

ACM 270-2 Special Topics....

Model reduction for large-scale simulations

9 units (3-0-6); second term. Pre-requisites: ACM 106ab or equivalent, ACM/CMS 104 or equivalent. Many powerful computational tools for optimization, inference, and uncertainty quantification rely on the ability to evaluate a model not once but many times. Traditional high-dimensional models are often too expensive for this many-query setting. Model reduction exploits structure in these high-dimensional models to derive cheap low-dimensional reduced models. The course will explore the mathematics and algorithmic principles of projection-based reduced modeling as well as their use in application. Instructor: Qian