

Line # 26676 (Fall 2023)  
**Math 881: Advanced Numerical Linear  
Algebra**

**MW 11:00 –12:15 p.m.      456 Snow**

**Instructor:** Xuemin Tu

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• **Office Hour** 10:00 - 11:00 a.m. MW, or by appointment.

• **Textbooks**

*A Multigrid Tutorial, second edition*

By Briggs/Henson/McCormick SIAM, 2000

*Domain Decomposition Methods for Partial Differential Equations*

By Alfio Quarteroni/Alberto Valli Oxford Science Publications, 1999

*Domain Decomposition, parallel multilevel methods for elliptic PDEs*

By Smith/Bjorstad/Gropp Cambridge, 2004

• **Prerequisite** MATH 781, 782, 783, plus some knowledge of computer languages.

• **Credits** 3 hours

• **Description** Finite difference methods for elliptic pdes. Multigrid and domain decomposition methods for the solution of systems of linear equations arising from elliptic pde discretizations. Parallel computing.

• **Homework** Due on Monday.  
No late homework will be accepted.

• **Projects** A course project is required.

• **Grading Policy**

Homework & Attendance	–	50%
Project	–	50%

• **Learning Outcomes** Basic finite difference methods for elliptic pdes. Multigrid and domain decomposition methods.

- **Student Resources** University Academic Support Centers  
<https://access.ku.edu/>
- **University Policies**
  - Academic Misconduct  
<https://policy.ku.edu/governance/USRR#art2sect7>
  - Change of Grade  
<https://policy.ku.edu/registrar/grade-change;>  
<https://policy.ku.edu/governance/USRR#art2sect3>
  - Commercial Note-Taking  
<https://policy.ku.edu/provost/commercial-note-taking>
  - Diversity and Inclusion  
<https://policy.ku.edu/provost/diversity-inclusion>
  - Mandatory Reporting (Title IX/Civil Rights)  
<https://policy.ku.edu/civil-rights/mandatory-reporting>
  - Nondiscrimination, Equal Opportunity, and Affirmative Action  
<https://policy.ku.edu/IOA/nondiscrimination>
  - Sexual Harassment  
<https://policy.ku.edu/civil-rights/sexual-harassment>
  - Student Rights and Responsibilities  
<https://policy.ku.edu/student-affairs/student-code>
  - Racial and Ethnic Harassment Policy  
<https://policy.ku.edu/civil-rights/racial-ethnic-harassment-policy>