Math 781-001, Advanced Methods in Applied Mathematics

Fall 2017: T 7:20pm – 10:00pm, Exploratory Hall, Room 4106

Instructor: Daniel Anderson
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Office Hours: Tuesday/Thursday 3:00PM-4:00PM, and by appointment.

Text: There is no required text for this course. Informal course notes will be provided. Other recommended books are *Boundary Value Problems of Mathematical Physics, Vol. 1 and 2* (SIAM Classics in Applied Mathematics) by Ivar Stakgold and *Green's Functions and Boundary Value Problems* by Stakgold and Holst (Wiley).

Prerequisites: Familiarity with ordinary and partial differential equations.

Course Description: This course will examine Green's function problems for ordinary differential equations and a variety of partial differential equations (elliptic, parabolic and hyperbolic type) as well as examine some basic types of Integral equations. Problems arising in sciences and engineering applications will be considered.

Topics:

Distribution Theory Basics
Green's functions for ODEs and Boundary Value Problems
Green's functions for PDEs (elliptic, parabolic, hyperbolic)
Integral equations (Fredholm, Volterra type)

Grading Policy: A student's course grade will be based on homework (50%), a midterm exam (20%) and the final exam (30%).

Final Exam: The final exam date is Tuesday, December 19, 7:30-10:15pm.

Online class information will be posted periodically on my webpage
`http://math.gmu.edu/~dmanders/WEBDAN/math781_fall17.html`

Honor Code: It is expected that each student in this class will conduct himself or herself within the guidelines of the Honor Code. All academic work should be done with the level of honesty and integrity that this University demands.

Academic Integrity Mason is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone elses work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

Mason Email Accounts Students must use their MasonLIVE email account to receive important University information, including messages related to this class.
See http://masonlive.gmu.edu for more information.

Office of Disability Services If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. http://ods.gmu.edu

Writing Center: A114 Robinson Hall; (703) 993-1200; http://writingcenter.gmu.edu

University Libraries Ask a Librarian http://library.gmu.edu/mudge/IM/IMRef.html

Counseling and Psychological Services (CAPS): (703) 993-2380; http://caps.gmu.edu

University Policies The University Catalog, http://catalog.gmu.edu, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at http://universitypolicy.gmu.edu/. All members of the university community are responsible for knowing and following established policies.

Math 781 lectures – planned Fall 2017

Date (Sect.)	homework	Topic
8/29		Distribution Theory Basics
9/5		Distribution Theory Basics
9/12		Green's functions for BVPs
9/19		Green's functions for BVPs
9/26		Green's functions for BVPs
10/3		Green's functions for PDEs (elliptic)
10/10		[NO CLASS - Monday classes Meet Tuesday]
10/17		Green's functions for PDEs (elliptic/parabolic)
10/24		Green's functions for PDEs (parabolic)
10/31		Green's functions for PDEs (hyperbolic)
11/7		Integral Equations
11/14		Integral Equations
11/21		[APS] Integral Equations
11/28		Integral Equations
12/5		Integral Equations
12/19		**FINAL EXAM - 7:30-10:15pm**