### COURSES

#### First Year Courses

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<th>Credits</th>
<th>Grade</th>
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- LE/EECS 1541 or LE/EECS 1011
- Introduction to Computing for the Physical Sciences
- or
- Computational Thinking through Mechatronics

- SC/CHEM 1000 or SC/CHEM 1001
- Chemical Structure
- or
- Chemical Dynamics

In lieu of LE/ESSE 1010 3.00, may complete LE/ESSE 1012 3.00
E-mail daniella.primi@lassonde.yorku.ca for enrolment permission

- LE/ESSE 1010 3.00
- The Dynamic Earth and Space Geodesy

- LE/ESSE 1011 3.00
- Introduction to Atmospheric Science

- SC/MATH 1013 3.00
- Applied Calculus I

- SC/MATH 1014 3.00
- Applied Calculus II

- SC/MATH 1025 3.00
- Applied Linear Algebra

- SC/PHYS 1070 3.00
- Astronomy

- SC/PHYS 1011 3.00
- Physics I

- SC/PHYS 1012 3.00
- Physics II

#### Second Year Courses

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- LE/EECS 2501 3.00
- Fortran and Scientific Computing

- LE/ESSE 2030 3.00
- Geophysics and Space Science

- LE/ESSE 2470 or LE/CIVL 2210 3.00
- Introduction to Continuum Mechanics
- or
- Fluid Mechanics

- SC/MATH 2015 3.00
- Applied Multivariate & Vector Calculus

- SC/MATH 2271 3.00
- Differential Equations for Scientists and Engineers

- SC/PHYS 2010 3.00
- Classical Mechanics

- SC/PHYS 2020 3.00
- Electricity and Magnetism

- SC/PHYS 2030 3.00
- Computational Methods for Physicists and Engineers

- SC/PHYS 2040 3.00
- Relativity and Modern Physics

- SC/PHYS 2060 3.00
- Optics and Spectra

- SC/PHYS 2213 3.00
- Experimental Physics with Data Analysis

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**Note:** For students transferring into the EATS program, the following are acceptable substitutes for the 6 credit foundational science (physics) requirement: SC/PHYS 1800 3.00 and SC/PHYS 1801 3.00; or SC/ISCI 1310 6.00; or SC/ISCI 1301 3.00 and SC/ISCI 1302 3.00; or any of the following with a minimum grade of C in each course: SC/PHYS 1410 6.00; SC/PHYS 1420 6.00; SC/PHYS 1411 3.00 and SC/PHYS 1412 3.00; SC/PHYS 1421 3.00 and SC/PHYS 1422 3.00.

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Students interested in space astronomy and space exploration should contact the Department of Physics and Astronomy in the Faculty of Science.
### Third Year Courses

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<tr>
<th>COURSES</th>
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<tbody>
<tr>
<td>LE/ESSE 3030 3.00 Atmospheric Radiation and Thermodynamics</td>
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<tr>
<td>LE/ESSE 3040 3.00 Atmospheric Dynamics I</td>
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<tr>
<td>LE/ESSE 3280 3.00 Physics of the Space Environment</td>
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<tr>
<td>LE/ESSE 3600 3.00 Geographical Information Systems (GIS) and Spatial Analysis</td>
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<tr>
<td>LE/ESSE 3610 3.00 Geodetic Concepts</td>
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<tr>
<td>SC/MATH 3241 3.00 Numerical Methods I</td>
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<tr>
<td>SC/MATH 3271 3.00 Partial Differential Equations</td>
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3.00 Credits - Non-Science Requirement

### Fourth Year Courses

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<tbody>
<tr>
<td>LE/ESSE 4020 3.00 Time Series and Spectral Analysis</td>
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<tr>
<td>LE/ESSE 4220 3.00 Remote Sensing of the Earth's Surface</td>
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<tr>
<td>LE/ESSE 4230 3.00 Remote Sensing of the Atmosphere</td>
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<tr>
<td>LE/ESSE 4361 3.00 Space Mission Design</td>
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At least 15.00 credits from:
LE/ESSE 3670 3.00, LE/ESSE 4000 3.00, LE/ESSE 4110 3.00, LE/ESSE 4130 3.00, LE/ESSE 4140 3.00, LE/ESSE 4160 3.00, LE/ESSE 4360 3.00, LE/ESSE 4630 3.00, SC/PHYS 4330 3.00

3.00 Credits - Non-Science Requirement

### General Education Requirement:

- **non-science requirement:** 12 credits from the approved list of courses and subject areas in your Academic Calendar;
- **mathematics:** SC/MATH 1013 3.00; SC/MATH 1014 3.00;
- **computer science:** LE/EECS 1011 3.00 or LE/EECS 1541 3.00;
- **foundational science:** SC/PHYS 1011 3.0 and SC/PHYS 1012 3.0 (see approved course substitutes for transfer students)

### Major Requirements

- the EATS program core, as specified above (19 credits);
- **Science breadth:** satisfied by above requirements.

### Upper level requirement:

- A minimum of 42 credits at the 3000 level or higher.
- **Additional elective credits, as required,** for an overall total of 120 credits.
- **Standing requirements:** a minimum cumulative credit-weighted grade point average of 5.00 (C+) over all courses completed.

All Honours BSc degree candidates are encouraged to complete a non-credit industrial internship (normally salaried). This provides experience in a four-month to 12-month placement, normally after the third year of study.

Note: Alternatively the first year engineering core would be an acceptable substitute for the first year courses.