

# Second year in Physics and Astronomy



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3<sup>rd</sup>- and 4<sup>th</sup>-year advisor: Janis McKenna

Astronomy advisor: Ingrid Stairs

Biophysics Advisor: Vesna Sossi

Combined Major in Science: any PHAS Advisor

Program coordinator: [Kirsty Dickson](mailto:Kirsty Dickson) [ugcoord@phas.ubc.ca](mailto:ugcoord@phas.ubc.ca)

All of us are here to offer advice, help with any program/course issues.

## 2<sup>nd</sup> Year – gateway to PHAS programs

In 2<sup>nd</sup> year, you entered one of our Programs:

- ★ Honours Physics
- ★ Combined Honours/Major Physics plus another Science
- ★ Major Physics, Major Astronomy
- ★ Dual Degree Program – BSc (Physics) & BEd (Secondary)  
BSc (Physics) & B Arts  
BSc (Physics) & B Music
- ★ You may be in another program doing a Minor in Physics

Or in 3<sup>rd</sup> year, you may enter:

**Combined Major in Science** & choose a Phys and Astro “package”

# Graduation Requirements

**You** are responsible for knowing your graduation requirements.

Consult UBC Calendar and Faculty of Science online:

<http://www.science.ubc.ca/students/degree>

[www.calendar.ubc.ca/vancouver](http://www.calendar.ubc.ca/vancouver)

Then look under “**Faculties, Colleges and Schools**” then  
“**Science**” then “**Physics**” or “**Astronomy**”

Arts Electives, Science Electives, Science Breadth Requirement, Communication/English requirements are all necessary to graduate.

**Use Degree Navigator in SIS** to help you check that you’re meeting your program requirements. At end of 3<sup>rd</sup> year come get a “**Graduation Check**” from **Science Advising**, and/or our **PHAS Undergraduate Co-ordinator**

# BSc Graduation Requirements

## Summary of Program Requirements Science

	Major, Combined Major, or General Science	Major+Minor In Science	Major+Major (Science)	Honours or Combined Honours	Honours+Minor In Science
Minimum Total Credits	120	120	120	132	132
of which courses 300+	48	48	60	48	60
Minimum Total Science Credits	72	72	72	72	72
of which courses 300+	30	42	54	42	54
Minimum Total Arts Credits	12	12	12	12	12
<u>Maximum Credits that can be double counted</u>	-	6	6	-	6
Maximum credits not in Science or Arts	24	24	24	24	24

All Majors BSc: 120 credits

All Honours BSc: 132 credits

### Science Breadth requirement – all BSc degrees 2020+

(3<sup>rd</sup> and 4<sup>th</sup> year students may go by old program requirements in 2016-2018 Calendar)

**Majors, Honours:** 3 cr from 6 of the 7 Science Categories

**Combined Majors, Combined Honours:** 3 cr from 5 of the 7 Science Categories

Categories: MATH, PHYS, CHEM, CPSC, (STAT/DSCI)\*, BIOL\*, (EOSC/ASTR/ATSC, GEOB, ENVR)\*

\* some special cases/exceptions, see <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,215,410,1663>

# Honours

**For those intending to enter career in research or continue to graduate school.**

Honours degrees require a 6 credit Honours thesis.

- Honours Physics
- Honours Biophysics
- Honours Physics and Astronomy
- Honours Physics and Mathematics
- Honours Computer Science and Physics
- Honours Chemical Physics
- Honours Physics and another Science Subject

(We can help you formulate and get approval for a program which meets all Honours requirements, Faculty of Science requirements and UBC graduation requirements)

## **All Honours Science Degrees:**

- **Must take at least 30 credits Sept-April (or 15 credits/term if co-op)**
- **Must maintain average >68% each academic year**
- **Must not fail any courses.**

# Major Degrees

★ **For those intending to enter career in science/technology, education, science-related.**

★ MAJOR is NOT the recommended stream for graduate studies, although Majors who take ALL the core senior honours physics courses + have research experience have been accepted to graduate schools.

★ Offers more flexibility than Honours (more electives)

★ Fewer total credits (120 in Major, 132 in Honours)

★ “Easy” to fit in a Minor (Minor could be in Arts, Commerce, Science.)

- Major Physics
- Major Astronomy
- Combined Major Physics and Computer Science
- Combined Major Physics and Oceanography
- Double Major in Science and Arts

# Dual Degree

★ **For those intending to add a second specialization outside of Science.**

★ NOT the recommended stream for graduate studies, although students who take all core senior honours physics courses may be accepted to graduate schools.

- Dual Degree Science and Arts **BSc(Physics) & BA**
- Dual Degree Science and Music **BSc(Physics) & BMus**
- Dual Degree Science and Education

**5 year program:**

**Dual Degree Program: BSc(Physics) BEd (Secondary)**

Graduate with qualifications/certification to accept teaching position

# Combined Major in Science

<http://cms.science.ubc.ca/>

- ★ Broad-based Science education
- ★ Maximum flexibility, allows for large breadth
- ★ Choose 3 CMS “packages” or specializations
- ★ **NOT** for those planning for graduate studies in Physics/ Astronomy

## **Physics and Astronomy CMS Package**

### *1. Physics Option*

Prerequisites: MATH 200; PHYS 117 (or 101 or 107); PHYS 118/119 (or 102 or 108/109); PHYS 200.  
PHYS 219, 229 and MATH 215 recommended

Package Courses: 3 credits of PHYS numbered 300 or higher (except: PHYS 348) and 6 credits  
PHYS or ASTR courses numbered 300 or higher (except: PHYS 348).

Recommended Courses: PHYS 301, 304, 305, 309, 312, 314, 315, 318, 319, 330, 333, 404, 405, 420

### *2. Astronomy Option*

Prerequisites: (MATH 200, MATH 317) or MATH 217; MATH 215; PHYS 117 (or PHYS 101 or PHYS 107); PHYS 118 (or PHYS 102 or PHYS 108); PHYS 200; PHYS 203; PHYS 216. PHYS 210, ASTR 200, and ASTR 205 recommended

Package Courses: 6 credits from ASTR 300, 333, 403, 406, 407 and 3 credits of PHYS numbered 300 or higher

Other “Packages”:

Chemistry, Earth/Environmental Science, Life Science, Mathematical Science



# Minor (outside Physics/Astronomy)

- ★ Pick up a second specialization
- ★ Relatively easy to add a Minor to a Major Physics or Major Astronomy due to more flexibility in Majors program and courses
- ★ With planning: add a Minor to Honours Physics
- ★ Not much “elective room” to add a minor to Combined Honours or Combined Majors program – but it has been done.
  - Minor in another Science
  - Minor in any Arts subject (Economics, Philosophy, a language, often seen in PHAS, but any Arts minor possible)
  - Minor in Commerce
  - Minor in Human Kinetics
  - Minor in Land and Food Systems

Typically need 18 upper level (300- 400-level) credits

Some Arts Minors require 30 credits, 18 of which must be upper level.

To apply for Minor: download forms from Faculty Science website.

# Work/Research Opportunities for PHAS undergrads

**UBC PHAS undergraduates have participated in paid research, including:**

- **Co-op** <http://www.sciencecoop.ubc.ca/> (4-, 8-, or 12- month co-op jobs)  
(everything on this page except Work Learn (part-time) are valid for co-op workterms)
- **NSERC USRA** (Undergrad Student Research Award)  
[https://www.nserc-crsng.gc.ca/students-etudiants/ug-pc/usra-brpc\\_eng.asp](https://www.nserc-crsng.gc.ca/students-etudiants/ug-pc/usra-brpc_eng.asp)
- **TRIUMF** Summer student program (and 4-, 8- or 12-month co-op jobs)  
<http://www.triumf.ca/undergraduate-student-program>
- **NRC** (National Research Council Canada)  
[http://www.nrc-cnrc.gc.ca/eng/careers/programs/student\\_employment.html](http://www.nrc-cnrc.gc.ca/eng/careers/programs/student_employment.html)
- **DAAD RISE** (German Research Internships in Science and Engineering <http://www.daad.de/rise/en/> UBC is a DAAD partner
- **UBC Go Global - Research Abroad**  
<http://students.ubc.ca/career/international-experiences/research-abroad>  
More Go Global international experiences <http://students.ubc.ca/career/international-experiences>
- **UBC SURE** (Science Undergraduate Research Experience):  
<http://science.ubc.ca/giving/projects/sure-science-undergraduate-research-experience>
- **IAESTE** (International Association for the Exchange of Students for Technical Experience: <http://www.iaeste.org>  
(Canadian IAESTE office: <http://iaestecanada.org/> )
- **UBC Work Learn Program** paid, max 10 hours/week while fulltime student