You should have a program check done in your final year of studies. Students are responsible for the accuracy of their own programs. The guide should be used in conjunction with the University of Lethbridge Calendar, which is the final authority on all questions regarding program requirements and academic regulations. Contact an Academic Advisor in the Faculty of Arts and Science for advising information.

**Name :** \_\_\_\_\_

**ID :** \_\_\_\_\_

**B.Sc. Physics**

Completion of at least 40 courses (120.0 credit hours) with a grade point average of at least 2.00.

**Major Requirements (26 courses)**

- \_\_\_\_\_ Chemistry 1000 - General Chemistry I
- \_\_\_\_\_ Computer Science 1620 - Fundamentals of Programming I
- \_\_\_\_\_ Mathematics 1410 - Elementary Linear Algebra
- \_\_\_\_\_ Mathematics 1560 - Calculus I
- \_\_\_\_\_ Mathematics 2560 - Calculus II
- \_\_\_\_\_ Mathematics 2570 - Calculus III
- \_\_\_\_\_ Mathematics 2580 - Calculus IV
- \_\_\_\_\_ Physics 2000 - Introduction to Physics II
- \_\_\_\_\_ Physics 2120 - Introduction to Physics III
- \_\_\_\_\_ Physics 2130 - Waves, Optics and Sound
- \_\_\_\_\_ Physics 2150 - Quantum Mechanics I
- \_\_\_\_\_ Physics 2800 - Methods in Mathematical Physics
- \_\_\_\_\_ Physics 2925 - Introduction to Experimental Physics
- \_\_\_\_\_ Physics 3150 - Quantum Mechanics II
- \_\_\_\_\_ Physics 3175 - Electricity and Magnetism
- \_\_\_\_\_ Physics 3200 - Mechanics
- \_\_\_\_\_ Physics 3400 - Thermal and Statistical Physics
- \_\_\_\_\_ Physics 3750 - Contemporary Physics
- \_\_\_\_\_ Physics 3800 - Methods of Theoretical Physics
- \_\_\_\_\_ Physics 3925 - Experimental Physics
- \_\_\_\_\_ Physics 4175 - The Electromagnetic Interaction

**One of:**

- \_\_\_\_\_ Biology 1010 - Cellular Basis of Life
- \_\_\_\_\_ Biology 1020 - Diversity of Life

**One of:**

- \_\_\_\_\_ Physics 1000 - Introduction to Physics I
- \_\_\_\_\_ Physics 1050 - Introduction to Biophysics
- \_\_\_\_\_ <sup>1</sup>Engineering 2060 - Engineering Mechanics

**One of:**

- \_\_\_\_\_ Physics 4150 - Quantum Mechanics III
- \_\_\_\_\_ Physics 4200 - Advanced Mechanics

**<sup>2</sup>Two of:**

- \_\_\_\_\_ Physics 3650 - Optics
- \_\_\_\_\_ Physics 3840 - Introduction to Computational Physics
- \_\_\_\_\_ Physics 3900 - Intermediate Experimental Physics (Series)
- \_\_\_\_\_ Physics 4000 - Advanced Studies in Physics (Series)
- \_\_\_\_\_ Physics 4100 - Nuclear and Particle Physics
- \_\_\_\_\_ Physics 4250 - Solid State Physics
- \_\_\_\_\_ Physics 4650 - Physics of Remote Sensing

**Other Courses (minimum 14 courses)**

- |          |           |
|----------|-----------|
| 1. _____ | 8. _____  |
| 2. _____ | 9. _____  |
| 3. _____ | 10. _____ |
| 4. _____ | 11. _____ |
| 5. _____ | 12. _____ |
| 6. _____ | 13. _____ |
| 7. _____ | 14. _____ |

**Notes**

<sup>1</sup>Engineering 2000 and Mathematics 1560 are prerequisites for Engineering 2060.

<sup>2</sup>Offerings in Physics 3850 (Topics) and Physics 4850 (Topics) and either Physics 4150 or Physics 4200 (if not used above) may be used to satisfy this requirement.

Since a number of courses are offered only on alternate years, students are advised to plan carefully to include the desired courses. In all cases, students (especially those planning for advanced studies in Physics) are encouraged to seek advice on their programs from any member of the Department of Physics and Astronomy.

It is recommended that students majoring in Physics include in their program courses in Biology, Chemistry, Computer Science, and Mathematics.

It is strongly recommended that a student attain a grade of 'C' or higher in any course used to satisfy prerequisites for courses in Physics and Mathematics.

See also:

- Bachelor of Science - Remote Sensing
- Bachelor of Science/Bachelor of Education - Physics/Science Education
- Bachelor of Science/Bachelor of Management - Physics

**Completion of the General Liberal Education Requirement (GLER).**

*Only four courses (12.0 credit hours) in total may be counted from all courses offered by a single department. See the 2013/2014 Calendar, p. 88, for more information.*

**LIST I: Fine Arts and Humanities Courses**

1. \_\_\_\_\_ 3. \_\_\_\_\_

2. \_\_\_\_\_ 4. \_\_\_\_\_

**LIST II: Social Science Courses**

1. \_\_\_\_\_ 3. \_\_\_\_\_

2. \_\_\_\_\_ 4. \_\_\_\_\_

**LIST III: Science Courses**

1. \_\_\_\_\_ 3. \_\_\_\_\_

2. \_\_\_\_\_ 4. \_\_\_\_\_

Not more than 12 courses (36.0 credit hours) may be completed at the 1000 level (or lower) [0500 - 1999] for credit towards the degree, excluding Activity courses (labelled PHAC and MUSE).

1. \_\_\_\_\_ 7. \_\_\_\_\_

2. \_\_\_\_\_ 8. \_\_\_\_\_

3. \_\_\_\_\_ 9. \_\_\_\_\_

4. \_\_\_\_\_ 10. \_\_\_\_\_

5. \_\_\_\_\_ 11. \_\_\_\_\_

6. \_\_\_\_\_ 12. \_\_\_\_\_

Completion of at least 15 courses (45.0 credit hours) from disciplines offered by the Faculty of Arts and Science or the Faculty of Fine Arts at the 3000/4000 level, excluding Activity courses (labelled PHAC and MUSE).

1. \_\_\_\_\_ 9. \_\_\_\_\_

2. \_\_\_\_\_ 10. \_\_\_\_\_

3. \_\_\_\_\_ 11. \_\_\_\_\_

4. \_\_\_\_\_ 12. \_\_\_\_\_

5. \_\_\_\_\_ 13. \_\_\_\_\_

6. \_\_\_\_\_ 14. \_\_\_\_\_

7. \_\_\_\_\_ 15. \_\_\_\_\_

8. \_\_\_\_\_

\_\_\_\_\_ Not more than five Independent Study courses (15.0 credit hours) may be completed for credit towards the degree.

\_\_\_\_\_ Not more than five Disciplinary Credit Applied Studies courses (15.0 credit hours) may be completed for credit towards the degree. Students may, in addition, complete Applied Studies 2000, 2001, 2010, and 2011.

\_\_\_\_\_ Not more than 24 courses (72.0 credit hours) may be completed from any one discipline for credit towards the degree.

*Note: Disciplines are identified by a specific course label (e.g. KNES, ASTR, and HIST are separate disciplines).*

\_\_\_\_\_ Not more than four Activity courses (i.e. courses labelled PHAC and MUSE; maximum 6.0 credit hours) may be completed for credit towards the degree, except for Kinesiology majors (not more than 10 Activity courses; 15.0 credit hours) and Music majors (not more than 8 Activity courses; 12.0 credit hours).

\_\_\_\_\_ Not more than four courses (12.0 credit hours) from disciplines offered outside the Faculty of Arts and Science or the Faculty of Fine Arts may be completed for credit towards the degree (i.e. labelled CDEV, CRED, EDUC, HLSC, MGT, NURS, and PUBH). Courses cross-listed between the Faculty of Arts and Science and another Faculty do not count towards this limit.

\_\_\_\_\_ **Residence requirement:**

**Degree:** at least 20 courses (60.0 credit hours) must be completed at the University of Lethbridge, including the last 10 courses (30.0 credit hours) completed for credit towards the degree.

**Major:** at least half of the courses required in the major must be completed at the University of Lethbridge.

**Minor (Optional):** \_\_\_\_\_

*See the 2013/2014 Calendar, p. 143, for eligible minors.*

1. \_\_\_\_\_ 4. \_\_\_\_\_

2. \_\_\_\_\_ 5. \_\_\_\_\_

3. \_\_\_\_\_ 6. \_\_\_\_\_

## Sample Sequencing Plan

Shown below is a sample sequence of courses for your degree. If you follow this plan, you should be able to graduate in four years, provided you complete five courses per semester. This is just one example of how you could complete your major and degree requirements; you may find that a different sequence works as well as this one.

<p><b>Year 1, Fall</b>                      Biology 1010 or Biology 1020                      Mathematics 1410                      Mathematics 1560                      Physics 1000 or Physics 1050                      GLER course</p>	<p><b>Year 1, Spring</b>                      Mathematics 2560                      Physics 2000                      Physics 2130                      Computer Science 1620                      GLER course</p>
<p><b>Year 2, Fall</b>                      Chemistry 1000                      Mathematics 2570                      Physics 2120                      Physics 2800                      GLER course</p>	<p><b>Year 2, Spring</b>                      Mathematics 2580                      Physics 2150                      Physics 2925                      GLER course                      GLER course</p>
<p><b>Year 3, Fall</b>                      Physics 3150                      Physics 3175                      Physics 3200                      Physics 3925                      GLER course</p>	<p><b>Year 3, Spring</b>                      Physics 3400                      Physics 3750                      Physics 3800                      GLER course                      GLER course</p>
<p><b>Year 4, Fall</b>                      Physics 4175                      Physics 3000/4000 level                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective</p>	<p><b>Year 4, Spring</b>                      Physics 4150 or Physics 4200                      Physics 3000/4000 level                      Elective 3000/4000 level                      Elective 3000/4000 level                      Elective</p>

*Note: Students are advised to consult with the Department of Physics and Astronomy regarding the sequencing of courses.*

## Terms Used

**GLER course:** A course that could count toward the General Liberal Education Requirement. You may use courses in your major towards this 12-course requirement. See the 2013/2014 University of Lethbridge Calendar, Part 4 - Academic Regulations (p. 88) for complete information.

The Faculty of Arts and Science offers Liberal Education 1000 and 2000, specifically designed to introduce first-year students to the wide scope of human knowledge and teach essential university success skills, critical thinking, and integrative thinking (see the 2013/2014 University of Lethbridge Calendar, Part 14 - Courses, p. 307). LBED 1000 and 2000 may be used toward satisfying the GLER.

**Elective:** A course that you may choose freely from all those available and applicable to your program. Use courses inside or outside your major, bearing in mind any restrictions that may apply (e.g., a maximum of 24 courses from any one discipline).

