**MATH 62-360**

**Special Functions**  Fall 2016

**Instructor:** Dr. Hassanzadeh

**Office:** 10-102 Lambton Tower

**E-mail:** mhassan@ uwindsor.ca

**Webpage** http://web2.uwindsor.ca/math/mhassan/

**Lectures:** Tuesday/Thursdays 5:30-6:50 PM, Dillon Hall, room 361

**Office hours**: Tuesday/Thursday; 3:00 - 5:00 PM, or by appointment.

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| **Extra Help:** You can send me emails and discuss your attempted solutions. I can offer  specific comments. Please identify yourself as a 62-360 student. |

**Textbook**: Fourier analysis and its applications, Jerald. B. Folland, American Mathematical

Society, 2009

**Course Webpage:** https://blackboard.uwindsor.ca/ Login with your UWin ID and password.

All materials of the course including recommended weekly homework

will be posted on blackboard.

**Course content**: Fourier series, Sturm-Liouville problems, Applications to partial

differential equations, L^2 -spaces and orthogonal bases, Eigen function expansions,

Gamma functions, Bessel functions, Legendre polynomials and functions.

Some adjustments may have to be made as the course progresses.

**Prerequisites:** Vector Calculus (62-215), Differential Equations (62-216)

**Assignments:** Assignments will be posted on the course site, but will not

be graded. Working out the assigned problems is the minimum practice needed to

succeed in this course.

**Academic Integrity:** Students will be penalized and reported for cheating during testing (including but not limited to speaking to other students, copying, offering unauthorized aid, etc.) Students who engage in any form of academic dishonesty will be subject to disciplinary action under Senate Bylaw 31: Student Affairs and Integrity. Sanctions vary with the offence and might include suspension or transcript notations. Students who think about cheating are urged to consider the potentially serious consequences of their actions such as the effects on one’s ability to find a co-operative education placement or permanent employment upon graduation.

**Calculators:** ONLY non-programmable calculators are allowed in tests.

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| **Evaluation:**  Midterm 1 | Thursday, October 6 | 30% |
| Midterm 2 | Thursday November 10 | 30% |
| Final Exam | December 20 at 7:00 pm | 40% |
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* The time for midterms will be 5:30 to 6:50 pm and the location will be announced.

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| **Missed Evaluations**:   |  | | --- | | There will be no make-up midterms. Percentages for midterms missed for legitimate reasons, accompanied  with appropriate documentation, will be added to the Final Exam weight.  If you miss the final exam you will be able to write a make-up exam. |   You must provide Windsor’s Student Medical Form if you miss a test/exam due to illness. Please use the form at “Senate Policy on Medical Notes from Regulated Health Care Professionals”.  Link: [www.uwindsor.ca/secretariat/sites/uwindsor.ca.secretariat/files/](http://www.uwindsor.ca/secretariat/sites/uwindsor.ca.secretariat/files/)medical\_notes\_from\_regulated\_health\_care\_professionals.pdf |

**Remarks**:

1. **Using all kinds of electronic devices such as cell-phone and laptop is not allowed in classes. Respecting the class environment is mandatory.**

2. Daily attendance is required and expected.

3- Classes start on September 8, 2016 and end on December 7, 2016.

4. There is no class for Reading Week which is from October 8 to October 16.

4. Last date to voluntarily withdraw from courses is: November 16, 2016.

5. The Student Evaluation of Teaching will be administered during the last two weeks of class.

6. Exam conflicts: Students scheduled to write three invigilated final examinations in one day and students who are unable to write a final examination due to a conflict with religious conviction may apply for an alternate examination date. Please download the appropriate form from [http://www.uwindsor.ca/registrar and](http://www.uwindsor.ca/registrar) submit to the Office of the Registrar.

**Additional References**

This course has three main themes: Fourier series, Partial differential equations (PDEs)

and Special functions. In different universities the course is taught under different names,

often with different emphasis on one or the other of the three themes. Basically, all

undergraduate courses in Partial Differential Equations, Fourier Analysis, and

Mathematical Methods for Engineers and Physicists, cover more or less the same topics.

Our main reference by J. Folland has a balanced emphasize on the three main themes.

Here are a few additional references (found in our library):

1. G. B. Arfken, Mathematical methods for physicists, 6th edition, Academic press, 2005.

2. E. Kreyszig, Advanced engineering mathematics, 10th edition, Wiley, 2011.

3. J. W. Brown, R.V. Churchill, Fourier Series and Boundary Value Problems, 7th

edition, McGraw Hill.

3. Tyn Myint U, Partial differential equations for scientists and engineers, Birkhäuser, 4th

edition, 2006.

4. T. W. Korner, Fourier analysis, Cambridge, 2002.

5. E. M. Stein and R. Shakarchi, Fourier analysis, Princeton University press, 2003.

6. N. N. Lebedev, Special functions and their applications, Dover, 1972.

7. G. E. Andrews, R. Askey, and R. Roy, Special functions, Cambridge, 1999