

# 2013/2014 Seminar Series

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## Ultra Wideband Wireless Positioning Systems

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The Federal Communication Commission has defined ultra wideband (UWB) systems as those which have an absolute bandwidth larger than 500 MHz and centre frequency ( $f_c$ ) larger than 2.5 GHz, or have a fractional bandwidth ( $\text{bandwidth} / f_c$ ) larger than 0.2 for systems with  $f_c$  lower than 2.5 GHz. Such systems have the potential for high precision range estimation and resistance to multipath interference and fading.

This talk explores the properties of UWB systems and describes how they can be used for precision range estimation to provide real-time location services. The talk also presents an overview of how the IEEE 802.15.4a standard specifies physical and mandatory access control (MAC) operations for UWB devices. Finally, we present an overview of the properties and costs of four current commercial systems that provide UWB real-time ranging and positioning.

**Wednesday, February 26 @ 3:30pm**  
**Information Technology Centre, ITC317**