

Spring 2023 Book List

Recommendation: please consult with the course instructor before purchasing any material.

- 1004** Hambley Allan R., **Electrical Engineering Principles and Applications** (7E), New York: Pearson (2017), ISBN: 978-0134484143.
- 2024** Centeno, Virgilio A., **Electrical Circuits and Devices**, Great River Learning – Customer Solutions Team. 2021. ISBN: 978-1644966778

Required Hardware:

The Lab-in-A-Box kit previously used in ECE 1004.

- 2054** (Applied Electrical Theory – ME students only)
Allan R. Hambley, **Electrical Engineering Principles and Applications Plus Mastering Engineering with Pearson eText – Access Card Package**, 7th edition, Pearson. ISBN 9780134712871.

Students can opt to purchase:

Book + Modified Mastering access card: 0134680618

or

*SVE + Modified Mastering access card: 0134680626

or

Modified Mastering access card: 0134487001

*SVE= Student Value Edition which is the loose leaf/ three-hole punched version of the text.

- 2164** J. J. Sellers, **Understanding Space: An Introduction to Astronautics** (3rd Edition), McGraw Hill, 2005. ISBN: 9780077230302
CROSS LISTED WITH AOE 2664

- 2214** Ellingson, Steven W. **ELECTROMAGNETICS** (I). Blacksburg, VA: VT Publishing, 2018, 225. (Available at: <https://doi.org/10.21061/electromagnetics-vol-1> **CC BY-SA 4.0**.) **Author offers free access to this book.**

Neamen, D. A. **Microelectronics Circuit Analysis and Design**. 4th edition, New York: McGraw-Hill Education, 2009, 1392. ISBN 978-0073380643.

Required Course Materials:

The Lab-in-A-Box kit that was previously used in 1004 and 2024.

- 2514** Riley, David and Kenny A. Hunt. **Computational Thinking For The Modern Problem Solver**. i, Boca Raton Florida: CRC Press, 2014, 405. ISB: 9781466587779
Available on the VT online library:

<https://ebookcentral.proquest.com/lib/vt/detail.action?docID=1524329>

Required Software:

1. Modeling and simulation software, such as MATLAB and Simulink.
2. Linux virtual machine and software development environment (open source).
3. Unmanned aircraft simulation and ground station software (open source).

Required Field Equipment:

A technology platform suitable for project-based learning, such as a ready-to-fly quadcopter (provided by the department).

- 2544** M. Morris Mano, Charles R. Kime, Tom Martin, **Logic and Computer Design Fundamentals**, 2015. 5th edition, PEARSON. ISBN 9780133760637.
- 2564** **No textbook required.**
- 2714** Oppenheim, A. V., Willsky, A. S., and Nawab, S. H. **SIGNALS AND SYSTEMS**. ii, Pearson, 1996, 1000. ISBN: 978-0138147570 or ISBN-10:0138147574
- 2804** **No textbook required.**
- 3004** Charles K. Alexander and Matthew N. O. Sadiku, **Fundamentals of Electric Circuits**, 7th edition, McGraw-Hill. ISBN: 978-1260226409.
- 3054** Hambley Allan R., **Electrical Engineering Principles and Application** (7E), New York: Pearson (2017), ISBN: 9780134484143. Students should have from taking 2054.
- 3074** **No textbook required.** All required materials will be made available electronically.
- 3104** **No textbook required.** Will use notes and public domain information.
- 3105** Ellingson, Steven W. (2018) **Electromagnetics, Vol. 1**. Blacksburg, VA: VT Publishing. ISBN: 978-0-9979201-9-2.
Free Electronic Book for students: <https://doi.org/10.21061/electromagnetics-vol-1> **CC BY-SA 4.0**
Author offers free access to this book.
Recommended:
Fawwz T. Ulaby, Umberto Ravaioli, **Fundamentals of Applied Electromagnetics**, 8th edition, Pearson. ISBN 978-0135199008. **NOTE: This ISBN is for the Pearson eText access card.**
- 3106** Ellingson, Steven W. (2020) **Electromagnetics, Vol. 2**. Blacksburg, VA: Virginia Tech Publishing. ISBN: 978-1-949373-92-9
Free Electronic Book for students: <https://doi.org/10.21061/electromagnetics-vol-2>. **CC BY-SA 4.0**
Author offers free access to this book.
Recommended:

Fawwz T. Ulaby, Umberto Ravaioli, **Fundamentals of Applied Electromagnetics**, 8th edition, Pearson. ISBN 978-0135199008. **NOTE: This ISBN is for the Pearson eText access card.**

- 3134** Kasap, S.O., **Optoelectronics & Photonics: Principles & Practices**, 2nd Edition, Pearson, 2012, ISBN-9780132151498
- 3204** Donald Neamen, **Microelectronics Circuit Analysis and Design**, 4th edition, 2009. McGraw-Hill. ISBN 9780073380643.
- 3214** Donald Neamen, **Semiconductor Physics and Devices**, 4th edition, McGraw-Hill. ISBN 9780073529585
- 3254** (Applied Electrical Theory – ME students only)
Allan R. Hambley, **Electrical Engineering Principles and Applications– Access Card Package**, 7th edition, PEARSON. 978-0134712871.

Students can opt to purchase:

Book + Modified Mastering access card: 0134680618

or

*SVE + Modified Mastering access card: 0134680626

or

Modified Mastering access card: 0134487001

*SVE= Student Value Edition which is the loose leaf/ three-hole punched version of the text.

STUDENTS SHOULD HAVE FROM TAKING ECE 2054

3274 **No textbook required.** ECE Department, **ECE 3274 Lab Manual**. Available on-line.

3304 J. D. Glover and M. S. Sarma, **Power System Analysis and Design**, Cengage Engineering, 6th edition. ISBN 9781305632134.

Robert W. Erikson and Dragan Maksimovic, **Fundamentals of Power Electronics**, 2nd edition, 2001, Springer Science & Business Media, Inc. ISBN 9780792372707.

3354 **No textbook required.** ECE Department, **ECE 3354 Lab Manual**. Available on-line.

3504 Patterson, D., & Hennessey, J. (2013). **Computer Organization and Design: The Hardware/Software Interface**. Morgan Kaufmann Publishers Inc. Pp. 800. ISBN 9780124077263.

Required Software:

Architecture simulator as specified by the instructor. There are several simulators available in the public domain at no cost.

- 3514 Carrano, F. & Henry, T. (2016). **Data abstraction and problem solving with C++: Walls and mirrors**, (7th Edition) London, United Kingdom: Pearson. pp. 864. ISBN 978-0134463971.
- 3524 Negus C. (2015). **Linux Bible** (10th edition). Hoboken, NJ: John Wiley & Sons. pp. 912. ISBN 978-1119578888.
- Shaw, Z. (2014). **Learn Python the hard way: A very simple introduction to the terrifyingly beautiful world of computers and code** (3rd ed.) Boston, MA: Addison-Wesley. pp. 320. ISBN: 978-0321884916
- 3544 John Wakerly, (2017). **Digital Design Principles and Practices**, (5th edition) PEARSON. ISBN 978-0134460093.
- 3564 James F. Kurose and Keith W. Ross, **Computer Networking: A Top-Down Approach**. Pearson. 8th edition, 2021. ISBN: 978-0135928615. (Was ECE 4614) Electronic Book only. Paper copy available for rental only. ISBN: 978-0136681557
- 3574 David Thomas and Andrew Hunt. **The Pragmatic Programmer**. Addison-Wesley, 2ed. 2020. ISBN 978-0135957059.
- 3604 Ellingson, S.W. (2016). **Radio Systems Engineering**, Cambridge University Press, pp. 650. ISBN 978-1107068285
- 3614 Grami, Ali (2015). **Introduction to Digital Communications**. Academic Press (Elsevier), pp. 604. ISBN 978-0124076822.
- 3704 Oppenheim, A. V., Willsky, A. S., and Nawab, S. H. (1996). **SIGNALS AND SYSTEMS**. Pearson. 2E. pp. 1000. ISBN: 978-0138147570 or ISBN-10:0138147574
- 3714 Nise, Norman S. (2020). **CONTROL SYSTEMS ENGINEERING**. 8th Edition, John Wiley and Sons. 800pp. ISBN: 978-1-119-72140-6
- 4124 John S. Seybold, **Introduction to RF Propagation**, John Wiley, 1st edition, 2005. ISBN 978-0471655961.
- 4174 Prölss, G. W., **Physics of the earth's space environment**, 1st Ed. Berlin: Springer, 2004. Pp. xv, 513. ISBN 978-3540214267. **(Cross-listed with AOE)**
- 4254 **No textbook required. Co-located with ECE 5224**
- 4284 **No textbook required.** ECE Department, **ECE 4284 Lab Manual**

4314 Kersting, W. H., (2018), **Distribution System Modeling and Analysis**, 4th Ed., CRC Press, 1-518. ISBN: 978-1498772136 (hardcover). ISBN: 978-1315120782 (eBook)

Cooper Power Systems, (1990), **Electrical Distribution System Protection**, 3rd Edition, 1-165. **(The electronic version of this manual will be made available to students by the instructor).**

4354 Stanley H. Horowitz and Arun G. Phadke, **Power System Relaying**, 4th edition. John Wiley. ISBN 978-1118662007.

4364/5374G

No textbook required. Instructor provides a free online textbook.

4424/CS4824

**(Cross-listed with CS) CS teaches during Sp2023
No textbook required.**

4504 John Hennessy and David Patterson, **Computer Architecture: A Quantitative Approach**. Elsevier, 6th edition. 2017. ISBN 978-0128119051. **(Cross-listed with CS)
Co-located with ECE/CS 5504. Taught by CS SP23.**

4514 **No textbook required.**

4524 Stuart Russell and Peter Norvig, **Artificial Intelligence: A Modern Approach**, 4th Edition, 2020. 1152 pp. Pearson. ISBN: 978-0134610993.

4550/5550G

Giorgio C. Buttazzo, **Hard Real-Time Computing Systems: Predictable Scheduling Algorithms and Applications**, 3rd edition, Springer. ISBN 9781461406754
Same room as 5550G

4560 Ed Skoudis with Tom Liston, **Counter Hack Reloaded**, 2nd edition, Prentice-Hall. ISBN 978-0131481046.

4564 **No cost to students** (Full-text available thru VT Library Safari service)

S. Monk, Programming the Raspberry Pi: Getting Started with Python, Tab Books, 2012,(ISBN 978-0071807838).

B. Rhodes and J. Goerzen, **Foundations of Python Network Programming**, Apress, 3rd ed., 2014, (ISBN 978-1430258544)

TJ O'Connor, **Violent Python : A Cookbook for Hackers, Forensic Analysts, Penetration Testers and Security Engineers, Elsevier/Syngress**, 2012, (ISBN 978-1-59749-964-4)

P. Waher, **Learning Internet of Things**, Packt Publishing, 2015, (ISBN 978-1783553532)

Other resources will be available from on-line sites including the Virginia Tech Library's e-book and full-text database offerings.

Each student will receive the following hardware for use during the semester:

Raspberry Pi 3 - Model B

32 GB MicroSD Card

Power Supply with micro-USB Cable

4644 Mung Chiang, **Networked Life: 20 Questions and Answers**, 1 Edition, 2012. Cambridge University Press. ISBN: 978-1107024946

4704 **No textbook required.** Consult with the instructor.

4805 & 4806 (Senior Design Project)

Required Text:

Patrick Lencioni, **The 5 Dysfunctions of a Team**, 2010. John Wiley & Sons. ISBN: 978-0787960759.

4944 Required reference materials will be made available electronically.

4984 Reinforcement Learning-Jason Xuan

Reinforcement Learning: An Introduction, Sutton and Barto, 2nd Edition. The MIT Press, 2018, ISBN-13: 978-0262193986.

Reading materials will be provided from journals and online resources in addition to the textbook.

4984 Intro to Quantum Lab- Wayne Scales

No Textbook Required

Recommended:

Wong, Thomas, **Introduction to Classical and Quantum Computing**, Root Groove, 2022, pp. 382. ISBN: 979-8985593105

Free pdf online:

<https://www.thomaswong.net/introduction-to-classical-and-quantum-computing-1e3p.pdf>

5205 Dieter K. Schroder, **Semiconductor Material and Device Characterization**, 2006, 3rd edition, John Wiley. ISBN 978-0471739067.

5210 Marc J. Madou, **Fundamentals of Microfabrication and Nanotechnology**. 3rd edition, CRC Press. 2011. ISBN: 978-0849331800

Recommended:

Stephen D. Senturia, **Microsystem Design**, 2nd edition, Springer. ISBN: 978-0792372462

5224 **No textbook required. Co-located with ECE 4254.**

5244 **No textbook required.**

5274 **No textbook required.**

Lecture notes provided by the instructor via website, “Modeling and Control of Three-Phase PWM Converters.”

A list of publications related to the subject.

5374G/4364 **No textbook required**

5424/5824 **cross-listed with CS**

Sections taught by ECE will use:

Kevin Murphy, **Machine Learning: A Probabilistic Perspective**, MIT Press, 2012. ISBN 978-0262018029. **(Cross-listed with CS)**

Sections taught by CS will use:

Christopher M. Bishop. **Pattern Recognition and Machine Learning**. Springer. 2nd Edition. ISBN: 978-0387310732.

Ian Goodfellow and Yoshua Bengio, **Deep Learning**, 2016, MIT Press, ISBN: 9780262035613

5434 Platzer A. (2018). **Logical Foundations of Cyber-Physical Systems**. Springer. ISBN: 978-3-319-63588-0

5444 Shanahan, M. (2015). **The Technological Singularity**. Cambridge, MA: MIT Press. Pp. xv, 272.

The book is available for free and online from the VT library.

5454 **No textbook required.** Handouts and publication readings provided by the instructor.

5464 Kelleher, J. Mac Namee, B., & D’Arcy, A. (2020). **Fundamentals of machine learning for predictive data analytics: Algorithms, worked examples, and case studies** (2nd ed.). MIT Press. pp. 856. ISBN: 978-0262044691

- 5480** Charles Pfleeger, et al. **Security in Computing**. 5th edition, Upper Saddle River, New Jersey: Prentice Hall, 2015, 944, ISBN 9780134085043 (on-line – MIT only)
- 5484** L. Null and J. Lobur, **The Essentials of Computer Organization and Architecture**, 5th edition, Jones and Bartlett Publishers. ISBN 978-1284123036 (on-line – MIT only)
- 5486** **No textbook required.** Selected journal papers, magazine articles, and conference papers to be provided online.(On-Line MIT only)
- 5494** Poole, D.L. & Mackworth, A.K. (2017). **Artificial intelligence: Foundations of computational agents**, 2nd Edition. ISBN: 978-1107195394 (**Free version online:** <https://artint.info/index.html>)
- 5504** John Hennessy and David Patterson, **Computer Architecture: A Quantitative Approach**. Elsevier, 6th edition. 2017. ISBN 978-0128119051.(Cross-listed with CS and Co-located with ECE/CS 4504). Taught by CS SP23.
- 5514** **No textbook required.**
- 5544/CS5544** Aho, Lam, Sethi & Ullman, **Compilers: Principles, Techniques, and Tools**. 2nd Edition. Pearson. 2007. 1040pp. ISBN: 978-0321486813
- 5545** Weste and Harris, **CMOS VLSI Design, A Circuits and Systems Perspective**, 4th edition, 2004. Pearson. ISBN 9780321547743.
- Recommended:*
Joseph G. Tront, **PSpice for Basic Microelectronics**, McGraw-Hill, 2008.
ISBN 9780073529479.
- 5550G/4550** Giorgio C. Buttazzo, **Hard Real-Time Computing Systems: Predictable Scheduling Algorithms and Applications**, 3rd edition, Springer. ISBN 9781461406754
- 5560/CS5560** **CS teaches for SP 2023**
- William Stallings, **Cryptography and Network Security – Principles and Practices**, 7th edition, Pearson. 2016. ISBN 9780134444284.
- 5566/CS5566** **No textbook required**
- 5586** William Stallings; Lawrie Brown, **Computer Security: Principles and Practice**, Pearson, 4th edition. ISBN 9780134794105. (On-Line – MIT Only)
- 5590/CS5590** CS teaches

No textbook required

- 5606** H. Vincent Poor, **An Introduction to Signal Detection and Estimation**, 2nd edition, Springer. 1994. ISBN 9781441928375.
- 5620** John G. Proakis and Dimitris G. Manolakis, **Digital Signal Processing: Principles, Algorithms, and Applications**, 4th edition, 2006, Prentice-Hall. Student edition of Matlab. ISBN 9780131873742
- 5636** M.A. Richards, **Fundamentals of Radar Signal Process**, 1E, 2005, McGraw-Hill, ISBN: 978-0071444743
- 5644** Han, Z., Niyato, D., Saad, W., Başar, T., & Hjørungnes, A. (2012). **Game Theory in Wireless and Communication Networks: Theory, Models, and Applications**. Cambridge, UK. Cambridge University Press. Pp. xv, 554. ISBN 9780521196963
- 5654** John Proakis, **Digital Communications**, 5th edition, 2008. McGraw-Hill. ISBN 9780071263788.
- 5664** Nishith Tripathi and Jeffrey H. Reed, **Cellular Communications: A Comprehensive and Practical Guide**, 2014, Wiley-IEEE Press. ISBN 9780470472071.
- 5714** **(Zoom course – originates Northern VA)** Class notes and papers will be provided.
No textbook required.
- 5734** **CROSS-LISTED with AOE 5734 & ME 5584**
Boyd, S. & Vandenberghe, L. (2004). **Convex Optimization**. New York: Cambridge University Press. Pp. xiv, 730. ISBN: 978-0521833783 (Hardcover)
- 5764/AOE5764/ME5564**
No textbook required. All course materials will be provided by the instructor through course notes.
- 5805&5806**
Patrick Lencioni, **The 5 Dysfunctions of a Team**. John Wiley & Sons. 1st. 2010. ISBN:978-0787960759.
- 5944** **No textbook required.**
- 5984** **PE & Sys for Future Grid (Dong, Dong & Richard Zhang)**
No textbook required
- 5984** **SS:HVDC, FACTS, and Renewables (Ali Mehrizi-Sani)**
No textbook required

5984 SS: Quantum Engineering (Linbo Shao)
No textbook required

Recommended:

Hidary, J.D. (2019). Quantum Computing: An Applied Approach. Springer, Cham. Print ISBN 978-3-030-23921-3 Online ISBN 978-3-030-23922-0

Nielsen, M. & Chuang, I. (2010). Quantum Computation and Quantum Information (2nd ed.). Cambridge: Cambridge University Press. ISBN: 978-1-107-00217-3

5984 SS: Intro to Quantum Lab (Wayne Scales)
No Textbook Required

5984 SS: Inverter Circ&Ctrl Implmntn (Jason Lai)
No Textbook Required

5984 SS: Deep Reinforcement Learning (Jason Xuan)
No Textbook Required

5984 SS: RFIC Design (Walling)
Razavi, Behzad. RF Microelectronics, 2nd Edition, Prentice Hall, 2011. ISBN-13: 978-0137134731.

6104 Electromagnetic Metamaterials-Jordan Budhu
Required Text:

Tretyakov, S. (2003). Analytical Modeling in Applied Electromagnetics. Artech House. ISBN: 9781630812836

Recommended reference text:

Simovski, C., Tretyakov, S. (2020). An Introduction to Metamaterials and Nanophotonics. Cambridge University Press. ISBN: 9781108610735 (online) ISBN: 9781108492645 (Hardcover)

6174/AOE6174 Taught by AOE

Jardin, S., Computational Methods in Plasma Physics. Chapman & Hall/CRC Computational Science 1st edition, 2010. ISBN 9781439810217

Birdsall and Langdon, Plasma Physics via Computer Simulation. ISBN: 9780750310253

6314 Course notes, IEEE Standard and IEEE publications provided through references to the IEEE Explorer.

6524/CS6524

No textbook required.

6744 **No textbook required.**
(CROSS-LISTED with AOE6744/ME6544)

6774 **No textbook required. ME Teaches. (CROSS-LISTED AOE6774/ME6574/ISE6574)**
Recommended:

Lavretsky, Eugene & Wise, Kevin. (2013) **Robust and Adaptive Control: With Aerospace Applications.** Springer. ISBN: 9781447143956. The following link goes to the PDF version of the textbook.

<https://link.springer.com/content/pdf/10.1007/978-1-4471-4396-3.pdf>

Ioannou, Petros & Sun, Jing.(2012) **Robust Adaptive Control.** Dover Publications. 1st edition. ISBN: 9780486498171

Khalil, Hassan. (2001). **Nonlinear Systems,** Pearson. 3rd edition. ISBN: 9780130673893