

**FALL 2020 IN PROGRESS Booklist**

***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.
- 1574 Tony Gaddis, - **Starting Out with C++: From Control Structures through Objects, Brief Version**, Pearson, 9th Edition, 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**, 7<sup>th</sup> 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.

- 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. ISBN: 978-0073380643.

**Required Course Materials:**

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

- 2500 David A. Patterson and John L. Hennessy, **Computer Organization and Design: The Hardware/Software Interface**, revised 5<sup>th</sup> edition, 2013. Morgan Kaufmann. ISBN 978-0124077263.

**2514** Riley, David and Kenny A. Hunt. **COMPUTATIONAL THINKING FOR THE MODERN PROBLEM SOLVER**. i, Boca Raton Florida: CRC Press, 2014, 405. ISBN: 978-1466587779

(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**, 10<sup>th</sup> edition, Wiley, 2020. ISBN 978-1119578888

Z. A. Shaw, **Learn Python the Hard Way**, 3<sup>rd</sup> edition, Addison-Wesley Professional, 2017. ISBN: 978-0134692883

**2544** Mano, M. Morris, Charles R. Kime, and Tom Martin. **LOGIC AND COMPUTER DESIGN FUNDAMENTALS**. v, Boston: Pearson Prentice Hall, 2016, 656. ISBN: 978-0133760637

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

**2574** Carrano and Henry, **Data Abstraction and Problem Solving with C++: Walls and Mirrors**, 7<sup>th</sup> edition. Pearson. ISBN 978-0134463971.

**Optional:** Robert Sedgewick, **Algorithms in C++, Parts 1-4**, 3<sup>rd</sup> edition, Addison-Wesley. ISBN 978-0201350883.

**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**, 6<sup>th</sup> edition, McGraw-Hill. ISBN: 978-0078028229.

**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.

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- 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](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 e-text 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 e-text access card.**
- 3204** Donald Neamen, **Microelectronics Circuit Analysis and Design**, 4<sup>th</sup> edition, McGraw-Hill. ISBN 978-0073380643.
- 3214** Donald Neamen, **Semiconductor Physics and Devices**, 4<sup>th</sup> edition, McGraw-Hill. ISBN 978-0073529585
- 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 978-0792372707.  
**\*PDF version available on-line. Free for students.**
- 3354** **No textbook required.** ECE Department, **ECE 3354 Lab Manual**. Available on-line.
- 3544** John Wakerly, **Digital Design Principles and Practices**, 5<sup>th</sup> edition. PEARSON, 2017. ISBN 978-0134460093.
- 3574** David Thomas and Andrew Hunt. **The Pragmatic Programmer**. Addison-Wesley, 2020. ISBN 978-0135957059.
- 3614** Ali Grami, **Introduction to Digital Communications**, Academic Press (Elsevier), 2016. ISBN 978-0124076822.

- 3704 Oppenheim, A. V., Willsky, A. S., and Nawab, S. H. **SIGNALS AND SYSTEMS**. ii, Pearson, 1996, 1000. ISBN: 978-0138147570 or ISBN-10:0138147574
- 4104 David M. Pozar, **Microwave Engineering**, John Wiley, 4<sup>th</sup> edition. ISBN 978-0470631553.  
**(Co-located with 5104G)**
- 4134 Saleh, B. E. A. and Teich, Malvin C. **Fundamentals of Photonics**. 2nd Edition. New York, NY: John Wiley and Sons, 2007, 1177. ISBN: 978-0471358329  
**(Co-located with 5134G)**
- 4154 Prohss, G. W., **Physics Of The Earth's Space Environment**, (1<sup>st</sup> Edition), Springer, 2004, 513 pages. 978-3-642-05979-7  
**(Co-located with 5164 and cross-listed with AOE)**
- 4164 P.M. Kintner and M.L. Psiaki., **Global Positioning System Theory and Design** 3<sup>rd</sup> Edition. *The textbook is provided in electronic format by the instructor.*
- 4194 W. G. Rees, **Physical Principles of Remote Sensing**, 3<sup>rd</sup> edition, 2013. Cambridge Univ. Press. ISBN 978-0521181167. **(Co-located with 5194)**
- 4205 Sergio Franco, **Design with Operational Amplifiers and Analog Integrated Circuits**, McGraw-Hill, 3<sup>rd</sup> edition, 2005. ISBN 978-0072320848.
- 4220 Behzad Razavi, **Design of Analog CMOS Integrated Circuits**, McGraw-Hill, 2<sup>nd</sup> edition, 2016. ISBN: 978-0072524932.
- 4224 Robert W. Erikson and Dragan Maksimovic, **Fundamentals of Power Electronics**, 2<sup>nd</sup> edition, 2001, Springer. ISBN 978-0792372707.  
**\*PDF version available on-line. Free for students.**
- 4334 J. D. Glover and M. S. Sarma, **Power System Analysis and Design**, Cengage Engineering, 6<sup>th</sup> edition. ISBN 978-1305632134.
- 4414/CS 4224 conjoined with ECE 5414G/CS 5264G.  
Love, R. **Linux Kernel Development** 3E. Upper Saddle River, NJ: Addison-Wesley. 2010. Pp. xxv, 440. ISBN: 978-0672329463
- Recommended:**
- Bovet, D. P., & Cesati, M. (2005). **Understanding the Linux Kernel** 3E. Sebastopol, CA: O'Reilly. Pp. xvi, 944. ISBN: 978-0596005658
- Corbet, J., Rubini, A., & Kroah-Hartman, G. **Linux Device Drivers** (3rd ed.). 2005. Sebastopol, CA: O'Reilly. Pp xvii, 640. ISBN: 978-0596005900

-Love, R. **Linux System Programming: Talking Directly to the Kernel and C Library**. 2E.2013. Sebastopol, CA: O'Reilly. Pp. xx, 456. ISBN-13: 978-1449339531.

-Mauerer, W. **Professional Linux Kernel Architecture** (1st ed.). 2008. Indianapolis, IN: Wiley. Pp xxx, 1368. ISBN: 978-0470343432

4424 **Recommended:**

Kevin Murphy, **Machine Learning: A Probabilistic Perspective**, 1E. MIT Press, 2012. ISBN 978-0262018029.

**(Cross-listed with CS 4824)**

**Recommended**

Marc Deisenroth, **Mathematics for Machine Learning**, 1Edition. Cambridge University Press, 2020. ISBN: 978-1108455145

**(Cross-listed with CS 4824)**

4524 D. L. Poole and A. K. Mackworth, ***Artificial Intelligence: Foundations of Computational Agents***, 2nd Edition, Cambridge University Press, 2017. ISBN: 978-0521519007

4525 Mat Buckland, **Programming Game AI by Example**, Wordware Game Developers Library, 1<sup>st</sup> Ed. 2004. ISBN-978-1556220784

4534 **No textbook required.**

4540 Weste and Harris, **CMOS VLSI Design: A Circuits and Systems Perspective**, 4<sup>th</sup> edition, 2010. Pearson. ISBN 978-0321547743. Also available in eText version ISBN: 978-0133001471.

4554 Richard Szeliski, **Computer Vision: Algorithms and Applications**, 1E. Springer-Verlag, 2011. ISBN 978-1848829343. **(Same room as 5554)**  
**Book available for free in a PDF format:** <http://szeliski.org/Book/>

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 9781430258544

TJ O'Connor, **Violent Python : A Cookbook for Hackers, Forensic Analysts, Penetration Testers and Security Engineers**, Elsevier/Syngress, 2012, ISBN 978-1597499644

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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

- 4574 Maurice Herlihy and Nir Shavit, **The Art of Multiprocessor Programming, Revised Reprint** 1<sup>st</sup> edition. Morgan Kaufmann, 2012. ISBN: 978-0123973375
- 4580 Burger and Burge, **Digital Image Processing**, 2nd edition, Springer-Verlag, 2016, ISBN 978-1447166832
- 4614 James F. Kurose and Keith W. Ross, **Computer Networking: A Top-Down Approach**, Pearson, 7<sup>th</sup> edition, 2016. ISBN: 978-0133594140.
- 4624 J. G. Proakis and D. G. Manolakis, **Digital Signal Processing: Principles, Algorithms, and Applications**, 4<sup>th</sup> edition, PEARSON, 2006. ISBN 978-0131873742.
- 4634 Ali Grami, **Introduction to Digital Communications**, Academic Press (Elsevier), 1<sup>st</sup>, 2015. ISBN 978-0124076822.
- 4664 **No textbook required.**
- 4805 & 4806 (Senior Design Project)  
Patrick Lencioni, **The 5 Dysfunctions of a Team**. John Wiley & Sons. 1<sup>st</sup>. 2010. ISBN: 978-0787960759.
- 4984 **Microgrids. Ali Mehrizi-Sani. No textbook required.**
- 4984 **Interdisciplinary Design I. Queen, R.. No textbook required**
- 5104G David M. Pozar, **Microwave Engineering**, John Wiley, 4<sup>th</sup> edition. ISBN 9780470631553.  
**(Co-located with 4104)**
- 5105 Jian-Ming Jin, **Theory and Computation of Electromagnetic Fields**, 2<sup>nd</sup> edition, Wiley. ISBN 978-1119108047. **(+Zoom section)**
- 5134G Saleh, B. E. A. and Teich, Malvin C. **Fundamentals of Photonics**. 2nd Edition. New York, NY: John Wiley and Sons, 2007, 1177. ISBN: 978-0471358329  
**(Co-located with 4134)**

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- 5164 Prolss, G. W., **Physics Of The Earth's Space Environment**, (1<sup>st</sup> Edition), Springer, 2004, 513 pages. 978-3-642-05979-7  
(Co-located with 4154/AOE 4654)
- 5174 F. F. Chen, **Introduction to Plasma Physics and Controlled Fusion**, 3<sup>rd</sup> edition. Springer. ISBN 978-3319223087.  
(Cross-listed and taught by AOE)
- 5194 W. G. Rees, **Physical Principles of Remote Sensing**, 3<sup>rd</sup> Edition, 2013. Cambridge Univ. Press. ISBN 9780521181167. (Co-located with 4194)
- 5204 Baliga, G. J., **Fundamentals of Power Semiconductor Devices, 2 Ed. 2018**. Springer. ISBN: 978-3319939872.
- 5234 Henry Ott, **Noise Reduction Techniques in Electronic Systems**, 3rd edition, John Wiley. ISBN 978-0470189306.
- 5254 **No textbook required.**
- 5314 A. J. Wood and B. F. Wollenberg, **Power Generation, Operation, and Control**, John Wiley, 2013, 3<sup>rd</sup> edition. ISBN 978-0471790556.
- 5414G/CS 5264G. Conjoined with ECE 4414/CS 4224  
Love, R. **Linux Kernel Development** (3rd ed.). Upper Saddle River, NJ: Addison-Wesley. 2010. Pp. xxv, 440. ISBN: 978-0672329463  
**Recommended:**  
-Bovet, D. P., & Cesati, M. (2005). Understanding the Linux Kernel (3rd ed.). Sebastopol, CA: O'Reilly. Pp. xvi, 944. ISBN: 978-0596005658  
-Corbet, J., Rubini, A., & Kroah-Hartman, G. (2005). Linux Device Drivers (3rd ed.). Sebastopol, CA: O'Reilly. Pp xvii, 640. ISBN: 978-0596005900  
-Love, R. (2013). Linux System Programming: Talking Directly to the Kernel and C Library (2nd ed.). Sebastopol, CA: O'Reilly. Pp. xx, 456. ISBN-13: 978-1449339531.  
-Mauerer, W. (2008). Professional Linux Kernel Architecture (1st ed.). Indianapolis, IN: Wiley. Pp xxx, 1368. ISBN: 978-0470343432
- 5424 Kevin Murphy, **Machine Learning: A Probabilistic Perspective**, MIT Press, 2012. 1<sup>st</sup> Ed. ISBN 978-0262018029. (Cross-listed with CS one section taught by CS and another one taught by ECE)
- 5480 Pfleeger, C., Pfleeger, S., & Margulies, J. (2015). **Security in Computing**, 5th ed. Prentice Hall. Pp. xxxiii, 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)

- 5485 James F. Kurose and Keith W. Ross, **Computer Networking: A Top-Down Approach Featuring the Internet**, Pearson. 7<sup>th</sup> edition, 2016. ISBN: 9780133594140. **(on-line – MIT only)**
- 5504 Online course. **No textbook required. Cross-listed with CS.**
- 5510 Maurice Herlihy and Nir Shavit, **The Art of Multiprocessor Programming**, Morgan Kaufman, 2012. ISBN 9780123973375. **(Cross-listed with CS – 2 sections CS and ECE teaches)**
- 5554 Richard Szeliski, **Computer Vision: Algorithms and Applications**, 1E. Springer-Verlag, 2011. ISBN 978-1848829343. **(Same room as 4554)**  
**Book available for free in a PDF format: <http://szeliski.org/Book/>**
- 5560 William Stallings, **Cryptography and Network Security – Principles and Practices**, 7<sup>th</sup> edition, Pearson, 2016. ISBN: 13: 978-0134444284.
- 5565 **No textbook required.** Instructor will provide lecture materials.  
**(Cross-listed with CS)**
- 5584 **UPDATE: CS Instructor will be using this book for FA20**  
Charlie Kaufman, Radia Perlman and Mike Speciner. **Network Security: Private Communication in a Public World**, Series in Computer Networking and Security, 2<sup>nd</sup> edition, Prentice Hall. ISBN-978-0130460196.  
**(Cross-Listed, CS teaches Fall 2020)**
- 5585 **(IT Security & Trust – MIT only)**  
Ed Skoudis **CounterHack Reloaded: A Step by Step Guide to Computer Attacks and Effective Defenses**, 2<sup>nd</sup> edition, Prentice Hall. ISBN 978-0132704533. **(on-line – MIT only)**
- 5605 Alberto Leon-Garcia, **Probability & Random Processes for Electrical Engineering**, 3<sup>rd</sup> edition, 2008, Addison-Wesley. ISBN: 978-0131471221 **CGEP course. Cross-listed BMES.**
- 5636 M. A. Richards. **Fundamentals of Radar Signal Processing**. 1E. McGraw-Hill, 2005. ISBN 978-0071444743.
- 5674 Jeffrey H. Reed, **Software Radio, A Modern Approach to Radio Design**, 2002. Prentice-Hall. ISBN 978-0130811585.
- 5744 Wilson J. Rugh, **Linear Systems Theory**, 2<sup>nd</sup> edition, Prentice-Hall. ISBN 978-0134412054.  
**(Cross-listed with ME and AOE)**



- 5754 Williams and Lawrence, Linear State-Space Control Systems, 1<sup>st</sup> edition, 2007. John Wiley. ISBN 9780471735557 **(Cross-listed with ME and AOE) ME teaches**
- 5774 H. Kahlil, Nonlinear Systems, 3<sup>rd</sup> edition. Pearson. 2002. ISBN 9780130673893. **AOE teaches. (Cross-listed with ME and AOE)**
- 5944 **No textbook required.**
- 5984 **Special Study: Power Systems Under Abnormal Operating Conditions. CC Liu. No textbook required.**
- 5984 **Special Study: Research & Development Methods for Engineers. Kovanis, V. No textbook required**
- 5984 **Special Study: Optical Fiber Sensors. Anbo Wang.**  
Udd, Eric, and William B. Spillman. Fiber Optic Sensors: An Introduction for Engineers and Scientists. 2nd ed., Wiley, 2011. ISBN: 978-0470126844
- 6104 **Adv Topic: Nano-photonics Science & Technology. Wei Zhou. No textbook required.**
- 6504 **Adv Topic: Reinforcement Learning. Think Doan.**  
Richard Sutton and Andrew Barto, Reinforcement Learning, 2nd Edition. MIT Press (2015). ISBN: 978-0262039246
- 6524 **No textbook required.**
- 6554 **No textbook required.**
- 6604 **No textbook required. MATLAB or Octave is required. S. Ellingson.**
- 6634 **No textbook required.**