

ROPEC 2011, INTERNACIONAL

CURSO TUTORIAL: "Networked Control"

INSTRUCTOR: Richard H. Middleton

HORARIO: MIÉRCOLES: 4 A 8 PM

LUGAR: Salón 2 CIAC Bicentenario, UMSNH

Costo: \$150.00 pesos (Requiere PREVIA inscripción a la ROPEC)

PROGRAMA SINTÉTICO:

1. Motivation and Review:

Control over fixed wired networks versus shared data networks, limitations imposed by networks, effects in networks.

2. Information Theory and Fundamentals:

Information theory concepts, entropy, mutual information, channel capacity, Additive white Gaussian noise channels, Shannon Capacity.

3. Control with limited information:

Conditional Entropy in feedback systems, Capacity required for stabilization of linear systems, performance limitations due to limited capacity, results for non-linear control systems.

4. Signal to Noise Ratio Limited Control:

Capacity, and AWGN channels, links to H2 optimal control, solutions in special cases.

5. Practical Issues:

Protocols and selection of protocols, Techniques for Dealing the Network Delays and Losses, Out of sequence data, resource allocation

6. Simulation studies and conclusions



Professor Richard H. Middleton completed his B.Sc. (1983), B.Eng. (1984) and Ph.D. (1987) from the University of Newcastle, Australia. He has had visiting appointments at the University of Illinois at Urbana-Champaign, the University of Michigan and the Hamilton Institute (National University of Ireland Maynooth). He was elected to the grade of Fellow of the IEEE starting 1999, and has served as an associate editor of the IEEE Transactions on Automatic Control, the IEEE Transactions on Control System Technology, and Automatica.

He is currently a Research Professor at the Hamilton Institute, The National University of Ireland, Maynooth; a Senior Research Associate of the University of Newcastle; and President (2011) for the IEEE Control Systems Society. His research interests include a broad range of Control Systems Theory and Applications, including Robotics, control of distributed systems and Systems Biology with applications to Parkinson's Disease and HIV Dynamics.