

About Green Technology

From Delmar, Cengage Learning



“In his recent speech to Congress, Obama said the U.S. will double its supply of renewable energy in three years. To do so, he’s calling on a new class of workers to be trained in environmental fields. Green jobs training programs will get \$500 million from the stimulus.”

“At a summit in Philadelphia on Friday, Vice President Joe Biden said people who make \$20 per hour before a green jobs training program can make \$50 per hour after. On average, the clean-energy jobs pay 10 to 20 percent more than similar work outside the field, he said.”

— Quote from CNN Online March 3, 2009

Programs on Green Technology begin with changes to construction and power resources. Currently, programs focused on jobs for their students are addressing “Green” by making additions and changes to their existing course offerings. For instance, the new Delmar, Cengage Learning *Refrigeration and Air Conditioning Technology* text by Whitman for HVAC-R has a major green emphasis. We have been helping schools make gradual changes to their existing HVAC courses, teaching the fundamentals and continuing to grow green over time. Many Delmar texts apply this approach; to see which texts are going green, look for words like:

efficiency / effectiveness
renewable energy / conservation
environmental protection
alternative energy systems / sustainability

Transportation Technologies

The green impact on the transportation industry is evident throughout the training. Changes to emission standards and engines driven solely by fossil fuels happen daily. Delmar, Cengage Learning products are updated to reflect the latest in inspection guidelines and hybrid technologies. The ASE is issuing new NATEF training standards for all students and NATEF certified programs.

Most existing Delmar, Cengage Learning auto texts discuss emissions and hybrid technologies. Coverage will continue to grow with each individual revision.

Examples of texts addressing more green and hybrid technologies include:

- Erjavec, *Automotive Technology: A Systems Approach, 5E* the latest in emissions and hybrid technology is thoroughly integrated (ISBN: 9781428311497)
- Bennett, *Medium/Heavy Duty Truck Engines, Fuel and Computerized Management Systems 3E* has been completely updated in response to the EPA’s new stringent standards for diesel emissions. (ISBN: 9781428366664)
- Thomas/Jund, *Collision Repair and Refinishing* contains extensive coverage of emissions-reducing waterborne paints, which are coming into widespread use and are now mandated in California. (ISBN: 9781401889944)

Construction

Green issues are having a huge impact on the construction industry. Several organizations offer standards around green building. The National Green Building Standard™ developed by the NAHB for all residential construction work including single-family homes, apartments and condos, land development and remodeling and renovation, is endorsed by the American National Standards Institute (ANSI). There is a certificate in Green Construction (LEEDS), that requires a program in Construction or professional experience as a pre-requisite.

There are new standards by OSHA and those standards are most commonly covered topic-by-topic within each industry or sub-industry (electrical, etc.).

The International Code Council (ICC) that manages and publishes the International Building Codes (IBC) publishes a ‘green’ version of the codes. There is a bridge code in effect until the new codes are published.

While all texts will continue to grow green as they are revised, examples of texts addressing more efficiency and green technologies include:

- Spence, *Construction Methods, Materials and Techniques 3E* (ISBN: 9781435481084)
- Jefferis, *Commercial Drafting @ Detailing, 3E* (ISBN: 9781435425972)
- Jefferis-Madsen, *Architectural Design @ Drafting, 6E* (ISBN: 9781435481626)
- Underwood, *The Green Home: A Decision Making Guide for Owners and Builders* (ISBN:9781435493100)
- Morgan, *Picture Yourself Going Green, Step-by-Step Instruction for Living a Budget-Conscious, Earth-Friendly Lifestyle in Eight Weeks or Less* (ISBN: 9781598638448)
- Smith, *Electricity for Refrigeration, Heating and Air Conditioning, 8E* (ISBN: 9781111038748)
- Siegenthaler, *Modern Hydronic Heating, 3E* (ISBN 13: 9781428335158) (Publishing December 2010)
- Fox, *Introducing @ Implementing Autodesk Revit Building 2010* (ISBN: 9781435493100)
- Vogt, *Carpentry 5E* (ISBN: 9781435484054)

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For information on “greening” your curriculum contact your local Delmar, Cengage Learning Representative

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Construction (continued from previous page)

- *Going Green with the International Residential Code* (ISBN: 9781435497290)
- *2009 International Energy Conservation Code* (ISBN: 9781580017428)
- *2006 International Energy Conservation Code: Code & Commentary, 1E* (ISBN: 9781580014885)
- Kruger, *Residential Construction Academy: Green Building* (ISBN 13: 9781439059784) (Publishing in May 2012)
- Seville/Kruger, *Green Building: Principles and Practices* (ISBN: 9781111135959) (Publishing December 2011)
- Guertin, *Green Applications for the RCA Series*, (ISBN: 9781111037543)
- Spadafora, *Green Building Construction and the Fire Service* teaches firefighters how to deal with fire prevention and firefighting techniques unique to green building technology. (ISBN: 978111127343) (Publishing April 2012)

Delmar, Cengage Learning is preparing a major revision of our *Residential Construction Academy* series and each revised book will include coverage of green and sustainable practices. They are listed below:

- Standiford, *Residential Construction Academy: Facilities Maintenance, 2E* (ISBN: 978-1-111-31112-4)
- Huth, *Residential Construction Academy: Basic Principles for Construction, 3E*, (ISBN: 978-1-111-30718-9) (Publishing February 2011)
- Vogt, *Residential Construction Academy: Carpentry, 3E*, (ISBN: 978-1-111-30826-1) (Publishing March 2011)
- Joyce, *Residential Construction Academy: Plumbing, 2E*, (ISBN: 978-1-111-30777-6) (Publishing February 2011)
- Silberstein, *Residential Construction Academy: HVAC, 2E*, (ISBN: 978-1-4390-5634-9) (Publishing January 2011)
- Fletcher, *Residential Construction Academy: House Wiring, 3E* (ISBN: 978-1-111-30621-2) (Publishing January, 2011)
- Herman, *Residential Construction Academy: Electrical Principles, 2E* (ISBN: 975-1-111-30647-2) (Publishing February 2011)

Project Lead the Way

Project Lead the Way's hands-on engineering curricula integrate green concepts with projects that consider the efficiency, effectiveness, and lifecycle of engineered products and systems. Our new series of texts developed in partnership with Project Lead the Way (PLTW) support this integral approach with green coverage built into the content. All the books in this series take a decidedly green perspective by addressing environmental impacts and product lifecycle from the outset and teaching students how to design green for the future.

- Rogers, *Gateway to Engineering* (ISBN: 9781418061784)
- Karsnitz, O'Brien, and Hutchinson, *Engineering Design: An Introduction* (ISBN: 9781418062415)
- Banach, Jones, Kalameja, *Autodesk Inventor Essentials 2011 School Edition* (ISBN: 9781111543822)

Technology Education

The authors of *Engineering and Technology* never miss an opportunity to highlight the environmental and societal impacts of technology, but they do much more than talk the talk. This comprehensive introduction to engineering and technology walks the walk by providing a wealth of design challenges using green technologies. Students will research and design solutions involving solar, wind, and wave power, electric vehicles, plastics identification and recycling, agricultural technology, bioremediation, and more.

- Hacker, *Engineering and Technology* (ISBN: 9781418073893)

Electrical Power Generation

Electrical programs at schools are changing to include new power resources and student competencies on analyzing appropriate power resources depending on available natural resources and geography.

Photovoltaic installation continues to be strong in states like California and Colorado that see 300+ sunny days a year. But with new state-funded programs like the one in Massachusetts which provides \$68 million to offsetting the cost of PV systems, demand is spreading across the entire United States. Technicians in this area need training in installation, maintenance, and troubleshooting which can be found in community colleges across the U.S.

Wind power technology is a rapidly developing area that is being promoted by the American Wind-Energy Association (AWEA). With the participation of more than three dozen educational institutions and industry partners, AWEA has issued preliminary skill standards that are now referenced by wind power curricula. Delmar, Cengage Learning is currently developing text and lab materials for standard community college wind power programs.

Fuel cells continue to be used for electrical power generation. As the need for skilled fuel cell technicians has grown, more community colleges are offering training programs leading to an Associates degree or certification. States leading this training are Texas, Ohio, Connecticut, South Carolina, and Minnesota all of which have several community colleges with certificate and/or Associate degree programs in Fuel Cell Technology.

Renewable energy is any combination of wind, solar, hydrothermal, fuel cell, and geothermal energy in addition to the renewable energy storage devices that convert and store the raw energy for electrical use. Renewable energy classes are starting to take form in many community colleges with a focus on evaluation, need, and the benefits of alternative energy.

Examples of texts addressing more green include:

- Mullin, *Electrical Wiring Residential, 17E* (ISBN: 9781435498266)
- Mullin, *Electrical Wiring Commercial, 14E* (ISBN: 9781435498297)

Watch for upcoming titles in these important green areas of Electrical Power Generation:

PHOTOVOLTAICS

- *The Electrician's Guide to Photovoltaic System Installation* (9781111639969) by Greg Fletcher, due to publish August 2012, will focus on the basic procedures for installing a photovoltaic (PV) system in both residential and light commercial buildings. It is being written with the installing electrician in mind and will not cover PV system design in detail, but will include all of the major topic areas that make up the North American Board of Certified Energy Practitioners (NABCEP) entry level PV installer certification exam. The text is appropriate for apprentice electrical programs, high school level electrical programs, and post-secondary electrical programs at technical colleges and community colleges as well as Electricians who are currently working in the field and who want to learn about PV system installation.
- *Solar Energy: Photovoltaics and Concentrating Solar Power* by Rodney Wiltshire and Christopher Conto, due to publish January 2013, can be used in a variety of classes where solar is taught including but not limited to: green building construction & retrofitting classes, photovoltaic systems, agriculture/natural resource classes, intro to alt energy, alternative energy production classes, alternative energy efficiency classes, and electrical classes. The text will cover both Solar Electric (Photovoltaic's-PV) and Solar Thermal (Concentrating Solar Power-CSP) areas. This foundation text is appropriate for all levels of study that need the theory and fundamentals of solar energy. There are currently 3 solar standards that are considered industry standard: NAHB (National Association of Home Builders) green standards, ETA (Employment and Training Administration (of the Federal Government), and NABCEP (North American Board of Certified Energy Practitioners) exam objectives. All of these areas will be covered in the text and all NEC (National Electrical Code) references will be up to date.

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Electrical Power Generation (continued from previous page)

WIND

- Hemami, *Wind Turbine Technology* (ISBN: 9781435486461)
Projected publication date: January, 2011.
- Kilcollins, *Maintenance Fundamentals for Wind Technology* (ISBN: 9781111307745), Lab Manual (ISBN: 9781111307752)
Projected publication date: January, 2012.

FUEL CELLS

- Gleason, *The Fuel Cell Technician's Guide*, (ISBN 9781111318208) will give a comprehensive overview of fuel cells designed specifically for fuel cell technicians. There are many fuel cell textbooks dedicated to engineers but none written specifically for those who install, implement, hand troubleshoot and repair fuel cells/systems. The primary purpose of this book is to be used in fuel cell education for technicians and inspectors/fire protection officials.

RENEWABLE ENERGY

- Grinnell, *Renewable Energy* (ISBN: 9781111542702)
Projected publication date: January, 2013.

Also watch for upcoming revisions with growing green coverage with the 2011 NEC release: Mullin, *Electrical Wiring Residential, 17E* (a chapter dedicated to residential solar installation); Herman, *Standard Textbook of Electricity, 5E* (containing green tips and green applications in every section); Mullin, *Electrical Wiring Commercial, 14E* (a chapter dedicated to commercial solar installation).

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Smart Grid

The support for smart grids became federal policy with passage of the Energy Independence and Security Act of 2007. As more and more cities enforce the use of the smart grid and meters, current electricians and electronic technicians as well as students of these trades will need to quickly learn the technology and terminology. This new technology will need to be taught within the electrical and electronic disciplines for the installation, maintenance, and troubleshooting of the grid and meters as well as made available to the current workforce for employee advancement in the field.

- Hertzog, *Smart Grid Dictionary Plus* (ISBN: 9781111540395), scheduled to publish January 2011, is a professional and academic learning dictionary focused on Smart Grid terms and acronyms and covers terminology from electric utilities and regulatory agencies; energy efficiency and building automation applications; energy storage, battery, security, and sensor technologies; smart meters and telecommunications; and standards organizations. The text will define technical concepts and identify important websites for additional research. The accompanying CourseMate will provide a CLebook, instructor and student PPTs for additional industry knowledge, quizzing, flash cards, games, and engagement tracker.
- Wells, *Smart Grid Home* (ISBN: 9781111318512), scheduled to publish March 2012, will address a huge emerging market in home improvement – the upgrading of residential electrical service and applications to take advantage of smart grid technology in the home. As electric power costs rise and utility companies alter traditional flat rate charges in favor of peak demand pricing, students of electronics and electricity will need to learn how to get ahead of the trend by increasing energy efficiency and altering usage patterns to avoid high costs. The book will teach readers how to evaluate for reduction in energy consumption, lower electrical energy costs, and how to create autonomy (generating some or all of one's own electric power).

Culinary

Yes, even culinary is going green. The buy local movement means fresher food on our table and less greenhouse gases expended in the transport of food from field to table. Smart processes, like building green storerooms, are other ways in which culinary education is thinking about sustainability. Garlough's *Modern Food Service Purchasing* features coverage of the green movement from a purchasing perspective (buying green products, building green storerooms, etc.), including a checklist of green initiatives commonly being adopted in the industry.

What's Next?

We're always looking for new authors at Delmar, Cengage Learning and we're especially interested in finding authors who want to write green. If you're interested in writing on any of the following topics, or other green topics, please contact us:

Automotive, Wind Power & Survey of Renewable Energies:
Contact Dave Boelio, dave.boelio@cengage.com

Alternate Energy for Electrical Power Generation, Fuel Cells, Green Energy Management (energy auditors), Electrical Installation for BioMass, Electrical Installation for Geo-thermal, Storage and Conversion of Energy:
Contact Stacy Masucci, stacy.masucci@cengage.com

Building Trades & PLTW: Contact Jim DeVoe, james.devove@cengage.com

Culinary: Contact Jim Gish, james.gish@cengage.com

Other topics: Contact Sandy Clark, sandy.clark@cengage.com