

Department: Mathematics and Computer Sciences

Division: Applied Mathematics

Level and Major: Graduate

Course Title: Meshless Methods

Number of Credits: 3

Prerequisite: Advanced numerical analysis

Lecturer:

Course Description:

Course Goals and Objectives:

Course Topics:

- Interpolation in high dimensions
- Interpolation Scattered points, Distance Matrix
- Positive Definite Functions
- Conditionally positive definite functions
- Radial basis functions with compact support
- Shape parameter and stability of meshless methods-optimal shape parameter
- Radial basis functions pseudospectral method
- Radial point interpolation method
- Moving Kriging interpolation technique
- Local collocation radial basis function
- Radial basis functions-finite difference method
- Radial basis Functions-Differential quadrature method
- Local meshless method for solving the Shallow water equations
- Moving least squares approximation, Interpolating moving least squares approximation,
- Meshless method based on the weak form
- Meshless method based on the local weak form
- Adaptive meshless method
- Numerical solution of Navier-Stokes equation with meshless method

Reading Resources:

Evaluation: