

Fall 2015

PHYS 4201/5201

Kevin Stokes
University of New Orleans

Follow this and additional works at: <https://scholarworks.uno.edu/syllabi>

This is an older syllabus and should not be used as a substitute for the syllabus for a current semester course.

Recommended Citation

Stokes, Kevin, "PHYS 4201/5201" (2015). *University of New Orleans Syllabi*. Paper 879.
<https://scholarworks.uno.edu/syllabi/879>

This Syllabus is brought to you for free and open access by ScholarWorks@UNO. It has been accepted for inclusion in University of New Orleans Syllabi by an authorized administrator of ScholarWorks@UNO. For more information, please contact scholarworks@uno.edu.

MATH PHYSICS – FALL 2015

PHYS 331-90C (Southeastern)

PHYS 460(G) (UL-Lafayette)

PHYS 4201/5201 (UNO)

- Instructor Kevin Stokes – University of New Orleans
- Telephone 504-280-1062
- Office SC 1019 Laboratories SC 1033
- e-mail klstokes@uno.edu – When e-mailing me, please put **MATHPHYS** in the subject line, along with the subject of the e-mail message.
- Office hours Monday, Wednesday and Friday 9:00-10:30 am and by appointment.
- Required texts M. L. Boas, *Mathematical Methods in the Physical Sciences*, 3rd edition (Wiley: 2005) 978-0471198260
- Other required material
- Mathematical Handbook or integral tables like *Schaum's Mathematical Handbook of Formulas and Tables* by S. Lipschutz, M.R. Spiegel and J. Liu (McGraw-Hill: 2012), 978-0071795371 about \$12.00 from Amazon.com.
 - Calculator with trig functions, exponentials and logarithms.
- Prerequisites Calculus-based Physics II (UNO: PHYS 1062, Southeastern: PHYS 222; ULL: PHYS 201)
- Objectives
- Understand the basic mathematical techniques used in physics calculations including linear algebra, ordinary and partial differential equations, vector analysis and integral transforms.
 - Obtain the mathematical skills necessary for solving science and engineering problems in upper-level courses in Mechanics, Electricity and Magnetism and Quantum Mechanics.
- Course delivery 2-way compressed video. Please report technical difficulties to Dr. Blanchard (Southeastern), Dr. Sidirovskia (UL-Lafayette, 337-482-6274), or Dr. Stokes (UNO, 504-280-6341)
- Grading policy Your grade will be determined by your performance on three exams (two midterm exams and a final). Homework assignments will be graded and can substitute for one of the exams. You are guaranteed at least the following grading scale. Exam

weights are given by $w = \int_0^{\infty} x^2 \exp \left[x^2 \left(\frac{3\sqrt{\pi}}{4} \right)^{2/3} \right] dx$

| GRADING SCALE | |
|---------------|-----------------|
| letter grade | numerical score |
| A | 90-100 |
| B | 80-89 |
| C | 70-79 |
| D | 60-69 |
| F | less than 60 |

| GRADE DIVISION | |
|--|--------|
| | weight |
| Exam 1 | w |
| Exam 2 | w |
| Final exam | w |
| Homework grade will replace lowest test grade, if the homework grade is higher | |

| | | | | | | | | | |
|------------------------------------|---|---------|--------------------|---------------------|---------------------|-----------------------|---------------------|--------------------------|----------------|
| Moodle (internet-based utility) | Grades, course information, homework solutions and announcements will be available on "Moodle." This WEB-based course information system is accessible from Southeastern: http://moodle.selu.edu , ULL: https://moodle2.louisiana.edu/ , UNO: http://www.uno.edu/moodle/ . | | | | | | | | |
| Homework Assignments | <p>Homework assignments will be announced in class as well as posted on Moodle. The assignments are due at the date and time indicated on Moodle. Scan your homework assignment and turn it in on Moodle. Late assignments will be penalized.</p> <table> <tr> <td>On time</td><td>100% (Full credit)</td></tr> <tr> <td>Up to one week late</td><td>75% of earned grade</td></tr> <tr> <td>One to two weeks late</td><td>50% of earned grade</td></tr> <tr> <td>More than two weeks late</td><td>0% (No credit)</td></tr> </table> <p>Obviously, if there are special circumstances (an extended illness, for example) let me know.</p> | On time | 100% (Full credit) | Up to one week late | 75% of earned grade | One to two weeks late | 50% of earned grade | More than two weeks late | 0% (No credit) |
| On time | 100% (Full credit) | | | | | | | | |
| Up to one week late | 75% of earned grade | | | | | | | | |
| One to two weeks late | 50% of earned grade | | | | | | | | |
| More than two weeks late | 0% (No credit) | | | | | | | | |
| Exams | Three exams will be given this semester, two midterms and a final. The test dates are on the attached syllabus. All exams are equal weight. You may bring a 4"X6" index card with anything you want written on it (front and back) and a calculator to the exams. | | | | | | | | |
| Make-up exam policy | If you know ahead of time you have a conflict, let me know and let the instructor at your institution know. If you miss an exam because of an illness (yours or a family member's) or some other unforeseeable event, contact me and the instructor at your institution as soon as you can. You can e-mail me, leave a message on my answering machine or call the UNO Physics Department office at 504-280-6341. You must provide documentation showing the reason for missing the exam, if asked. | | | | | | | | |
| Academic dishonesty | <p>Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Working together on homework is OK, simply copying someone else's solution or a solution from the internet, is NOT OK.</p> <p>Refer to the Student Code of Conduct for further information.</p> <ul style="list-style-type: none"> ▪ Southeastern: http://www.selu.edu/admin/stu_affairs/handbook/ ▪ UNO: http://www.studentaffairs.uno.edu | | | | | | | | |
| Special needs | <p>University of Louisiana system policy is to provide reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the appropriate Office of Disability Services</p> <ul style="list-style-type: none"> ▪ Southeastern: Office of Disability Services, Mims Hall, Room 117 ▪ UNO: www.ods.uno.edu | | | | | | | | |

MATH PHYSICS PHYS 5201 – FALL 2015

GRADUATE STUDENTS ONLY (PHYS 5201)

- Additional requirements
1. Additional problems on homework assignments
 2. Additional problems on the exams
 3. Term paper (semester project) – Project requirements and grading rubric are on Moodle.
- Learning objectives
- Understand the mathematical techniques used in physics calculations including linear algebra, ordinary and partial differential equations, vector analysis and integral transforms.
 - Obtain the mathematical knowledge and skills necessary for solving real-world science and engineering problems.
 - Determine the mathematical techniques and solution methods appropriate for the analysis of physical problems.
- Recommended reading/texts
- G.B. Arfken, H.J. Weber, and F.E. Harris, *Mathematical Methods for Physicists*, 7th Ed. (Academic Press: 2012) 978-0123846549.
- Grading policy
- Your grade will be determined by your performance on three exams (two midterm exams and a final) and a semester project. Homework assignments will be graded and can substitute for one of the exams. You are guaranteed at least the following grading scale.

| GRADING SCALE | |
|---------------|-----------------|
| letter grade | numerical score |
| A | 90-100 |
| B | 80-89 |
| C | 70-79 |
| D | 60-69 |
| F | less than 60 |

| GRADE DIVISION | |
|--|--------|
| | weight |
| Exam 1 | 30% |
| Exam 2 | 30% |
| Final exam | 30% |
| Project | 10% |
| Homework grade will replace lowest test grade, if the homework grade is higher | |

MATHEMATICAL PHYSICS - FALL 2015

Monday, September 7, Labor Day Holiday
 Thursday-Friday, October 1-2, Fall Break (Southeastern)
 Thursday-Friday, October 15-16, Fall Break (UNO)
 Thursday-Friday, November 26-27, Thanksgiving Holiday

| | DAY | DATE | TOPICS | READING ASSIGNMENT |
|-----|------------|---------------|--|--|
| 1 | Thu | Aug 20 | Infinite Series | Chapter 1: Sections 12-15 |
| 2 | Tue | 25 | Complex Numbers | Chapter 2: Sections 5, 9-16 |
| 3 | Th | 27 | Liner Algebra | Chapter 3: Sections 1-3 |
| 4 | Tue | Sep 1 | | Sections 6-9 |
| 5 | Thu | 3 | | Sections 10-12, 14 |
| 6 | Tue | 8 | Partial Differentiation | Chapter 4: Sections 1-7 |
| 7 | Th | 10 | | Sections: 11-13 |
| 8 | Tue | 15 | Multiple Integrals | Chapter 5: Sections 1-4 |
| 9 | Thu | 17 | Problems and review | |
| 10 | Tue | 22 | TEST 1 | |
| 11 | Th | 24 | Vector Analysis | Chapter 3: Section 4 Chapter 6: Sections 1- 5 |
| 12 | Tue | 29 | | Sections 6-9 |
| 12a | Thu | Oct 1 | Southeastern fall break | see Moodle for on-line assignment |
| 13 | Tue | 6 | | Sections 10-11 |
| 14 | Th | 8 | | Chapter 10: Sections 8-9 |
| 15 | Tue | 13 | Fourier Series and Fourier Transforms | Chapter 7: Sections 1-6 |
| 15a | Thu | 15 | UNO fall break | see Moodle for on-line assignment |
| 16 | Tue | 20 | | Sections 7-10 |
| 17 | Th | 22 | Ordinary Differential Equations | Chapter 8: Sections 1-5 |
| 18 | Tue | 27 | | Sections 6-7 |
| 19 | Thu | 29 | | Sections 8-9 |
| 20 | Tue | Nov 3 | TEST 2 | |
| 21 | Th | 5 | Series Solutions of Differential Equations | Chapter 12: Sections 1-5 |
| 22 | Tue | 10 | | Sections 6-10 |
| 23 | Thu | 12 | | Sections 11-14 |
| 24 | Tue | 17 | Partial Differential Equations | Chapter 13: Sections 1-3 |
| 25 | Th | 19 | | Sections 4-6 |
| 26 | Tue | 24 | | Sections 7-8 |
| | Thu | 26 | Thanksgiving break | |
| 27 | Tue | Dec 1 | Probability and Statistics | Chapter 15 Sections 1-4 |
| 28 | Thu | 3 | | Sections 5-7 |
| | | | FINAL EXAM - WEEK OF DEC 7- DEC 11 | |
| | THU | Dec 10 | UNO: 3:00 PM – 5:00 PM | |
| | | | SELU: | |