

# SCIENCE SEMINAR

Thursday, December 6

Carson Taylor Hall room 322

## Dr. Mark Decoster

*Professor, Biomedical Engineering and Institute for Micromanufacturing  
Louisiana Tech University*

will present

### **“The Brain in Balance: Tales from a Cellular Biochemist Studying Space and Time”**

One definition of the brain is that it senses change. This change can be input to our traditional senses such as light, taste, and touch, to name a few. Sensing change and recording it is also important to deciding output (or not), such as responding to a question or avoiding danger. Short-term through long-term sensing of change may also be stored into memory. This process of sensing change and responding to it with storage may be defined as learning when it helps with the process. At the cellular and biochemical levels, cells in the brain may be excited or inhibited, resulting in changes in space and time (spatial and temporal events). One of these important events is the movement of calcium across an excitable membrane, which helps neurons translate external events (the world speaking to us), to internal events (responding to the world). In biological systems as complex as the brain, many things can go wrong, such as in epilepsy and with brain tumors (cancer), which our group is also studying. Part of understanding the healthy and diseased brain in this talk will be a discussion of the brain in balance, and how it takes multiple cells in partnership, through positive and negative feedback, to keep us in this balanced state. Results from funded and ongoing research will be shared as well as current ideas being developed for supporting future research efforts.

**Come at 3:30pm for refreshments, speaker at 4:00pm**