Spring 2020 Book List

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

***1004** Hambley Allan R.**, Electrical Engineering Principles and Applications** (7E), New York: Pearson (2017), ISBN: 9780134484143.

***1574** Tony Gaddis, - **Starting Out with C++: From Control Structures through Objects, Brief Version**, 9th Edition, Pearson, 2019. ISBN:9780135226759.
My programming Lab is not required.

***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, Prentice-Hall. 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

***2204** Donald Neamen, **Microelectronics Circuit Analysis and Design**, 4th edition, McGraw-Hill. ISBN 0073380643.

***2214** Ellingson, Steven W. ELECTROMAGNETICS (I). 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**. iv, New York: McGraw-Hill Education, 2009, 1392.
Required Course Materials:

List modified on Monday, February 24, 2020

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

***2274** ECE Department, **ECE 2274 Lab Manual**. Available on-line.

***2500** David A. Patterson and John L. Hennessy, **Computer Organization and Design: The Hardware/Software Interface**, revised 5th edition, 2013. Morgan Kaufmann. ISBN 9780124077263.

***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 in the VT online library:
http://proquest.safaribooksonline.com.ezproxy.lib.vt.edu/9781466587793)

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).

***2524** C. Negus and C. Bresnahan, **Linux Bible**, 9th edition, Wiley, 2015. ISBN 978-111899875.

Z. A. Shaw, **Learn Python the Hard Way**, 2nd edition, Shavian Publishing LLC, 2011. Available at no cost from http://www.learnpythonthehardway.org/.

***2534** **No textbook required**.

***2544** M. Morris Mano, Charles R. Kime, Tom Martin, **Logic and Computer Design Fundamentals**, 2015. 5th edition, PEARSON. ISBN 9780133760637.

***2564** **No textbook required.**

***2574** Carrano and Henry, **Data Abstraction and Problem Solving with C++: Walls and Mirrors**, 7th edition. Pearson. ISBN 9780134463971.
Optional: Robert Sedgewick, **Algorithms in C++, Parts 1-4,** 3rd edition, Addison-Wesley. ISBN 9780201350883.

***2704** B. P. Lathi, **Linear Systems and Signals**, 3rd edition,2017. Oxford University Press. ISBN 9780190200176. Updated ver. 4-18

Mathworks, **The Student Edition of Matlab**. Distributed in TORG.

***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

List modified on Monday, February 24, 2020

***2804** **No textbook required.**

***3004** Charles K. Alexander and Matthew N. O. Sadiku, **Fundamentals of Electric Circuits**, 6th edition, McGraw-Hill. ISBN: 9780078028229.

***3054** Hambley Allan R., **Electrical Engineering Principles and Application** (7E), New York: Pearson (2017), ISBN: 9780134484143.

***3074** 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

***3154** **No textbook required.** The supervising instructor will create and furnish user-guides for the students prior to each laboratory exercise to ensure that equipment can be operated safely and effectively.

***3174** **No textbook required.** This is a newly developed laboratory course and no existing textbooks are available on the market.

***3204** Donald Neamen, **Microelectronics Circuit Analysis and Design**, 4th edition, 2009. McGraw-Hill. ISBN 9780073380643.

List modified on Monday, February 24, 2020

***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. 978-0134484143.

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** 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** ECE Department, **ECE 3354 Lab Manual.** Available on-line.

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

***3574** David Thomas and Andrew Hunt. **The Pragmatic Programmer.** Addison-Wesley, 2020. ISBN 9780135957103.

***3604** Ellingson, S.W., **Radio Systems Engineering**, Cambridge University Press, 2016, 680. ISBN 9781107068285

***3614** Ali Grami, **Introduction to Digital Communications,** Academic Press(Elsevier), 2016. ISBN 9780124076822.

***3704** B. P. Lathi, **Linear Systems and Signals**, 3rd edition,2017. Oxford University Press. ISBN 9780190200176.
Students should have from taking 2704.

***3714** Nise, Norman S. **CONTROL SYSTEMS ENGINEERING**. 8th Edition, Wiley; ISBN: 978-1119592921

List modified on Monday, February 24, 2020

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

***4144** T.-C. Poon and J.-P. Liu, **Introduction to Modern Digital Holography**, Cambridge Univ. Press. 1st edition, 2014. ISBN 9781107016705.

***4284** ECE Department, **ECE 4284 Lab Manual**

***4354** Stanley H. Horowitz and Arun G. Phadke, **Power System Relaying**, 4th edition. John Wiley. ISBN 9781118662007.

***4364/5374G**

No textbook required

***4424/CS4824**

Kevin Murphy, **Machine Learning: A Probabilistic Perspective**, MIT Press, 2012. ISBN 9780262018029. Book used by CS instructor.
(Cross-listed with CS)
CS teaches during SP2020.

***4514** (**No textbook required**.)
For SP 2020 Dr. Dong Ha will use:
John Wakerly, **Digital Design Principles and Practices**, 5th edition. PEARSON, 2017. ISBN 9780134460093.

4524** D. L. Poole and A. K. Mackworth, ***Artificial Intelligence: Foundations of Computational Agents, 2nd Edition, Cambridge University Press, 2017. ISBN: 978-1107195394
Updated by Dr. Lynn Abbott on 5/23/19

***4534** **No textbook required**.

***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** (Full-text available thru VT Library Safari service)

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

List modified on Monday, February 24, 2020

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

***4580** R. C. Gonzalez & R. E. Woods, **Digital Image Processing**, 4th edition, PEARSON. ISBN 9780133356724. Jason Xuan confirmed

***4614** James F. Kurose and Keith W. Ross, **Computer Networking: A Top-Down Approach**, 7th edition, 2017. ISBN: 9780133594140.

***4644** TBD.
Waiting for the publisher to release the newest edition of the book. Consult with instructor.

***4704** TBD. Consult with instructor.

***4805 & 4806 (Senior Design Project)**
Required Text:
Patrick Lencioni, **The 5 Dysfunctions of a Team**, 2010. John Wiley & Sons. ISBN: 9780787960759.

***4944** Required reference materials will be made available electronically.

***4984 & 5984** (Electronic Packaging-Special Study-Christina DiMarino)
No textbook required. Notes and other study materials will be supplied by the instructor**.**

***4984 & 5984** (Scott England) Taught with AOE.
Upper Atmosphere/Ionosphere Space Weather/Space Science II: Upper Atmosphere and Ionosphere.
Prölss, G. W., **Physics of the earth's space environment**,1st Ed. Berlin: Springer, 2004. Pp. xv, 513. ISBN 9783540214267.

***5106 (Zoom course – originates Blacksburg)**

List modified on Monday, February 24, 2020

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

***5144** Ting-Chung Poon and Taegeun Kim, **Engineering Optics with Matlab**, 2nd edition, World Scientific, 2018. ISBN 9789813100008.

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

***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 978521835268.

***5274** Lecture notes provided by 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**
Kevin Murphy, **Machine Learning: A Probabilistic Perspective**, MIT Press, 2012. ISBN 9780262018029. **(Cross-listed with CS)**
ECE teaches these sections for SP 2020.

***5434** Lee, Edward A. and Seshia, Sanjit A. **Introduction to Embedded Systems, A Cyber-Physical Systems Approach.** 2nd Edition, 2017.Cambridge, MA: MIT press. [Online] http://Leeseshia.org ISBN- 9780262533812

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

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

***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)

***5486** Selected journal papers, magazine articles, and conference papers to be provided online.(On-Line MIT only)

List modified on Monday, February 24, 2020

***5504/CS5504**

No textbook required.

***5514 No textbook required.**

***5534** Laung-Terng Wang, Yao-Wen Chang, and Kwang-Ting Cheng, **Electronic Design Automation: Synthesis, Verification and Test**, Morgan Kaufman, 2009. ISBN 9780123743640.

***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**

William Stallings, **Cryptography and Network Security** - Principles and Practices, 7th edition, Pearson. ISBN-ISBN 9780134444284.
CS teaches these sections for SP 2020.

***5564 No textbook required**

***5566/CS5566**

Jochen Schiller, **Mobile Communications** 2nd edition, Addison-Wesley, 2003. ISBN 0321123816.
Free for students, instructor will provide the link.

***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

List modified on Monday, February 24, 2020

***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.

***5704 Cross-listed with ME.** No required text. Exam notes will be provided.

Kurdila, A. J., Ben-Tzvi, P., ***Dynamics and Control of Robotics Systems. Wiley***; 1 edition (December 16, 2019)

***5714 (Zoom course – originates Northern VA)** Class notes and papers will be provided. **No textbook required**.

***5764/AOE5764/ME5564**
No textbook required. All course materials will be provided by the instructor through course notes.

***5944 No textbook required.**

***5984 & 4984** (**Special Study**-Electronic Packaging-Special Study-Christina DiMarino)
Notes and other study materials will be supplied by the instructor**.**

***5984** (**Special Study**-Adv. Analog Integrated Circuit Design-Cindy Yi)
R. Jacob Baker, **CMOS Circuit Design, Layout, and Simulation**, 3rd Edition, Wiley-IEEE Press, ISBN 9780470881323, 2010.
Behzad Razavi, **Design of Analog CMOS Integrated Circuits**, 2nd Ed. McGraw Hill, ISBN: 9780072524932, 2017.
Paper and Lecture Notes
Cadence Virtuoso Custom IC Design Tools

***5984** (**Special Study** -Compiler Optimizations- LLVM-Binoy Ravindran)
Alfred V. Aho, Monica S. Lam, Ravi Sethi, and Jeffrey D. Ullman. **Compilers: Principles, Techniques, and Tools** *(2nd Edition).* Pearson Addison Wesley, 2006. ISBN: 978-0321486814.

***5984 & 4984** (**Special Study**-Upper Atmosphere/Ionosphere-Special Study-Scott England)
Prölss, G. W., **Physics of the earth's space environment**,1st Ed. Berlin: Springer, 2004. Pp. xv, 513. ISBN 9783540214267.

***5984 (Special Study-Innv Pthwys AI & Mach Lrng-VT-MIT-K. Giles)**

List modified on Monday, February 24, 2020

Poole, D.L. & Mackworth, A.K. (2017). **Artificial Intelligence: Foundations of Computational Agents**, 2nd Edition. [Free version online: https://artint.info/index.html]

***5984 (Special Study-**Cyber-Physical Systems Security-**R. Gerdes)**
None. Papers and excerpts of books will be provided by the instructor.

***5984 (Special Study-Applications of Machine Learning. Creed Jones)**
Kelleher, J. Mac Namee, B., & D'Arcy, A. (2015). *Fundamentals of machine learning for predictive data analytics: algorithms, worked examples, and Case Studies* (1st ed.). MIT Press. Pp. xxi, 589.

***5984 (Special study-Quantum engineering-V. Kovanis)**
Zagoskin, A. (2015). **Quantum Mechanics: A Complete Introduction** (1st ed.). London: John Murray Learning. Pp. xii, 407. ISBN: 9781473602410

Nielsen, M. & Chuang, I.(2010).**Quantum Computation and Quantum Information.** (2nd ed.). Cambridge: Cambridge University Press. Pp. xxix, 665. ISBN: 9781107002173

***5984 Special Study (**Adv HV & Elect Insulation Eng. Mona Ghassemi)
Andreas Kuchler. **HIGH VOLTAGE ENGINEERING, FUNDAMENTALS TECHNOLOGY-APPLICATIONS**. Springer Vieweg, Berlin, Germany, 2018, 650, ISBN: 9783642119927

***6174/AOE6174. Taught by AOE.**
Jardin, S., **Computational Methods in Plasma Physics**. Chapman & Hall/CRC Computational Science 1st, 2010. ISBN 9781439810217

***6204 Adv Topic: Power Electronics for Motor Drives. (Jason Lai)**
No textbook required.

***6304 Adv Topic: HVDC, FACTS, and Renewables. (Ali Mehrizi-Sani)**
No textbook required.

6524/CS6524
No textbook required.

6564 **No textbook required.** Course materials provided by instructor.

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

6774 *State-of-the-art written notes will be provided by the instructor*. – ME teaches.
Supplemental Material – suggested textbook – M. Krstic, I. Kanellakopoulos, P. Kokotovic, **Nonlinear and Adaptive Control Design,** Wiley, 1995.
(CROSS-LISTED AOE6774/ME6574)

List modified on Monday, February 24, 2020