Course information

APM 581 Geometry and Control of Dynamical Systems I

Spring 2009. Line number 25616

Times: Tu Thu 3:00 - 4:15
Location: PSA 104

Instructor: Matthias Kawski
Contact info: e-mail: kawski@asu.edu (preferred mode of contact)
office location: Goldwater Center room 354
office hours: Tu Thu 1:15 - 2:30 and by appointment
office phone: (480) 965 3376 (very unreliable)
home phone: (480) 893 0107

and lecture notes provided by the instructor.

Class home-page: http://math.asu.edu/~kawski/classes/apm581/09sprg/apm581.html

Content, goals and objectives

This course is the first part of a new two-semester sequence. It is intended to cover in a novel way fundamental topics of differential geometric control theory, understood to be in a distinguished intersection of applied and pure mathematics. The plan is that the sequence covers the following topics (catalogue descriptions):

APM 581 Geometry and Control of Dynamical Systems I
Differential systems on manifolds, tangent bundle, Lie algebra tools, controllability, observability, feedback and stabilization, topological constraints.
Prereqs: 501-504 or equivalent or consent of instructor.

APM 582 Geometry and Control of Dynamical Systems II
Hamiltonian systems, variational principles, tools from symplectic geometry and Lie groups, continuous symmetries, reduction, geometry of the Pontryagin Maximum Principle, curvature.
Prereqs: 501-504 or equivalent or consent of instructor.

However, it is expected that in this first run, various modifications may be made to accommodate the needs of the participating students, several of whom are only able to take the first course. Likely this will take the form of stronger emphasis on geometry in the first semester, and more control in the second. In particular, this first course likely will include some coverage of curvature and connections.

For expectations, policies and grading, and further organizational details please visit the class’ homepage or contact the instructor.