

Texas Tech University
Texas Tech University Health Sciences Center

News and Publications
Box 4640/Lubbock, Texas 79409-2022/(806) 742-2136

FOR IMMEDIATE RELEASE

REF: 1-1-14-88

CONTACT: Marydawn Webber

LUBBOCK -- The College of Engineering and the Division of Continuing Education at Texas Tech University are presenting a Pulsed Power Short Course Jan. 18-21, with a series of lectures emphasizing the technical aspects of power electronics systems.

Approximately 50 engineers and scientists from throughout the United States, as well as Great Britain, Germany and France, will attend the lectures at the Lankford Lab on the Tech campus.

Presentations on new technology and research in the field will be made by 12 Tech faculty members, headed by professors Magne Kristiansen and Tommy R. Burkes. The featured speaker will be Dr. Kenneth R. Prestwich, manager of the Pulsed Power Applications Department at Sandia National Laboratories, New Mexico.

The term, pulsed power, refers to the delivery of electrical energy in very short bursts, as short as one billionth of a second (nanosecond). A nanosecond is the amount of time it takes light to travel one foot. The concept may be explained simply in terms of a bow and arrow: As the archer draws his bow back, he is storing energy, all of which is quickly transferred to the arrow when it is released.

In other words, pulsed power (also known as power electronics) may be thought of as an electrical equivalent of the bow and arrow, where the energy stored uses many thousands, sometimes several millions, of volts, and is released all at once in an extremely short (1-nanosecond) pulse.

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The applications of pulsed power technology are abundant in such areas of research as radio frequencies, super conductivity, high voltage insulators, magnetic insulation applications and magnetic energy storage and recovery techniques.

Tech has the largest and oldest university basic pulsed power research program in the country, and in 1985 was awarded a \$3.75 million contract for work on pulsed power applications for the Strategic Defense Initiative. The overall high-energy switching research program is funded at more than \$1 million annually.

Most universities involved in pulsed power research employ graduates and/or former faculty of Texas Tech.

Pulsed power research at Tech Began in the early 1970s with studies in controlled thermonuclear fusion, laser power supplies and electromechanical pulse generators. Initial investigations, along with other developments in the field, established the need for a better understanding of the physical phenomena of pulsed power technology.

High power switching and materials studies are particularly high priority research areas and have, today, become the main emphasis of the university's pulsed power research program. The program is highly interdisciplinary and involves faculty members from the departments of electrical engineering, industrial engineering, mechanical engineering, physics, chemistry and mathematics.

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CONTACT: News and Publications

A lecture by a distinguished botanist and a social and educational program about chairs are planned at Texas Tech University this week.

Dr. J.B. Hanson, emeritus professor of plant physiology at the University of Illinois-Urbana, will speak at the weekly Plant Soil Science Seminar at 4 p.m. Monday (Jan. 18) in the Goddard Range and Wildlife Building, Room 101. Hanson, who was head of the University of Illinois botany department from 1967-77, will speak about "Plant Injury and Calcium." He has conducted research about plant membranes, membrane potential and the energetics of membrane transport. A reception will precede the lecture at 3:30 p.m. in the atrium of the Plant Science Building.

Lubbock architect H. Deane Pierce will talk about the history and design of chairs at 7 p.m. Thursday (Jan. 21) at the Museum of Texas Tech University. The free program is the first in the spring line-up of Thursday Nights at the Museum, social and educational events designed to introduce individuals to the museum. A social time will begin at 6:30 p.m.

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CONTACT: Preston Lewis/
Valinda Jackson

LUBBOCK -- The live satellite teleconference "Middle Managers: New American Dinosaurs?" will be broadcast Feb. 10 at the Texas Tech University Health Sciences Center (TTUHSC).

The teleconference will feature John Elkins, president and chief executive officer of the Naisbitt Group, which provides consulting, forecasting and research for national and international organizations.

Participants will meet 2-4 p.m. that Wednesday in Room 5B148A, TTUHSC. Registration fee is \$25 and additional information is available from the Library of the Health Sciences, 743-2213.

The conference, part of Executive Communication's Management Vision series, will address issues faced by corporate, institutional and governmental leaders in today's changing economic and social environment. The program will cover trends shaping organizational change; skills managers need for survival in emerging work structures; and the innovation process and its importance.

The Naisbitt Group was founded by "Megatrends" author John Naisbitt. Elkins will discuss the variegated workforce, productivity problems and the service/information economy. Middle management skills will be examined. Other topics will include individual and organizational responsibilities of innovation; managing the interface between the existing organization and new structure; technical push versus market pull; and how innovation really works.

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HEALTH TIPSHEET
from
TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER
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FERTILE RESEARCH -- The same mechanism which helps block the invasion of bacteria into the uterus may be responsible for infertility in some women. About 15 percent of the infertility cases reported in the United States are blamed on unknown cervical factors. The cervix, or neck to the uterus, protrudes into the vagina and is the gateway to the reproductive tract. The cervical canal secretes proteins which can block passage of the spermatozoa. Some undetermined mechanism, reports TTUHSC cell biology and anatomy Professor Beverly S. Chilton, Ph.D., affects the viscosity of these proteins. Prior to ovulation, these cervical secretions normally have a thin consistency that will allow spermatozoa to pass the cervix on the way to the uterus. After ovulation, these secretions take on the consistency of a gel which serves as a first barrier against bacteria or spermatozoa advancing into the uterus. A breakdown in this cyclical mechanism may explain why some women cannot conceive children. With four-year funding of \$144,439 from the National Institutes of Health, Chilton is studying this cervical mechanism to identify how it works. This basic research could ultimately lead to ways to correct the infertility problems in some women as well as provide a new approach to birth control. For details, contact Chilton at (806) 743-2709.

SEEING RED -- The complete blood count may well be the most frequently performed hospital laboratory test. This test can provide physicians with key information about anemia, infection and other blood conditions such as leukemia. The blood count can help detect a disorder, classify the specific problem and monitor the body's response to treatment, says TTUHSC medical technology Professor Donald S. Mac Nair, M.D. The blood count determines the number of red corpuscles and the leukocytes per cubic millimeter of whole blood. This information is particularly useful in identifying anemia, which is a reduction in the number of circulating red blood cells. Though anemia is not itself a disease, it is a symptom of several diseases and a fairly common health problem nationally and worldwide. For more on the complete blood count and what it can tell you about your health, contact Mac Nair at (806) 743-3256. Mac Nair is also available to discuss other standard laboratory tests and their applications to your health.

For assistance in covering these or other stories, contact TTUHSC news manager Preston Lewis at (806) 743-2143. Photographs and video footage can be arranged upon request.

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