

Registration

Ways to Register

1. Call 423-425-4344 with your credit card information.
2. Fax the completed registration form to 423-425-4170.
3. Pay online at <http://www.utc.edu/ce>, scroll to Register Online.
4. Send the completed registration form to:
UTC Continuing Education, Dept. 5255
615 McCallie Ave
Chattanooga, TN 37403.

Cancellation Policy – Registrants are responsible for the entire invoice amount unless cancellation is received in writing and in advance. Individuals canceling will be charged a \$75 cancellation fee. Refunds will not be granted after the course begins.

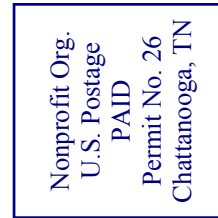
Tax Deductions – An income tax deduction is allowed for expenses of education, including registration fees, travel, meals and lodging undertaken to maintain and improve professional skills.

CEUs—Participants will earn 0.7 CEUs or 7 contact hours of Continuing Education.

Registration Form

Name _____		SSN# _____
Address _____		
City, State, Zip _____		
Phone (Home) _____	(Work) _____	(Fax) _____
Company (if PO used) _____		
Attention _____		
Seminar on Transportation without Petroleum # 10608003 September 16, 2009 (8:30 a.m.—4:30 p.m.)		
Course fee: \$125 Seminar Only \$150 Seminar with All Materials (zip drive)		
<input type="checkbox"/> I DO NOT want Course Materials (\$125).		
<input type="checkbox"/> I DO want the Course Materials (course fee \$150).		
<input type="checkbox"/> 10% course fee discount for teams of 5 or more (fee \$112.50 pp w/o Materials, \$135 pp with Materials)		
Method of Payment		
<input type="checkbox"/> Cash	<input type="checkbox"/> Visa	<input type="checkbox"/> MC
<input type="checkbox"/> Check	<input type="checkbox"/> PO	Number _____
Account Name _____		
Credit Card # _____	Expiration Date _____	3 digit security code _____
Signature _____		

The University of Tennessee at Chattanooga
The Division of Continuing Education
119 Race Hall, Dept 5255
615 McCallie Avenue
Chattanooga, TN 37403-2598



The University of Tennessee
at Chattanooga
Center for Energy
Transportation and
the Environment
in cooperation with the
Division of
Continuing Education



UTC's Advanced Vehicle Test Facility

Presents...

A Seminar on Personal Transportation without Petroleum

September 16, 2009

8:30 a.m.—4:30 p.m.

*UTC Advanced Vehicle Test Facility
4605 Amnicola Highway
Chattanooga, TN
<http://www.utc.edu/CETE>*

The University of Tennessee at Chattanooga is an equal employment opportunity/affirmative action/Title VI/Title IX/Section 504/ADA/ADEA institution.



Course Outline

This course explores the concept of a future for personal transportation without petroleum. It includes an introduction to the history of electric vehicles, an update on the current state-of-the-art in electric vehicle design, including the latest in battery technology, fuel cells, advanced charging technology, and the potential for Vehicle to Grid (V2G) as a means of storing electric energy. Hydrogen as an energy carrier will also be covered, including a first hand look at the UTC hydrogen fueling station.

The course will include Inductive Power Transfer as a means for wireless charging of vehicles. This segment will be presented by international experts from the University of Auckland, New Zealand.

Who Should Attend

Individuals interested in understanding a sustainable pathway to personal transportation without petroleum and without tail pipe emissions. Electric-power utility engineers who need in depth understanding of the impact of electric vehicles on the electric transmission and distribution grid.

Prerequisites

Participants should have an interest in transportation, energy and the environment with some experience in the fundamentals of energy conversion and related subjects.

Course Materials

Class notes:

Copies of all class materials will be placed on a zip drive for those selecting the option to receive class materials.

What is Covered:

1. Transportation Fundamentals
 - Trends in Petroleum Production
 - History of Electric Vehicles
 - Fundamental Energy Considerations
2. Battery Technologies
 - Lead Acid
 - Nickel Metal Hydride
 - Nickel Cadmium\
 - Lithium Ion Combinations
3. Battery Charging Systems
 - Level 1 (115V)
 - Level 2 (230V)
 - Level 3 (480 V, 3 ϕ)

What is Covered (Continued):

4. The Hydrogen Economy
 - Hydrogen as an Energy Carrier
 - Generation Methods
 - Coal Gasification
 - Steam Reformation of Natural Gas
 - Electrolysis
5. Fuel Cells
 - Fundamentals of Operation
 - Overview of Existing FC Vehicles
 - Transit Operations
 - Personal Transportation
6. Inductive Power Transfer
 - Introduction/overview
 - Past, Present and Future
 - Defining the end goal –
 - coupling power efficiently and safely
 - Overcoming problems
 - Stability, magnetic coupling
 - power flow control with multiple loads
 - Existing Applications using IPT
 - Meeting the challenge for Roadway with IPT
 - Application to vehicles
 - Historical objectives and challenges
 - The problem of variable coupling
 - Development of Stationary Applications
 - Future Roadway Powered Vehicles

Course Registrar

For more information about this course please contact Continuing Education at 423-425-4344

Course Instructors

Dr. J. Ronald Bailey is a Guerry Professor of Engineering and Director of the Center for Energy, Transportation and the Environment at the University of Tennessee at Chattanooga. O Immediately prior to joining UTC, Dr. Bailey served four years as F.W. Olin Professor and Dean of the College of Engineering at Florida Institute of Technology, and five years as Professor and Dean of Engineering at the University of Texas at Arlington. He is the Principal Investigator for several transportation research projects sponsored by the Federal Transit Administration and the author of numerous technical publications related to energy conversion and transportation. Dr. Bailey received his BS and MS degrees in mechanical engineering from N. C. State University and his PhD from the University of Southampton, England. He is a registered professional engineer and a member of ASME, NSPE, and the Chattanooga Engineers' Club.

Course Instructors—continued

Mark E. Hairr is Research Program Director for the Center for Energy, Transportation and the Environment (CETE). Mr. Hairr's responsibilities include project development and management; oversight of the program's daily operations; budget management; and grant administration. Prior to joining CETE, Mr. Hairr served as General Manager of Knoxville Area Transit (KAT) for more than five years overseeing all areas of the public transportation system for the City of Knoxville, Tennessee. During his tenure, KAT experienced rapid growth in new services and programs resulting in a ridership increase of 64%. Mr. Hairr implemented a new comprehensive clean fuels program at KAT using biofuels, propane and electric drive technologies. KAT was recognized in 2004 by the American Public Transportation Association (APTA) as Transit System of the Year and Mr. Hairr was named Urban Transit Manager of the Year by the Tennessee Public Transportation Association (TPTA) that same year. Prior to joining KAT, Mr. Hairr served in the administration of Knoxville Mayor Victor Ashe from 1993 through 1998 as a Policy Analyst managing a wide range of complex projects. Mr. Hairr's professional career began in 1990 at which time he became the Assistant City Planner for the City of Gatlinburg, Tennessee. Mr. Hairr holds a Bachelor of Arts degree in Sociology from the University of North Carolina at Charlotte and a Master of Science in Planning degree from the University of Tennessee.

Dr. John Boys, is Professor of Electronics at the University of Auckland where he is active in teaching and research. He has published more than 100 papers in international journals and is the holder of more than 20 US patents from which licenses in specialized application areas have been granted around the world. His specialist research areas are power electronics and inductive power transfer where he and Prof. Covic jointly head a research group. Dr Boys received his PhD degree from the University of Auckland, New Zealand in 1962. After completing his PhD he was with SPS technologies for five years before returning to academia as a lecturer at the University of Canterbury. He moved to Auckland in 1977 where he developed his work in Power Electronics. He is a Fellow of the Royal Society of New Zealand and a Distinguished Fellow of the Institution of Professional Engineers New Zealand.

Dr. Grant Covic, is a Professor within the Department of Electrical and Computer Engineering at The University of Auckland, where (together with Prof. Boys), he heads the power research cluster within the faculty of engineering. His current research and consulting interests include power electronics and inductive (contactless) power transfer (IPT). He has published more than 80 papers in international journals and conferences and holds a number of patents in the field of IPT. Dr Covic received his BE Hons, and PhD degrees from The University of Auckland, New Zealand in 1986 and 1993 respectively. He was appointed as a full time Lecturer in 1992, a Senior lecturer in 2000 and Associate Professor in 2007. He is a senior member of IEEE.