

UW Students take many paths to their physics degree. While a plurality of recent graduates finished 3.75 years after their first UW quarter, only 27% did so; about 15% of recent graduates took Physics 121 in their first quarter at UW; fewer than 5% did both. Below are several options to help you build a path to your degree depending on your preparation, desired degree option (or track) and post-graduation goals. Note these paths only include courses directly related to your physics degree – you still need to fit in your college distribution requirements.

If you plan on a physics major, first few quarters are the same, independent of degree option; you don't need to decide on your option (comprehensive, applied, biological, teaching) until you declare your major. You must complete one year of introductory physics and one year of calculus before you can declare a physics major. Both these sequences are available at community college and are offered every quarter at UW. A strong performance in AP, IB or A-level physics course (or Phys 114), is often suitable as a substitute for Phys 121, occasionally suitable for Phys 122, and rarely suitable for Phys 123. The honors introductory sequence is offered once each year, starting in the autumn, and assumes students are ready to learn rapidly and appreciate excursions into material not in the text. Honors is often a good option for students who completed a high school physics program with AP, IB or A-level credit, but who want to reinforce that knowledge at UW.

Students who arrive on campus placing into MATH 120 should join the Freshman Interest Group that pairs MATH 120 with PHYS 101, which gives a conceptual introduction to physics. This would then be followed by Math 124 in winter, and PHYS 121 paired with MATH 125 in the spring. They would then follow one of the paths below for starting with PHYS 122 or PHYS 123 in the Autumn. The PHYS 121 sequences that start in autumn and spring are roughly the same number of students.

In 2018-19, students who took MATH 124 and PHYS 121 concurrently did slightly better in MATH 124 (median 3.3) and slightly worse in PHYS 121 (median 3.0) than other students taking either class (median 3.1). The 6% of students who took MATH 126 concurrently with PHYS 123 did slightly worse in MATH 126 (median 2.9) and the same in PHYS 123 (median 3.1) as the rest of the class (median 3.1). Most students choose to take 1-2 quarters of calculus before starting PHYS 121, whether in high school, community college, or at UW.

For simplicity, most of the plans below assume students take Math 124 and Phys 121 at the same time. If you start with a higher level math class concurrent with Phys 121, simply substitute whatever math class you are ready for whenever there is a math option on the plan.

The most options are shown for the comprehensive track, but most can easily be modified for the teaching and applied tracks.

**Legend:** **BOLD** = required; **red** = lab; **green** = specific electives, **blue** = math, *italics* = choose one or more, regular type = recommended, but not required

## Comprehensive Track

The official physics degree requirements may be completed in three years. Students aiming for graduate school should spend a fourth year taking more advanced courses in physics or related fields, since graduate schools like to see (high) grades for the core 300-level courses on your application and the 400-level labs and courses introduce you to different areas of physics before you specialize. Alternatively, students can explore other majors in their first year before deciding on physics, take non-physics classes in their last year that prepare them for life and career goals in cognate fields, or spread the courses out to accommodate non-academic interests and obligations.

It is possible to complete a physics degree in 2 yrs after completing 121-2-3 and most distribution requirements at community college. However, this is rare. Most students take a third year. Students should plan on a third year if they are headed for graduate school or want a deeper grounding in physics.

## Comprehensive Track – 4 Year Plan

(or Transfer having finished Phys 121-122-123 and Math 124-125-126, plus 3 yrs)

Year	Summer	Autumn	Winter	Spring
Yr 1		<b>121 or 121H</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Math 126/136</b>
Yr 2		<b>224</b> <b>227 or Math 334</b> 231 <b>Math from menu</b>	<b>225</b> <b>228</b> <b>294</b> <b>334</b> (lab) <b>Math from menu</b>	<b>226</b> <b>335</b> (lab) Math from menu (opt) <i>Astro 321</i>
Yr 3	Local Research	<b>321</b> <b>324</b> <b>331 or 434</b> <i>Astro 322</i>	<b>322</b> <i>325</i> research <i>Astro 323</i>	<i>323</i> <i>329</i> research
Yr 4	Offsite Research (REU)	<i>328</i> 422 <b>433</b> <b>434</b> <i>485/494/research</i> special topics	423 429 <b>431</b> <i>486/495/research</i> special topics	421 <b>432</b> <i>487/496/research</i> special topics

**Note:** Students who have completed both Differential Equations (Math 307/AMath 351) and Linear Algebra (Math 308/AMath 352) in their first year may take Phys 225 in the autumn of Yr 2; they may then wish to take Phys 224 in spring. The order of PHYS 226 and PHYS 329 is flexible. Honors Math 334 may substitute for PHYS 227.

**Start with credit for PHYS 121/MATH 124, Grad School Bound in 4 yrs**

4 yrs at UW OR Comprehensive degree in 3 years (+gap year before grad school)

Year	Summer	Autumn	Winter	Spring
Yr 1		<b>122</b> <b>Math 125</b>	<b>123</b> <b>Math 126</b>	<b>224</b> <b>227</b> <b>Math from menu</b>
Yr 2	Local Research	<b>225</b> <i>AMath 301, Astro 300</i> <b>Math from menu</b> <i>328, Astro 322</i>	<b>294</b> <b>228</b> <b>334</b> (lab) <i>Astro 323</i>	<b>226</b> or <i>329</i> <b>335</b> (lab) Math from menu (opt) <i>329, Astro 321</i>
Yr 3	Local or Offsite Research	<b>321</b> <b>324</b> <i>331</i> or <i>434</i> <i>328, Astro 322</i>	<b>322</b> <i>325</i> <i>431</i> research <i>Astro 323</i>	<i>323</i> <b>226</b> or <i>329</i> <i>432</i> research
Yr 4	Offsite Research (REU)	422 <i>433, 434</i> <i>485/494/research</i> special topics	423, 429 <i>431</i> <i>486/495/research</i> special topics	421 <i>432</i> <i>487/496/research</i> special topics

**Start with credit for PHYS 121/MATH 124, Grad School Bound in 3 yrs**

Option 1: No Summers

Year	Summer	Autumn	Winter	Spring
Yr 0		(PHYS 101) (MATH 120) (Pre-MAP)	(MATH 124)	<b>121</b> <b>MATH 125</b>
Yr 1		<b>122</b> <b>Math 126</b>	294 <b>123</b> AMath 301 <b>Math from menu</b>	<b>224</b> <b>227</b> <b>Math from menu</b>
Yr 2	Local research or internship	<b>321</b> <b>225</b> <i>328</i> research	<b>322</b> <b>228</b> <b>334</b> research	<b>226</b> <i>323</i> <i>329, Astro 321</i> <b>335</b> research
Yr 3	Off-site REU	<b>324</b> <i>328</i> <i>331, 433</i> 422, Special topics <i>485/494/research</i>	<i>325</i> 423, 429 <i>431</i> Special topics <i>486/495/research</i>	421 <i>432</i> Special topics <i>486/495/research</i>

## Option 2: Courses in first Summer (allows more advanced classes)

Year	Summer	Autumn	Winter	Spring
Yr 0		(PHYS 101) (MATH 120) (Pre-MAP)	(MATH 124)	<b>121</b> <b>MATH 125</b>
Yr 1		<b>122</b> <b>Math 126</b>	294 <b>123</b> AMath 301 <b>Math from menu</b>	<b>224</b> <b>227</b> <b>Math from menu</b> <i>Astro 321</i>
Yr 2	<b>225</b> <b>228</b> <b>334*</b>	<b>321</b> <b>324</b> <i>331, 434</i> <i>Astro 322</i>	<b>322</b> <i>325</i> Research <i>Astro 323</i>	<b>226 a/o 329</b> <i>323</i> research
Yr 3	Local or Offsite Research	<i>328</i> <i>407, 422</i> <i>331, 433, 434</i> cognate sci 485/494/research special topics	<i>408, 423, 429</i> <i>431</i> cognate sci 485/494/research special topics	<b>226 a/o 329</b> <i>409, 421</i> <i>432</i> cognate sci 485/494/research special topics

\* or in winter

## Not Grad School Bound – Comprehensive in 3 yrs

## Option 1: Minimal major, No summers

Year	Summer	Autumn	Winter	Spring
Yr 1		<b>121 or 121H</b> <b>Math 124</b>	<b>122 or 122H</b> <b>Math 125</b>	<b>123 or 123H</b> <b>Math 126</b>
Yr 2		<b>224</b> <b>227</b> 231 <b>Math from menu</b>	<b>225</b> <b>228</b> <b>294</b> <b>334</b> <b>Math from menu</b>	<b>226</b> <b>335</b> (lab) <b>329, Astro 321</b>
Yr 3		<b>321</b> <b>324</b> <b>328, Astro 322</b> <b>331, 433, 434</b> research/494	<b>322</b> <b>325, Astro 323</b> cognate subj. research/495	<b>323, 329, Astro 321</b> cognate subj research/496

## Option 2: Minimal major, Including Summer to spread things out

Year	Summer	Autumn	Winter	Spring
Yr 1		<b>121</b> <b>Math 124</b>	<b>122</b> <b>Math 125</b>	<b>123</b> <b>Math 126</b>
Yr 2	<b>334</b> <b>224</b> <b>Math from menu</b>	231, <i>AMath 301</i> <b>227</b> <b>Math from menu</b>	<b>225</b> <b>228</b> <b>294</b>	<b>226</b> <b>321</b> <b>335, 432</b> <b>329, Astro 321</b>
Yr 3	<b>322</b> <b>Lab or 324</b>	<b>328</b> <b>324 or 331/433/434</b> research/494	<b>325</b> <b>431</b> research/495	<b>329, Astro 321</b> cognate subj research/496

Arrive needing 122 or 123 – Graduate Comprehensive in 2 years

Not recommended if heading for graduate school in physics. Not recommended if still need multiple distribution requirements.

Option 1: Arrive in autumn, needing Phys 123, or in Summer, needing 122.

Year	Summer	Autumn	Winter	Spring
Yr 1	<b>122</b>	<b>123</b> Math <b>126</b>	<b>294</b> <b>334</b> Math from menu	<b>224</b> <b>227</b> <b>335</b> Math from menu cognate sci
Yr 2	<b>225</b> <b>228</b>	<b>321</b> <b>324</b> <i>328, Astr 322</i> <i>331, 434</i> cognate sci research/494	<b>322</b> <i>325, Astr 323</i> <i>431</i> 423, 429, Cognate research/495	<b>226</b> <i>323, 329, Astro 321</i> 421, Cognate research/496

Option 2: Arrive in autumn, needing Phys 122 (or take 121 in spring and want to finish)

Year	Summer	Autumn	Winter	Spring
Yr 1		<b>122</b> Math <b>126</b>	<b>123</b> <b>294</b> Math from menu	<b>224</b> <b>227</b> Math from menu
Yr 2	<b>225</b> <b>228</b> <b>334</b>	<b>321</b> <b>324</b> <i>331, 434</i> <i>328, cognate sci</i> research/494	<b>322</b> <i>325</i> <i>431</i> 423, 429, Cognate research/495	<b>226</b> <i>323 a/o 329</i> <i>432, 335</i> research/496

## Applied Physics Track

### 4 Year Plan for Applied Track – Start 121 when arrive

Year		Autumn	Winter	Spring
Yr 1		<b>121 or 121H</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Math 126/136</b>
Yr 2		<b>224</b> <b>227</b> <b>231</b> <b>Math from menu</b>	<b>225</b> <b>294</b> <b>334</b> <b>228, Math menu</b>	<b>226, 329</b> Elective <b>335</b> AMath 301
Yr 3	Research/ Internship	<b>321</b> <b>331, 434</b> Elective ( <b>324,328</b> ) Math Menu	<b>322</b> Elective research cognate subj	<b>226, 323, 329</b> research
Yr 4	Research/ Internship	phys/cognate subj. <b>331, 433, 434</b> <b>485/494/research</b> special topics	phys/cognate subj. <b>431</b> <b>486/495/research</b> special topics	phys/cognate subj. <b>432</b> <b>487/496/research</b> special topics

### 4 Year Plan for Applied Track – Start 121 in Spring

Year		Autumn	Winter	Spring
Yr 1		Intro Science** <b>Math 124/134</b>	<b>Math 125/135</b>	<b>121</b> <b>Math 126/136</b>
Yr 2		<b>122</b> <b>Math from menu</b>	<b>123</b> <b>AMath 301</b> <b>Math from menu</b>	<b>224</b> <b>227</b> <b>Math from menu</b>
Yr 3	Research/ Internship	<b>321</b> <b>225</b> <b>231</b> Cognate elective Research/extra curr.	<b>322</b> <b>228, Math menu</b> <b>294</b> <b>334</b> Research/extra curr.	<b>226, 323, 329†</b> <b>335</b> Research/extra curr.
Yr 4	Research/ Internship	324† phys/cognate subj. <b>331, 433, 434</b> <b>485/494/research</b>	phys/cognate subj. <b>431</b> <b>486/495/research</b>	phys/cognate subj. <b>432</b> <b>487/496/research</b>

\*\* Can also start with PHYS 101 + MATH 120, then MATH 124 in winter, and shift remaining math one quarter.

†requires 228

## 3 Year Plan for Applied Track – No Summers; Start 121 in Autumn

Year		Autumn	Winter	Spring
Year 1		<b>121 or 121H</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Math 126/136</b>
Year 2		<b>224</b> <b>227</b> <b>231</b> <b>Math from Menu</b>	<b>225</b> <b>294</b> <b>334 (lab)</b> <b>228 or Math Menu</b>	<i>226, 329<sup>†</sup></i> <b>335</b> <b>AMath 301</b>
Year 3		<b>321</b> <i>331, 433, 434</i> <i>324<sup>†</sup>, 328</i> <b>485/494/research</b>	<b>322</b> Elective <b>431</b> <b>486/495/research</b>	<i>226, 323, 329</i> <i>432</i> <b>487/496/research</b>

## 3 Year Plan for Applied Track – Including Summer; Start 121 in Autumn

Year		Autumn	Winter	Spring
Year 1		<b>121 or 121H</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Math 126/136</b>
Year 2		<b>224</b> <b>227</b> <b>231</b> <b>Math from Menu</b>	<b>225</b> <b>294</b> <b>334 (lab)</b> <b>228 or Math Menu</b>	<b>321</b> <b>335</b> <b>AMath 301</b>
Year 3	<b>322</b>	<i>331, 433, 434</i> <i>324<sup>†</sup>, 328</i> <b>485/494/research</b>	Elective <b>431</b> <b>486/495/research</b>	<i>226, 323, 329</i> <i>432</i> <b>487/496/research</b>

## 2 Year Applied Track Degree after Community College. Start with 122 or 123

Year		Autumn	Winter	Spring
Yr 1		<b>122 or 123</b> <b>Math 126 or Menu</b>	<b>(123)</b> <b>294</b> <b>AMath 301</b> Elective <b>Math from menu</b>	<b>224</b> <b>227</b> <b>Math from menu</b>
Yr 2	<b>225 a/o 231</b> <b>228 or Math Menu</b>	<i>324<sup>†</sup>, 328</i> <b>321</b> <b>231 a/o 225</b> <i>331, 434</i> <b>research/494</b>	<b>322</b> <b>334</b> Elective <b>research/495</b>	<i>226, 323, 329<sup>†</sup></i> <i>335, 432</i> 1 or 2 Electives <b>research/496</b>

<sup>†</sup>requires 228



### Intensive Year to complete degree if double in STEM major that covers electives

Assumes have completed Phys 121, 122, 123; Math 124, 125, 126, 307, 308; cognate electives

Year	Autumn	Winter	Spring	Summer
Yr 4	<b>224</b> <b>227</b> <b>231</b> <b>AMath 301</b>	<b>225</b> <b>228 or math menu</b> <b>334</b> <b>294</b>	<b>321</b> <i>226, 329</i> <i>335*, 432*</i> <b>research</b>	<b>322</b> <i>Lab*</i> <i>324</i>

\*you may petition for one advanced lab in cognate science or engineering

## Biophysics Track

### Standard 4 Yr Path – Biophysics Degree

Some classes on here are optional, but recommended for grad school

		Autumn	Winter	Spring
Yr 1		<b>121 or 121H</b> <b>Chem 142</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Chem 152</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Chem 162</b> <b>Math 126/136</b>
Yr 2		<b>224</b> <b>227</b> <b>Math from Menu</b> <b>Bio 180</b>	<b>225</b> <b>228</b> <b>294</b> <b>Bio 200</b>	<i>226, 329</i> <b>(321)*</b> Bio 220 Add. math
Yr 3	<b>(322)*</b>	<b>(321)*</b> <b>324</b> <b>328, Chem 237</b>	<b>(322)*</b> <i>325</i> <b>334</b> <b>429, Chem 238</b>	<i>226, 323 or 329</i> <i>Add'l Bio/Chem</i> <b>research</b>
Yr 4	REU	<b>328</b> Add. Bio/Chem/Phys <b>434</b> special topics <b>research</b>	Add. Bio/Chem 423 a/o <b>431</b> <b>429</b> <b>research</b>	Add. Bio/Chem 421 a/o <b>432</b> special topics <b>research</b>

\*If you can take 322 in the summer, it is better to take 321/322 Sp/Su than taking 321, 324 and statistical mechanics or organic chemistry simultaneously in the fall.

### Minimum Biophysics Degree 3 year plan

Also OK as 2-yr plan from transfer if have completed intro physics, chemistry and math.

		Autumn	Winter	Spring
Yr 1		<b>121 or 121H</b> <b>Chem 142</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Chem 152</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Chem 162</b> <b>Math 126/136</b>
Yr 2		<b>224</b> <b>227</b> <b>Math from Menu</b> <b>Bio 180</b>	<b>225</b> <b>228</b> <b>294</b> <b>Bio 200</b>	<i>226, 329</i> <b>(321)*</b> Add'l Bio/Chem
Yr 3	<b>(322)*</b> <b>(324)*</b>	<b>(321)*</b> <b>(324)*</b> <b>328</b>	<b>(322)*</b> <b>334</b> <b>429</b> <b>research</b>	<i>226, 323, 329</i> Add'l Bio/Chem <b>research</b>

\*If you can take 322 in the summer, it is better to take 321/322 Sp/Su than taking 321, 324 and statistical mechanics or organic chemistry simultaneously in the fall.

## Teaching Preparation Track

### 4-year Plan – Teaching Track.

Includes courses recommended for breadth, but not required for graduation

Yr 1		<b>121 or 121H</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Math 126/136</b>
Yr 2		<b>224</b> <b>227 or Math 334</b> 231 <b>Math from menu</b>	<b>225</b> <b>228</b> <b>294</b> <b>334</b> (lab) <b>Math from menu</b>	<b>226</b> <b>335</b> Math from menu (opt) <i>Astro 321</i>
Yr 3	Local Research	<b>321</b> <b>324</b> <b>331, 434</b> <i>Astro 322</i>	<b>322</b> <i>325</i> research Intro. Chem/Bio	<i>323, 329</i> Intro. Chem/Bio research
Yr 4	Offsite Research (REU)	<i>328</i> <b>407</b> <i>Teaching/PER</i> special topics	<b>408</b> <i>423, 429</i> <i>Teaching/PER</i> special topics	<b>409</b> <i>421</i> <i>Teaching/PER</i> special topics

### Teaching Preparation Track – 3 yr plan

Includes some courses recommended for breadth, but not required for graduation

Year		Autumn	Winter	Spring
Year 1		<b>121 or 121H</b> <b>Math 124/134</b>	<b>122 or 122H</b> <b>Math 125/135</b>	<b>123 or 123H</b> <b>Math 126/136</b>
Year 2	(224)	<b>224</b> <b>227</b> <b>Math Menu</b>	<b>225</b> <b>294</b> <b>334</b> <b>228</b>	<b>226</b> <b>321</b> <b>335</b> a/o Math Menu
Year 3	<b>322</b> <b>324</b>	<b>407</b> <i>328</i> <b>331 or 434</b> teaching	<b>408</b> <i>325</i> Intro. Chem/Bio teaching/research	<b>409</b> <i>323</i> Intro. Chem/Bio Teaching/research