ME 350/450: ADVANCED TOPICS IN CONTROLS CONTROL OF PARTIAL DIFFERENTIAL EQUATION (PDE) SYSTEMS

http://www.lehigh.edu/~eus204/teaching/ME450_CDPS/ME450_CDPS.html

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Class Times	Tue/Th 4:25 – 5:40PM
Location	Remote
Course Description:	Introduction to partial differential equation (PDE) systems and their control. Lyapunov stability analysis for PDE systems. Backstepping control. Model Reduction. Boundary control of parabolic and hyperbolic PDE's. Interior control of parabolic and hyperbolic PDE's.
Textbook:	"Nonlinear and Robust Control of PDE Systems", by Panagiotis D. Christofides, Birkhauser 2001. ISBN: 0-8176-4156-4. "Boundary Control of PDEs: A Course on Backstepping Designs" by Miroslav Krstic and Andrey Smyshlyaev, SIAM 2008, ISBN: 978-0898716-50-4. "Nonlinear Systems", by Hassan K. Khalil, Third Edition, Prentice Hall 2002, ISBN: 0-1306-7389-7.
Prerequisites:	ME 343, ME 433, ME 450 (Nonlinear Systems) or consent of the instructor.
Office Hours:	After class or by appointment
Syllabus:	- Stability: Direct and converse Lyapunov theorems, Lasalle's theorem - Backstepping Control - Introduction to Partial Differential Equations - Model Reduction - Boundary Control of PDE's - Interior Control of PDE's - Diffusivity Control of PDE's