

## 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** Allan R. Hambley, **Electrical Engineering Principles and Applications Plus Mastering Engineering with Pearson eText – Access Card Package**, 7<sup>th</sup> 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.

**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**, 7<sup>th</sup> 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** (3<sup>rd</sup> 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**. 4<sup>th</sup> 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. 5<sup>th</sup> 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**, 7<sup>th</sup> 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**, 4<sup>th</sup> edition, 2009. McGraw-Hill. ISBN 9780073380643.

**3214** Donald Neamen, **Semiconductor Physics and Devices**, 4<sup>th</sup> edition, McGraw-Hill. ISBN 9780073529585

**3254** (Applied Electrical Theory – ME students only)

Allan R. Hambley, **Electrical Engineering Principles and Applications– Access Card Package**, 7<sup>th</sup> 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, 6<sup>th</sup> edition. ISBN 9781305632134.

Robert W. Erikson and Dragan Maksimovic, **Fundamentals of Power Electronics**, 2<sup>nd</sup> 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** (10<sup>th</sup> edition). Hoboken, NJ: John Wiley & Sons. pp. 912. ISBN 978-1119578888.

Shaw, Z. (2017) **Learn Python 3 the Hard Way: A Very Simple Introduction to the Terrifyingly Beautiful World of Computers and Code**. Addison-Wesley Professional ISBN: 9780134693866 or ISBN:9780134692883

**3544** John Wakerly, (2017). **Digital Design Principles and Practices**, (5<sup>th</sup> edition) PEARSON. ISBN 978-0134460093.

**3564** James F. Kurose and Keith W. Ross, **Computer Networking: A Top-Down Approach**. Pearson. 8<sup>th</sup> 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, 1<sup>st</sup> edition, 2005. ISBN 978-0471655961.
- 4174 Prölss, G. W., **Physics of the earth's space environment**, 1<sup>st</sup> 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**
- 4354 Stanley H. Horowitz and Arun G. Phadke, **Power System Relaying**, 4<sup>th</sup> 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, 6<sup>th</sup> 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 Rusell and Peter Norvig, **Artificial Intelligence: A Modern Approach**, 4<sup>th</sup> Edition, 2020. 1152 pp. Pearson. ISBN: 978-0134610993.
- 4550/5550G  
Giorgio C. Buttazzo, **Hard Real-Time Computing Systems: Predictable Scheduling Algorithms and Applications**, 3<sup>rd</sup> edition, Springer. ISBN 9781461406754  
**Same room as 5550G**
- 4560 Ed Skoudis with Tom Liston, **Counter Hack Reloaded**, 2<sup>nd</sup> 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** Timothy Pratt and Jeremy Allnut, **Satellite Communications**, 3rd ed., 2020, John Wiley & Sons Ltd. E-book ISBN: 9781119482055, Hardcover ISBN 9781119482178.

**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 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, 3<sup>rd</sup> edition, John Wiley. ISBN 978-0471739067.

**5210** Marc J. Madou, Fundamentals of Microfabrication and Nanotechnology. 3<sup>rd</sup> 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. 2<sup>nd</sup> 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**, 5<sup>th</sup> 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, 6<sup>th</sup> edition. 2017. ISBN 978-0128119051.(**Cross-listed with CS and Co-located with ECE/CS 4504**). **Taught by CS SP23**.
- 5544/CS5544 Aho, Lam, Sethi & Ullman, **Compilers: Principles, Techniques, and Tools**. 2<sup>nd</sup> Edition. Pearson. 2007. 1040pp. ISBN: 978-0321486813

- 5545 Weste and Harris, **CMOS VLSI Design, A Circuits and Systems Perspective**, 4<sup>th</sup> 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**, 3<sup>rd</sup> edition, Springer. ISBN 9781461406754

**5560/CS5560 CS teaches for SP 2023**

William Stallings, **Cryptography and Network Security – Principles and Practices**, 7<sup>th</sup> edition, Pearson. 2016. ISBN 9780134444284.

**5566/CS5566 No textbook required**

- 5586 William Stallings; Lawrie Brown, **Computer Security: Principles and Practice**, Pearson, 4<sup>th</sup> 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**, 2<sup>nd</sup> 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**, 5<sup>th</sup> 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. 1<sup>st</sup>. 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:***

Hidayi, 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 Ckt & 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.

**5984 SS: Industry Topics for Engineers (V. Kovanis)**

**No Textbook Required**

**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 1<sup>st</sup> 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