This document lists the required and optional textbooks for Caltech courses offered during the WI 2019-20 term. Not all courses are listed. Only those courses for which the Registrar has solid information are listed.

This document is updated as more information comes in from instructors.

Please consult the Library Catalog (TIND) to view class course reserves. Course reserves are available in the Sherman Fairchild Library only. Reserve material is available for 3-hour checkout.

**Changes in the last 7 days**

ACM/EE 106B
ACM095A
ACM118
APh/Ph 115
APh156B
Ae/AM/CE/ME 102B
Bi/BE 182
EE/CS/EST 135
En/VC 117
Ge 140B
**AEROSPACE ANTHROPOLOGY**

**An 014. Introduction to Sociocultural Anthropology.**

**Instructor:** Jean Ensminger

*Required textbooks:*


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**An/PS 127. Corruption.**

**Instructor:** Jean Ensminger

*Required textbooks:*


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**APPLIED & COMPUTATIONAL MATH**

**ACM/IDS 101B. Methods of Applied Mathematics.**

**Instructor:** Oscar Bruno

*Suggested textbooks:*


*Notes for students:*

The use of the texts is recommended but optional.

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**APPLIED MECHANICS**

**APPLIED PHYSICS**

**ASTrophysics**

**Ay 021. Galaxies and Cosmology.**
 Required textbooks: 
Schneider, Peter; *Extragalactic Astronomy and Cosmology (2nd)*, Springer, 2015. ISBN: 978-3642540820

Notes for students:  
Note that this book is freely available to Caltech students in electronic form; see https://caltech.tind.io//record/898817?ln=en

**Ay 102. Physics of the Interstellar Medium.**

Instructor: Lynne Hillenbrand

Required textbooks: 

Suggested textbooks: 

**Ay 122B. Astronomical Measurements and Instrumentation.**

Instructors: Gregg Hallinan, Vikram Ravi

Suggested textbooks: 

Notes for students:  
Library ebook available -  

**BIOENGINEERING**

**BE/APh 161. Physical Biology of the Cell.**

Instructor: Robert Phillips
**Required textbooks:**

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**BIOLOGY**

**Bi 008. Introduction to Molecular Biology: Regulation of Gene Expression.**

**Instructors:** Mitchell Guttman, Elizabeth Hong

**Suggested textbooks:**

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**Bi 114. Immunology.**

**Instructors:** Pamela Bjorkman, Mary Yui

**Required textbooks:**

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**Bi 117. Developmental Biology.**

**Instructor:** Marianne Bronner Hansen

**Required textbooks:**
Gilbert, Scott, Barresi, Michael; *Development Biology (12)*, 2019. ISBN: 1605358223

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**Bi/BE 182. Animal Development and Genomic Regulatory Network Design.**

**Instructors:** Isabelle Peter Lashgari Faghani, Angelike Stathopoulos

**Suggested textbooks:**
Peter, Isabelle, Davidson, Eric; *Genomic Control Process: development and evolution*, . ISBN: 0124047297

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**Bi/CNS/NB 162. Cellular and Systems Neuroscience Laboratory.**

**Instructor:** Lindsay Bremner
**Suggested textbooks:**

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**Bi/Ch 111. Biochemistry of Gene Expression.**

**Instructors:** Judith Campbell, Carl Parker

**Required textbooks:**

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**Bi/Ge/ESE 105. Evolution.**

**Instructors:** Victoria Orphan, Robert Phillips

**Required textbooks:**

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**BUSINESS, ECONOMICS, AND MANAGEMENT**

**CHEMICAL ENGINEERING**

**ChE/BE/MedE 112. Design, Invention, and Fundamentals of Microfluidic Systems.**

**Instructor:** Rustem Ismagilov

**Required textbooks:**
Folch, Albert; *Introduction to BioMems*, ISBN: 1439818398

**Suggested textbooks:**

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**ChE/Ch 164. Introduction to Statistical Thermodynamics.**

**Instructor:** Zhen-Gang Wang

**Required textbooks:**
ChE063A. Chemical Engineering Thermodynamics.

Instructor: Richard Flagan

Required textbooks:
Milo D. Koretsky; *Engineering and Chemical Thermodynamics (2nd)*, ISBN: 9780470259610

CHEMISTRY

Ch 021B. Physical Chemistry.

Instructor: Lu Wei

Required textbooks:
Griffiths, David J.; *Introduction to Quantum Mechanics (2nd)*, ISBN: 9781107179868
Atkins, Peter W., and Freedman, Ronald S.; *Molecular Quantum Mechanics (5th)*, ISBN: 9780199541423

COMPUTATION & NEURAL SYS


Instructors: Markus Meister, Pietro Perona, Shinsuke Shimojo, Doris Tsao

Required textbooks:

CNS/Psy/Bi 102A. Brains, Minds, and Society.

Instructors: Ralph Adolphs, John O’Doherty

Required textbooks:
COMPUTER SCIENCE

CS 021. Decidability and Tractability.
Instructor: Christopher Umans

Required textbooks:

ECONOMICS

ELECTRICAL ENGINEERING

EE 112. Introduction to Signal Processing from Data.
Instructor: Palghat Vaidyanathan

Required textbooks:


EE/Ma/CS 126B. Information Theory.
Instructor: Michelle Effros

Required textbooks:
Cover & Thomas; *Elements of Information Theory*, ISBN: 9780-471241959

Suggested textbooks:
Gallager; *Information Theory and Reliable Communication*, ISBN: 9780-471290483


ENGLISH

En 086. Fiction and Creative Nonfiction Writing.
Instructor: Merrill Gerber
**Required textbooks:**

Furman, Laura (Editor); *The O.Henry Prize Short Stories 2019: The Best Short Stories of the Year (1st)*, Anchor Books, div. of Random House LLC, 2019. ISBN: 978-0525565536


**Notes for students:**

Please read a story or an essay or one of each--to see which form appeals to you.

**En 120. What Women Want: Desire and the Modern American Novel.**

**Instructor:** Catherine Jurca

**Required textbooks:**


**Notes for students:**

It is essential that you buy these editions of the required books. Not all books with the title Portrait of a Lady or Sister Carrie are the same. They need to be physical books rather than e-books that you can bring to class with you.

**En 127. Jane Austen.**

**Instructor:** Kevin Gilmartin

**Required textbooks:**

Jane Austen; *Northanger Abbey*, Penguin, . ISBN: 9780141439792

Jane Austen; *Sense and Sensibility*, Oxford, . ISBN: 0198793359


**En/VC 117. Picturing the Universe.**
Instructor: Anne Sullivan

**Required textbooks:**


Hardy, Thomas; *Two on a Tower*, Penguin,. ISBN: 9780140435368

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**ENVIRONMENTAL SCIENCE & ENGINEERING**

**GEOLOGY**

Ge/Ay 117. Bayesian Statistics and Data Analysis.

Instructor: Heather Knutson

**Required textbooks:**


**Notes for students:**

This book is also available as an Ebook through the Caltech libraries.

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**HISTORY**

H 112. The Vikings.

Instructor: Warren Brown

**Required textbooks:**


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**HISTORY AND PHILOSOPHY OF SCIENCE**

HPS/PI 124. Philosophy of Space and Time.
Instructor: Mario Georg Hubert

Required textbooks:


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HUMANITIES

Hum/En 020. Greek Epic and Drama.

Instructor: George Pigman

Required textbooks:

Homer; *The Iliad*, ISBN: 9780140275360

Mary Lefkowitz and James Romm; *The Greek Plays*, ISBN: 978-0812983098


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Hum/H 008B. Civilization, Science, and Archaeology: The Development of Science from Babylon though the Renaissance.

Instructor: Jed Buchwald

Required textbooks:


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Instructor: Warren Brown

Required textbooks:


**Hum015 (Section 1). Special Topics in Humanities.**

**Instructor:** Stefanie Sobelle

*Required textbooks:*


**Hum015 (Section 2). Special Topics in Humanities.**

**Instructor:** Stefanie Sobelle

*Required textbooks:*


*Suggested textbooks:*


**LANGUAGES**

**L 102B. Elementary French.**

**Instructor:** Christiane Orcel

*Required textbooks:*

L 106B (Section 1). Elementary Japanese.
Instructor: Megumi Fujio

**Required textbooks:**
- Ritsuko Hirai; *First Year Japanese (6)*, Pearson, . ISBN: 9781323419014
- Ritsuko Hirai; *First Year Japanese Workbook (7)*, Pearson, . ISBN: 9781323587829

L 106B (Section 2). Elementary Japanese.
Instructor: Megumi Fujio

**Required textbooks:**
- Ritsuko Hirai; *First Year Japanese Workbook (7)*, Pearson, . ISBN: 9781323587829
- Ritsuko Hirai; *First Year Japanese (6)*, Pearson, . ISBN: 9781323419014

L 110B (Section 1). Elementary Spanish.
Instructor: Daniel Garcia

**Required textbooks:**

Notes for students:
We will use one textbook [JUNTOS] during the whole academic year. You have several purchase and rental options. Please make sure to select the proper one according to the number of terms you're planning to take elementary Spanish. The option listed at the Caltech Bookstore is for those students who plan to take three terms and want a printed copy of the textbook. For all the options, visit:

L 112B. Intermediate Spanish.
Instructor: Daniel Garcia

**Required textbooks:**

Notes for students:
We will use one textbook [Rutas] during the whole academic year. You have several purchase and rental options. Please make sure to select the proper one according to the number of terms you're planning to take. For all the options, visit: https://www.cengage.com/c/rutas-intermediate-spanish-1e-velardi/

L 167. Latin Literature.
Instructor: George Pigman

**Required textbooks:**

L 170B. Introduction to Chinese.
Instructor: Xiangyun Wang

**Required textbooks:**

L 172B. Intermediate Chinese.
Instructor: Xiangyun Wang

**Required textbooks:**

Instructor: Christiane Orcel

**Required textbooks:**
Bessora (Author), Barroux (Illustrator), Sarah Ardizzone (Translator); *Alpha: Abidjan to Paris*, Bellevue Literary Press, May 2018. ISBN: 978-1942658405
Ruillier, Jérôme (Author), Dascher, Helge (Translator); *The Strange*, Drawn and Quarterly, June 2018. ISBN: 978-1770463172


Calais Writers; *Voices from the “Jungle”: Stories from the Calais Refugee Camp*, Pluto Press, June 2017. ISBN: 978-0745399706

Gaudé, Laurent (Author), Hunter, Adriana (Translator); *Eldorado*, MacAdam/Cage, July 2008. ISBN: 978-1596922976


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**MATERIALS SCIENCE**

**MS 131. Structure and Bonding in Materials.**

_Instructor:_ Marco Bernardi

*Required textbooks:*


**MATHEMATICS**

**Ma 003. Introduction to Probability and Statistics.**

_Instructor:_ Kim Border

*Required textbooks:*


**Ma 005B. Introduction to Abstract Algebra.**

_Instructor:_ Christopher Campbell

*Suggested textbooks:*


**Ma 109B. Introduction to Geometry and Topology.**
Instructor: Dmitri Gekhtman

**Required textbooks:**


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**Ma 110B. Analysis.**

Instructor: Eric Rains

**Required textbooks:**

Simon, Barry; *Comprehensive Course in Analysis, Part 2A*, 2006. ISBN: 978-1470411008

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**Ma 116B. Mathematical Logic and Axiomatic Set Theory.**

Instructor: Aristotelis Panagiotopoulos

**Suggested textbooks:**


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**Ma 121A. Combinatorial Analysis.**

Instructor: Mykhaylo Tyomkyn

**Required textbooks:**

Lint, Jacobus Hendricus van, Wilson, R. M. (Richard Michael); *A course in combinatorics*, 2001. ISBN: 0521803403


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**Ma 130B. Algebraic Geometry.**

Instructor: Daxin Xu

**Suggested textbooks:**


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**Ma 147B. Dynamical Systems.**
**Instructor:** Kirill Lazebnik

**Required textbooks:**
Milnor, John; *Dynamics in One Complex Variable*, ISBN: 978-0691124889

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**Ma 191B (Section 2). Selected Topics in Mathematics.**

**Instructor:** Clara Shikhelman

**Required textbooks:**

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**Ma/ACM 142. Ordinary and Partial Differential Equations.**

**Instructor:** Rupert Frank

**Required textbooks:**

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**Ma/CS 006B. Introduction to Discrete Mathematics.**

**Instructor:** Clara Shikhelman

**Required textbooks:**
West, Douglas Brent; *Introduction to graph theory*, ISBN: 0130144002
Diestel, Reinhard; *Graph Theory*, ISBN: 9783642142789

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**MECHANICAL ENGINEERING**

**MUSIC**

**Mu 056. Jazz History.**

**Instructor:** Thomas Neenan

**Required textbooks:**
Mu 138. History II: Music History from 1750 to 1850.

Instructor: Thomas Neenan

**Required textbooks:**

**Notes for students:**
You are strongly encouraged to procure your own copies of the texts. Both texts are available in various formats at SFL for you to access until you procure your own copies. If you chose not to buy your own copies and rely on SFL reserve or electronic copies, you do so at risk of not being able to access the materials when you want.

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**NEUROBIOLOGY**

NB/Bi/CNS 163. The Biological Basis of Neural Disorders.

Instructors: Henry Lester, Carlos Lois

**Required textbooks:**
- Kandel, Eric; *Principles of Neuroscience (5)*, 2013. ISBN: 0071390111

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**PHILOSOPHY**

Pl 100. Free Will.

Instructor: Christopher Hitchcock

**Required textbooks:**
- Pereboom, Derk; *Free Will (2nd)*, Hackett, 2009. ISBN: 978-1-60384-129-0

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**PHYSICS**


Instructor: David Hsieh

**Required textbooks:**
- Purcell, EM,Morin, DJ; *Electricity and Magnetism (3)*, ISBN: 978-1107014022

Instructor: Gil Refael

**Required textbooks:**
Serway, Raymond A., Jewett, John W.; *Physics for Scientists and Engineers (9th)*, . ISBN: 978-1133947271

Ph 002B. Waves, Quantum Mechanics, and Statistical Physics.

Instructor: Clifford Cheung

**Required textbooks:**
Griffiths, David; *Introduction to Quantum Mechanics*, . ISBN: 0-13-111892-7

Ph 106B. Topics in Classical Physics.

Instructor: Sunil Golwala

**Required textbooks:**

**Suggested textbooks:**
Heald, Mark A., Marion, Jerry B.; *Classical Electromagnetic Radiation (3)*, Dover, 2012. ISBN: 978-0486490601

Ph 129B. Mathematical Methods of Physics.

Instructor: Xie Chen

**Required textbooks:**

**Suggested textbooks:**
Zee, A.; *Group Theory in a Nutshell for Physicists*, . ISBN: 9780691162690
Raymond, Pierre; *Group Theory: A Physicist’s Survey*, . ISBN: 978-0521896030
Tung, Wu-Ki; *Group Theory in Physics*, . ISBN: 9971966565
Georgi, Howard; *Lie Algebras in Particle Physics*, . ISBN: 978-0738202334
Ph/APh 137B. Atoms and Photons.

Instructor: Manuel Endres

Suggested textbooks:
- Cohen-Tannoudji, Claude; *Introduction to Quantum Electrodynamics*, ISBN: 0471845264
- Grynberg, Gilbert, Aspect, Alain, Fabre, Claude; *Introduction to Quantum Optics*, ISBN: 978-0521551120
- Gerry, Christopher, Knight, Peter; *Introductory Quantum Optics*, ISBN: 978-0521527354

Ph/APh 223A. Advanced Condensed-Matter Physics.

Instructor: Jason Alicea

Required textbooks:
- Girvin, Steven M., Yang, Kun; *Modern Condensed Matter Physics*, ISBN: 978-1107137394

VISUAL CULTURE

VC 060. Art/Media.

Instructor:

Required textbooks: