

Summer Prep Resources for Incoming SIO Graduate Students

For some of you, your first year curriculum may include topics and material that you studied minimally or not reviewed in years. Previous first-year students suggested that by compiling a list of online resources, incoming students could benefit from a self-directed summer refresher before beginning courses in the fall.

The following resources were compiled based on student and instructor feedback and suggestions. There are a number of resources; from basic websites to open-source courses to video tutorials.

Given that you all are coming from different academic backgrounds and that your preparation level for any given subject will vary, there is no suggested course of action. Please do take some time to poke around these resources. It is our hope that your cohort will be able to help refine this list as you complete your first year of courses.

Chemistry:

1. General Review:

<https://www.khanacademy.org/science/chemistry>

<http://chemistry.about.com/od/chemistry101/>

2. Periodic Table of Elements in the Ocean:

<http://www.mbari.org/chemsensor/pteo.htm>

3. Organic and Inorganic Chemistry:

<http://ocw.mit.edu/courses/find-by-topic/#cat=science&subcat=chemistry>

Math:

1. Linear Algebra Basics:

<https://www.youtube.com/watch?v=xyAuNHPsq-g&list=PLFD0EB975BA0CC1E0>

Sessions 1, 2, 3, 4, 7, 10, 11, 25, 27, 28, 29, 30, 31, 32, 94, 136, 137, 138, & 139

2. Calculus Basics:

<https://www.youtube.com/watch?v=EKvHQc3QEow&list=PL19E79A0638C8D449>

Sessions 1, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 42, 43, 49, 58, 59, 60, 66, 67, 68, 69, 70, 71, 76, & 94

3. Differential Equations:

<http://ocw.mit.edu/courses/mathematics/18-03sc-differential-equations-fall-2011>

3. Statistics Basics:

https://www.youtube.com/watch?v=uhxtUt_-GyM&list=PL4C863861E3B2E380

Sessions 1, 2, 3, 4, 5, 7, 8, 9, 10, 13, 14, 17, 18, 19, 28, 30, 35, 37, 38, 39, 42, 48, 49, 50, 52, 53, 54, 56, & 60

Physics:

1. Introduction to Vectors and Scalars:

<https://www.youtube.com/watch?v=ihNZlp7iUHE&list=PLAD5B880806EBE0A4&index=1>

Sessions 1, 24, 32, 118, 119, 133, 134, & 135

2. Introduction to Classical Mechanics:

<https://www.youtube.com/watch?v=oRKxmXwLvUU&index=2&list=PLAD5B880806EBE0A4>

Sessions 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 18, 19, 20, 23, 37, 38, 39, 40, 41, 44, 45, 46, 47, 51, 52, 55, 56, 57, 58, 71, 81, 82, 83, & 84

<http://ocw.mit.edu/courses/find-by-topic/#cat=science&subcat=physics&spec=classicalmechanics>

3. Fluids & Thermodynamics:

<https://www.youtube.com/watch?v=Pn5YEMwQb4Y&index=89&list=PLAD5B880806EBE0A4>

Sessions 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, & 105

4. Electricity & Magnetism:

<https://www.youtube.com/watch?v=NXMgvrS8Gr8&list=PLAD5B880806EBE0A4&index=106>

Sessions 106, 107, 110, 121, 122, 123, 124, 125, 126, 127, & 128

5. Introduction to Waves:

<https://www.youtube.com/watch?v=NXMgvrS8Gr8&list=PLAD5B880806EBE0A4&index=106>

Sessions 136, 137, 138, 139, 140, 141, 143, 144, 145, 146, 147, 148, & 149

Programming:

1. MATLAB:

<https://www.coursera.org/learn/matlab>

<https://www.eoas.ubc.ca/~rich/>

2. Python:

<http://software-carpentry.org/lessons/>

<https://www.coursera.org/learn/python>

3. R:

<https://www.coursera.org/learn/r-programming>

<http://swcarpentry.github.io/r-novice-inflammation/>

Syllabi for Core Courses:

SIOC 210 Physical Oceanography:

https://scripps.ucsd.edu/sites/scripps.ucsd.edu/files/basic-page-education/field_attachment/2015/SIO%20210%20FA15%20Talley.pdf

SIOG 260 Marine Chemistry:

https://scripps.ucsd.edu/sites/scripps.ucsd.edu/files/basic-page-education/field_attachment/2016/SIO260%20WI16%20Barbeau.pdf

SIOB 280 Biological Oceanography:

https://scripps.ucsd.edu/sites/scripps.ucsd.edu/files/basic-page-education/field_attachment/2015/SIO%20280%20FA15%20Franks.pdf