Spring 2024 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: 9780134484143.

2024 Hambley, Allan R.**, Electrical Engineering Principles and Applications** (7E), New York: Pearson (2017), ISBN: 9780134484143.

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 **(ECE teaches Spring 2024)**

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 9780073380643.

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: 9780138147570

2804 **No textbook required**

3004 Charles K. Alexander and Matthew N. O. Sadiku, **Fundamentals of Electric Circuits**, 7th edition, McGraw-Hill. ISBN: 9781260226409.

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: 9780997920192.
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: 9781949373929
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 9780135199008. **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. 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.
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 9780134463971.

3544 John Wakerly, (2017). **Digital Design Principles and Practices**, (5th edition) PEARSON. ISBN 9780134460093.

3564 James F. Kurose and Keith W. Ross, **Computer Networking: A Top-Down Approach**. Pearson. 8th edition, 2021. ISBN: 978-0135928615. Electronic Book only. Paper copy available for rental only. ISBN: 978-0136681557

3574 David Thomas and Andrew Hunt. **The Pragmatic Programmer.** Addison-Wesley, 2nd edition. 2020. ISBN: 9780135957059.
Recommended:
Martin, Robert C. (2009). **Clean Code**, Pearson, ISBN:9780132350884

Hunt, Andrew and Thomas, David, (2000). **The Pragmatic Programmer**. Addison Wesley. ISBN: 9780201616224

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 9780124076822.

3704 Oppenheim, A. V., Willsky, A. S., and Nawab, S. H. (1996). **Signals and Systems**. Pearson. 2E. pp. 1000. ISBN: 9780138147570

3714 Nise, Norman S. (2020). **Control Systems Engineering**. 8th Edition, John Wiley and Sons. 800pp. ISBN: 9781119721406

4114 Stutzman and Thiele, **Antenna Theory and Design**, 3rd edition, John Wiley. ISBN 9780470576649.

4124 John S. Seybold, **Introduction to RF Propagation**, John Wiley, 1st edition, 2005. ISBN 9780471655961.

4174 Prölss, G. W., **Physics of the earth's space environment**,1st Ed. Berlin: Springer, 2004. Pp. xv, 513. ISBN 978-3540214267. **Taught by AOE Spring 2024**
(Cross-listed with AOE)

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

4314 Kersting, W. H., (2018), **Distribution System Modeling and Analysis**, 4th Ed., CRC Press, 1-518. ISBN: 9781498772136 (hardcover). ISBN: 9781315120782 (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 9781118662007.

4364/5374G

No textbook required. Instructor provides a free online textbook.

4424/CS4824

(Cross-listed with CS) Taught by CS Spring 2024
No textbook required

4504 John Hennessy and David Patterson, **Computer Architecture: A Quantitative Approach.** Elsevier, 6th edition. 2017. ISBN 9780128119051. (Cross-listed with CS) Co-located with ECE/CS 5504. **Taught by CS Spring 2024**

4514 **No textbook required**

4524 Stuart Russell and Peter Norvig, **Artificial Intelligence: A Modern Approach,** 4th Edition, 2020. 1152 pp. Pearson. ISBN: 9780134610993.

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 9780131481046.

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 Wile & Sons Ltd. E-book ISBN: 9781119482055, Hardcover ISBN 9781119482178.

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

4805 & 4806 (Senior Design Project)

Patrick Lencioni, **The 5 Dysfunctions of a Team**, 2010. John Wiley & Sons. ISBN: 9780787960759.

4944 Required reference materials will be made available electronically.

5106 Jian-Ming Jin. **Theory and Computation of Electromagnetic Fields**, 2010, Wiley. 2nd edition, ISBN 9781119108047

5174 F. F. Chen**, Introduction to Plasma Physics and Controlled Fusion,** 3rd edition. Springer. ISBN 9783319223087.
(Cross-listed and taught by AOE Spring 2024)

5205 Dieter K. Schroder, **Semiconductor Material and Device Characterization**, 2006, 3rd edition, John Wiley. ISBN 9780471739067.

5210 Marc J. Madou, **Fundamentals of Microfabrication and Nanotechnology**. 3rd edition, CRC Press. 2011. ISBN: 9780849331800

Recommended:

Stephen D. Senturia, **Microsystem Design,** 2nd edition, Springer. ISBN: 9780792372462

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

5264 The instructor will provide a collection of relevant conference and journal papers and reference documents in this field.

Optional: Thomas H. Lee, **Planar Microwave Engineering: A Practical Guide to Theory, Measurement, and Circuits**, 2004, Cambridge University Press. ISBN 978-521835268.

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.

5344 **No textbook required**
Recommended:
All of these are available to you for free through Virginia Tech's subscription to IEEEXplore. Go to link and search book title:
https://ieeexplore.ieee.org/Xplore/home.jsp

Hingorani, N. G., & Gyugyi, L. (1999). **Understanding FACTS: Concepts and Technology of Flexible AC Transmission Systems.** Wiley-IEEE Press. 452 pp.

Mathur, M. R., & Varma, R. K. (2002). **Thyristor-Based FACTS Controllers for Electrical Transmission Systems.** Wiley-IEEE Press. 495 pp.

Yazdani, A., & Iravani, R. (2010). **Voltage-Sourced Converters in Power Systems.** Wiley-IEEE Press. 541 pp.

5374G/4364 **No textbook required**

5404 Behzad Razavi.(2016) **Design of Analog CMOS Integrated Circuits,** McGraw Hill. 2nd edition. ISBN: 9780072524932

Recommended:
Baker, R. Jacob. **CMOS Circuit Design, Layout, and Simulation**, 3rd Edition, Wiley-IEEE Press, ISBN 9780470881323, 2010. Pp 1072

Provided: Cadence Virtuoso Custom IC Design Tools Students will be also provided with reading material and papers to read. Paper and Lecture Note

5424 Kevin Murphy, **Machine Learning: A Probabilistic Perspective**, MIT Press, 2012. ISBN 9780262018029.

5434 Platzer A. (2018). **Logical Foundations of Cyber-Physical Systems**. Springer. ISBN: 9783319635880

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.

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: 9780262044691

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 9781284123036 (on-line – MIT only)

5494 Poole, D.L. & Mackworth, A.K. (2023). **Artificial intelligence: Foundations of computational agents**, 3rd Edition. Cambridge University Press. Free online for students: https://artint.info/3e/html/ArtInt3e.html ISBN 9781009258197

5504 Taught by CS Spring 2024

John Hennessy and David Patterson, **Computer Architecture: A Quantitative Approach.** Morgan Kaufmsnn, 6th edition. 2017. ISBN 9780128119051.(Cross-listed with CS and Co-located with ECE/CS 4504).

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:
Tront, Joseph G., **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 Spring 2024

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

5566/CS5566 No textbook required

5580 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 Spring 2024
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

5654 John Proakis, **Digital Communications**, 5th edition, 2008. McGraw-Hill. ISBN 9780071263788.

5660 No textbook required

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-Taught by AOE Spring 2024
Boyd, S. & Vandenberghe, L. (2004). **Convex Optimization.** New York: Cambridge University Press. Pp. xiv, 730. ISBN: 978-0521833783 (Hardcover)

5764/AOE5764/ME5564 Taught by ME Spring 2024
No textbook required. All course materials will be provided by the instructor through course notes.

5806 Patrick Lencioni, **The 5 Dysfunctions of a Team**. John Wiley & Sons. 1st. 2010. ISBN: 9780787960759.

5944 No textbook required

5984 SS: Quantum Information Technologies (MIT-Zin Lin)

Sutor, Robert, **Dancing with Qubits.** Packt Publishing. 2019. ISBN: 9781838827366

5984 SS: NextG Mobile Networks (MIT-A. Soysal)
No textbook required

5984 SS: Bioelectronics (Xiaoting Jia)-no CRN yet 9.26.23
No textbook required

Recommended reference text:
J. H. Martin et al., **in Principles of Neuroscience**, edited by E. R. Kandel, J.H.Schwartz, and T. J. Jessel (Norwalk: Appleton and Lange, 2000), p. 340-352. ISBN: 9780071390118

Fundamentals of microfabrication 2nd or 3rd edition by M.J. Madou. ISBN: 9780849308260

Flexible Electronics: **Materials and Applications** (Electronic Materials: Science & Technology) by William S. Wong and Alberto Salleo (Paperback - Dec 8, 2010) Springer, 480pp Liens Moodle. ISBN: 9780387743622

5984 SS: Deep Reinforcement Learning (Jason Xuan)
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 9783030239220

Nielsen, M. & Chuang, I. (2010). **Quantum Computation and Quantum Information** (2nd ed.). Cambridge: Cambridge University Press. ISBN: 9781107002173

6116 Stutzman, Warren L. **Antenna Theory and Design.** WILEY, 3rd Edition, 2012. ISBN: 9780470576649

6154 No textbook required

6314 No textbook required. Notes provided by the instructor.

6334 No textbook required

6524 No textbook required

Recommended:
Free for students
Goodfellow, Ian & Bengio, Yoshua and Courville, Aaron. **Deep Learning**, MIT Press, 2016, http://www.deeplearningbook.org/. 780 pages.

6744 **No textbook required. Taught by AOE Spring 2024**
(CROSS-LISTED with AOE6744/ME6544)

6774 **No textbook required. Taught by ISE Spring 2024 (CROSS-LISTED AOE 6774 /ME6574 /ISE6574)**

Recommended:
Lavretsky, Eugene & Wise, Kevin. (2013) R**obust and Adaptive Control: With Aerospace Applictions.** 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