

Course Syllabus

PHYS 3411.0U1 Theoretical Physics Summer 2016

Professor Contact Information

Instructor: Paul Mac Alevey
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Mailbox: in PHY 1.506

The class meets 32 times (inclusive of midterm tests but exclusive of the final) on Mondays, Wednesdays & Fridays at 2:00 – 4:00 in PHY 1.202. The final is scheduled by the University but hasn't arranged it yet...

Office hours

Instructor: MWF 4:15 to 5:15 or by appointment. This is just after class. If a class-member asks me questions in PHY 1.202, I'll talk to them there so 'office hours' might happen in the classroom. (If there is nobody asks me questions by 4:35, I'll feel free to leave.)

I do not use office hours *primarily* for the purposes of distributing hints to homework problems. If I am asked about a homework problem then my response will be to ask you what you have done. Please be ready to write something. I don't intend to do your homework for you. After talking to me, I intend that you'll be on-the-right-track to solve the problem yourself! On the other hand, many students from previous semesters should have gone to office hours but didn't. Don't expect that you can 'get-by' with minimal effort. What you get out of this class largely depends on your own efforts.

TAs: Qiyue Wang qxw151330@utdallas.edu Hours; TBA

Course Pre-requisites, Co-requisites, and/or Other Restrictions

You need to have already done:

MATH 2418 (Linear Algebra) or equivalent
MATH 2415 (Calculus of Several Variables) or MATH 2419 (Calculus II),
PHYS 2326 (Electromagnetism and Waves) or PHYS 2422 (Honors Physics II.)

You need to be doing:

MATH 2420 (Differential Equations with Applications) or equivalent.

PHYS 3411 is a pre-requisite for many other physics courses and needs to be thoroughly understood for success in the physics classes that follow it.

Course Description

PHYS 3411 Theoretical Physics (4 semester hours) Complex numbers; Vector spaces and linear operators; Line integrals; surface & volume integrals; Gradient, divergence & curl; vector integral theorems; Fourier series; Product solutions of PDEs

Student Learning Objectives/Outcomes

- Given a physical model (that involves a partial differential equation and boundary conditions), students will find a solution of the equation that fits the boundary conditions.
 - Students will choose an appropriate technique of 'index notation' (Cartesian only) to generate a proof of a given vector or matrix identity
 - Students will Fourier-analyze functions into Fourier series. Given a function (of one variable), students will find the infinite sets of Fourier coefficients.
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Required Textbooks and Materials

We will use the book “**Mathematical Methods in the Physical Sciences**” by Mary L. Boas **3rd Edition**, ISBN: 0-471-19826-9. (You can get it at the campus bookstore, off-campus books, Amazon.com etc.... I don't mind if you buy it new or used but I think that it is worth keeping the book if you will be doing more Physics courses.)

I will be assigning homework from the book and assume that you have access to it.

Suggested Course Materials

You should have writing equipment at all meetings of the class. (You only need a 'scientific' calculator.)

Assignments & Academic Calendar

This class is not intended to be the same as other physics classes. PHYS 3411 is a class of mathematical methods. The practical application of those methods will often appear in other physics classes. The techniques developed in this course have been chosen by other members of the faculty who intend to use them in their courses.

I'll begin with Complex Numbers (Chapter two). It is a straight-forward chapter about the algebra of complex numbers and you may have seen some of it already.

One of the prerequisites is a course in linear algebra so I'll assume that you know much of the linear algebra in chapter three. This assumption isn't true about Index notation. While index notation is a topic in linear algebra, it is rarely done in most linear algebra courses. However, you need it in your physics courses so I'll spend time doing the topic. It appears in the book but isn't very thoroughly developed there. ***I'll give you 'handouts' that I expect you to use.*** This notation turns out to be a powerful tool that is useful in vector analysis. There aren't many textbook-references to this topic so you'll need to be sure to think about it yourself and ask me questions that arise.

I'll skip chapter four because the topics in this chapter have already been done in calculus II (MATH 2419) and/or calculus of several variables (MATH 2415). We'll study chapter five if time allows.

We will spend time on 'Classical Vector Analysis' (chapter six) and the vector integral theorems (also in chapter six). You'll constantly be meeting grad, div and curl in other physics courses and I'll continue to use index notation to get identities that involve these operators as well as other vector identities. Index notation will appear again in connection with identities that involve grad, div and curl. I have another handout to give you then. (It might also help if you read the article from the American Journal of Physics by A. Evett. I'll post it on eLearning). I want to do the sections about eigenvectors & eigenvalues at this stage.

Expansion of functions in series is an important idea in Physics. Not all physically interesting functions are 'well-behaved' (by which we often mean something like functions being continuous and differentiable everywhere). Expansion of functions as power series assumes that they are. An important topic is the representation of physically interesting functions that aren't so well behaved. Surprisingly, this can often be done by writing a function as the sum of a series of *sines* and *cosines* – a Fourier Series. We'll see how to do this in Chapter seven.

While the differential equations of immediate physical interest are (usually) Partial Differential equations (PDEs), Chapter 12 (Ordinary Differential Equations) is necessary before solving them. I expect that you'll already be familiar with the content of Boas' chapter 8 (ODEs) but don't think that you'll be familiar with either Legendre's or Bessel's equation(s) or the properties of their solutions. (Using series to find a solution to a linear ODE often comes at the end of courses in ODEs (or doesn't appear) so I intend to include it. I'll do as many sections of this chapter as needed.

In chapter 13, we look at a technique that separates a PDE in N variables into N ODEs. Finding the solution to a PDE thus involves finding the solutions to the N ODEs. We will use this technique in Cartesian coordinates in the first sections of Chapter 13. In sections following 13.4, PDEs have to be solved in cylindrical and spherical (or circular) regions. While you are quite familiar with some ODEs, less familiar ODEs (Legendre's & Bessel's ODEs) arise in connection with separation of variables in these other regions.

A **tentative** schedule for the course is as follows;

	Date	Meeting	Aims
Monday	May 23	1	Introduction Handout 1: Beginning Index notation – section 3.2. Two kinds of indices & the Summation Convention 3.9*,
Wednesday	May 25	2	Handout 2: Permutation/Levi-Civita symbol (Boas talks about the permutation symbol in section 10.5. <u>For now</u> , there is no need to work beyond example 2 in 10.5!) Cross Product and index notation Vector identities
Friday	May 27	3	Matrix product in index notation (from section 3.6) Rotation matrices (first mentioned in sec. 3.6) – Orthogonal & Unitary
Monday	May 30		<i>Memorial Day – No class</i>
Wednesday	June 1	4	Handout 3: Matrices and index notation (from section 3.9) - Transposes in index notation. Table in 3.9 summarizes matrix types 3.14 definitions orthogonality & norm for functions (and uses bracket notation) [You might want to recall the definitions of orthogonality & norm for directed lines that are in 3.10.]
Friday	June 3	5	Handout 4; Gradient, Divergence and Curl in 3D Cartesian coordinates & Index Notation. [Use 6.7 to remind yourself about grad, div and curl from your previous work. I'll post some questions about grad, div and curl that you'll need to be able to do. Go through the small part of section 10.5 about curl. It is after example 2 and begins; "Recall from chapter 6...". You don't need to go through the subsection about dual tensors.] Worksheet on identities
Monday	June 6	6	More from Worksheet
Wednesday	June 8	7	Exercise with index notation; Orthogonality of eigenvectors & properties of matrices of real symmetric matrices & Hermitian matrices
Friday	June 10	8	Matrices that represent deformations/physical transformations – in 3.11. Example of going from diagonal matrix M to a non-diagonal M' . Transformations in a rotated frame - Diagonalizing Matrices Application of Diagonalization 3.12 (Work through the examples 1 & 2 about conic sections)
Monday	June 13	9	6.4 Unit vectors in polar coordinates; $\frac{1}{h_1} \frac{\partial \vec{r}}{\partial x_1}$. 6.9 Green's theorem (in the plane) 6.11 Stokes' theorem
Wednesday	June 15	10	6.8 scalar potential
Friday	June 17	11	First Midterm
Monday	June 20	12	Potential continued (finding a potential given a [conservative] force), 6.10 Divergence theorem

* In section 3.9 Boas writes A_{ik}^T when she means the ik^{th} element of the matrix A^T . Please don't confuse this with $(a_{ik})^T$ [which is the transpose of the number a_{ik} and is almost always not what you need]. On the other hand, $(A^T)_{ik}$ is "the ik^{th} element of the matrix A^T " and probably is what you need.

			[5.4 transforming integrals from one coordinate system to another with Jacobians]
Wednesday	June 22	13	7.1 Fourier Series (FS) for functions that are periodic in $(-\pi, \pi)$, 7.5 Coefficients for FS
Friday	June 24	14	Handout; Example of a FS. 7.6 Dirichlet's theorem (convergence of FS)
Monday	June 27	15	Handout; re-scaling to get FS for functions that are periodic in $(-l, l)$ - 7.8 7.9 Integrals over symmetric intervals and Parity
Wednesday	June 29	16	7.10 decomposition of a sound signal. [This is an example of FS for functions that are periodic in $(-l, l)$. Complex FS from sine – cosine FS & example [This is in 7.7 but I get the complex case directly from the sine/cosine form.]
Friday	July 1	17	7.11 Parseval's equality (using the complex exponential FS), Example of Parseval's equality
Monday	July 4		<i>Happy Independence day – No class!</i>
Wednesday	July 6	18	Complex Fourier Series as a decomposition/expansion on $\{e^{inx}\}_{n=0}^{\infty}$. This anticipates many of the comments in 12.6
Friday	July 8	19	Second Midterm
Monday	July 11	20	Handout on series solutions for $y'' + y = 0$ - Section 12.1. [I use a method outlined by M. Spiegel that isn't the same as Boas'.] Need for an assumed solution; $y = \sum_n a_n x^{n+s}$. [Boas treats similar ODEs in 12.11.] Legendre Polynomials - series solutions of Legendre's equation that converge. [Boas does this in 12.2.]
Wednesday	July 13	21	12.5 - Multipole expansion of Electric Potential/Generating Function. Recurrence relations for Legendre Polynomials. Parity and the 'special values' $P_n(\pm 1)$
Friday	July 15	22	12.7 - Orthogonality of $\{P_n(x)\}_{n=0}^{\infty}$ 12.8 - Normalizing Legendre Polynomials 12.9 Legendre series
Monday	July 18	23	Solving $\frac{d}{dr} \left(r \frac{dR}{dr} \right) = -k^2 r R$ Or $\frac{1}{rR} \frac{d}{dr} \left(r \frac{dR}{dr} \right) = \frac{p^2}{r^2} - k^2$; Bessel Functions. I'll give you a handout for 12.14 Graphs and Zeros (k_{0n}) of Bessel Functions.
Wednesday	July 20	24	13.1 Partial Differential Equations (PDEs)
Friday	July 22	25	13.2 semi-infinite plate - solving PDEs by separating variables handout of steps for solving PDEs
Monday	July 25	26	Worksheet on heat flow in a finite plate (13.2)
Wednesday	July 27	27	Review worksheet on 13.2 [Using superposition to generate solutions of PDEs.]
Friday	July 29	28	Heat equation in a rod of finite length 13.3, Worksheet on 13.3
Monday	Aug 1	29	Find c_n in $T = \sum_n c_n T_n$ for the rod problem using FS Find c_n in $T = \sum_n c_n T_n$ for the rod problem using orthogonality. The equivalent slab problem. 13.5 Separation in cylindrical coordinates Rejection of $N_p(kr)$ for the problem in 13.5 and getting separation constants $k = k_{0n}$. Write $R(r) = J_p(k_{sp}r)$

			Assemble basis $J_p(k_{sp}r)e^{-(\alpha k_{so})^2 t}$ and linear combination.
Wednesday	Aug 3	30	13.6 Worksheet on drumhead
Friday	Aug 5	31	Review drumhead problem
Monday	Aug 8	32	Handout on 13.7 (Separation of variables in spherical coordinates) - transverse then radial ODE in 13.7 Last BC in 13.7 to get to 12.9 Legendre series
			<i>If time allows then we'll say something about the following:</i>
			Calculus of variations ch 9
			Motivating extremal values of integrals
			First example of Euler-Lagrange
			Deriving Euler-Lagrange equations.
			First use of EL; geodesics on a flat plane.
			First integrals of EL
			Writing $F(x, y, y')$ or $F(y, x, x')$ to get easier Euler-Lagrange equations.
			Euler-Lagrange used to find a catenary
			Euler-Lagrange used to find geodesics on a cone.
	TBA		Final (comprehensive) TBA by the University

The University arranges the time for the final exam. Please check the UTD web page to check the scheduled time just before this exam.

<http://www.utdallas.edu/student/registrar/finals/>

I want to assign homework on **Fridays** with **due** dates **on the Monday at the beginning of class 10 days later**. I'll send an email to you but (with a few exceptions) will draw homework questions from the following list.

Section	Question Numbers (Maximum points in parentheses)
3.2	1 (6), 2 (6)
3.6	10 (6)
3.9	7 [Use index notation] (6), 11 (4), 14 [Use <u>matrix</u> notation] (6), 15 (9), 18 [Use index notation] (12)
3.11	4(12), 21 (24) Write the following check on your calculations; Check that the sum of the eigenvalues equals the trace of the original matrix, and that the product of the eigenvalues equals the determinant of the original matrix. <div style="text-align: center;">ANS. $\lambda = -1, -2, 2$</div> 28 (9), 34(6)
3.12	7 (9)
6.4	4 (4), 5 (4), 9 (4)
6.7	8 (6), 15 (6),

	17 [You must use index notation to do the following parts] b (9), d (12), g (12), h (9), i (12), j (12) {The identities only need to be shown in rectangular coordinates. Use of section 9 from chapter 10 is not necessary. In part (j), think of the right-hand-side as involving two pairs of terms; the first and second terms and the third and fourth terms.}
	18 (9) [Do this problem using the methods that you saw before this class (4) and do the problem by using index notation (5).]
6.8	5 (12), 15 (12), 16a (6)
6.9	3 (6), 9 (18) {The centroid of a 2-D object is at coordinates (\bar{x}, \bar{y}) where $\bar{x} = \frac{\iint x dA}{\iint dA}$ and $\bar{y} = \frac{\iint y dA}{\iint dA}$ }, 12 (18) (The curve given is not closed. [But if you think about it, you can find a way to use Green's theorem if you want.])
6.10	6 (6), 8 (12)
6.11	2 (18), 9 (6), 12 (6), 16 (12), 18 (12) The vector potential is not unique. Thus the vector potential that you get may be correct but not be the same as Boas' answer. You must calculate the curl of the potential that you have found. If your vector potential is correct then you'll find that its curl is the vector \vec{V} that you started with.
7.5	1 (12), 6 (12), 8(6) [Compute the integrals. Don't forget to write down the series!]
7.6	3 (6), Macalevey1 (9)
7.7	1 (9), 11 (24)
7.8	2 (9), 12 (18)
7.9	1 [Do parts (a) and (b)] (6), 21 (24)
7.10	2 (9), 8 (12)
7.11	6 (9), 10 (6), 9(6)
12.1	1 (12), 3 (12)
12.2	2 (6)
12.5	1 (6), 11 (3)
12.6	1 (9)
12.7	3 (9)
12.11	2 (18), 10 (24) also do question 12.11.Macalevey1 (that is attached as a PDF)
12.12	1 (9)
13.1	3 (6)
13.2	2 (12), 14 (12)
13.3	2 (18) [The bar is thin so it has only one dimension. It lies along the x-axis and only the curved surface is insulated. The response of the rod is not instantaneous so the temperature of both ends at $t = 0$ is still 100.] 8 (18) [The bar is thin and a superposition of solutions is useful.]
13.4	5 (12)

I intend to post solutions on the eLearning site after the due date. **In general, late homework is not given credit.** (*Homework is late if it submitted after the beginning of the class in which it is due.*)

To use eLearning, you have to have a login ID and password. The eLearning server is at <https://elearning.utdallas.edu/webapps/portal/frameset.jsp> The solutions are protected with a password. (It is the word **methods**.) The intent of this password is to keep the solutions private to members of this class this semester. ***If you have any hard-copy solutions to problems in Boas' book, then I require that you destroy them (or give them to me) now.*** Copying solutions

as a substitute for doing a problem yourself **almost guarantees poor performance on exams**. The solutions can be opened with Acrobat 5 or later <http://www.adobe.com/products/acrobat/readstep2.html>. It is intended that the solutions get you started so that you can produce a complete solution later.

You will also need to **check the preferences used by your browser** from the 'check browser' link on the first page that you get after log-into eLearning. (eLearning uses pop-ups intensively. Use your internet options to make the site a 'trusted site'.)

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- I do not intend to cover all sections in the text
 - I do not intend to follow the order in which the material is presented in the text
 - I intend to present some material in the text in a slightly different fashion from the text. Please take good notes!
 - **Test** dates won't change. Content of tests may change but will not include material in chapters/sections that have not been treated in class.
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Grading Policy:

I intend to use a grade scale as follows. If x is a score then,

$x \geq 95$	A+
$95 > x \geq 90$	A
$90 > x \geq 85$	A-
$85 > x \geq 75$	B+
$75 > x \geq 65$	B
$65 > x \geq 60$	B-
$60 > x \geq 55$	C+
$55 > x \geq 50$	C
$50 > x \geq 45$	C-
$45 > x \geq 40$	D+
$40 > x \geq 35$	D
$35 > x \geq 30$	D-
$30 > x$	F

Grades of **D+**, **D** or **D-** are not indications that the student should do further courses in the Physics department in the following semester. Such **course grades indicate that this course should be repeated**. (A grade of C doesn't indicate that all is well either.)

Weighting:	Homework	15%
	Midterm tests	25% each
	comprehensive Final Exam	35%

I do not intend to use a curve in my grading of individual tests. A grade of X (incomplete) is awarded if an unforeseen, non-academic emergency prevents a student from completing the work in a course. If an incomplete is given, the course must be completed within eight weeks of the first class day of the next long semester.

In general my tests are 'closed book' and 'closed notes'. ***I tend to embed reference material and some long equations in my tests.*** I have found that the main difficulty with tests is not with remembering equations (though remembering helps!) but in knowing how to use them. **All books, notes, backpacks, cell phones, etc. are to be placed by the sides of the room during a test.** (By the way, *don't spend too long erasing mistakes when writing answers to test questions.* Begin again and **label the correct version** so that I can find it. Partial answers may tell me something.)

Use of scientific calculators is **allowed on tests**. However, **graphing and programmable calculators** are **not allowed**. None of the test questions that I ask will involve lots of number crunching. **Valid UT-D student cards must be available if requested during tests.** (You can get one made at the info depot in the student union building; SU 2.204.)

Missed tests can only be made up in the case of documented, extenuating circumstances. Such circumstances include medical emergencies and work-related travel that cannot be re-scheduled.

If a student wants to discontinue the course because a poor grade is expected, it is more appropriate for the student to withdraw from the course and re-register in another semester.

Course & Instructor Policies

Boas gives a bibliography at the end of her book. If you want more information about any of the topics that she covers then I suggest looking for these references in the library.

Homework in this class takes the form of doing sets of questions. I intend to send you an e-mail (on eLearning) on either Wednesday evening (or Thursday morning). Solutions are **due at the beginning of class** on the **Friday of the following week**. However, you don't have to wait for me to formally assign homework before you begin on the questions. **As soon as we finish section 3.2, consider problems 3.2.1 and 3.2.2 to have been assigned etc.** (You will usually be right!).

Begin your homework as soon as you can because some problems are too difficult for a last-minute effort. Work out homework roughly before writing out a 'clean' version for submission as homework. **The final version should explain what you are doing and not just contain calculations.** When grading your work, the grader will be trying to understand your reasoning. Help him/her by saying what you are trying to do! **Homework with no comments or partly scratched out answers gets less credit.** (On the 'plus' side, taking the time to do this will give you a useful resource for exam review.) It should be written on paper with neat edges (rather than being on pages that are torn out of a spiral notebook. **Scratched out answers, partial erasing etc. is unacceptable.** **If your work can't be read then you should expect that your work will be returned with a request that you produce a neater version that the TA can read.** (Expect a 20% penalty if you are asked to rewrite your work.)

Please **staple** your homework together. Loose pages get lost among a pile of papers. Paperclips have their uses but they don't stay attached when in a pile of papers.

Feel free to form study groups etc but it is important to **hand in work that is your own. At any point during the semester, I will feel free to ask any member of the class to explain any aspect of a homework problem to me.**

In addition to the homework problems that are handed in for grading, I suggest that you work problems other than homework problems. Get a notebook to be used for extra questions that you try that are not part of assigned homework. (Everyone should do more questions than the ones assigned for homework. (You'll want to know which questions to try. You can answer this by simply trying the question. If you can finish it then you have your answer! If you can't do the question then ask me. It may involve a topic in the book that 3411 doesn't include. But it might be very relevant but is just asked in a way that you don't expect.

Study methods:

Perhaps these suggestions are familiar to you already. At any rate, here they are.

Many people don't figure out how to study until late in their academic careers. One question to sort out is at what time you study best. Some prefer mornings before they get too busy with other things. Others prefer afternoon or evening. Find out which time suits you best and use that time!

Some people are under the impression that, to do much work, a long session of study is needed. While a few minutes are not enough for a study session, study in 30-minute sessions is useful. Despite the best of intentions, studying the same topic for several hours can involve lots of wasted time. The lack of an imminent deadline allows you to lose focus. People tend to be most productive at the beginning of a session (when they are still fresh) and near the end (as the deadline approaches). It is important to realize that you can still 'spend a few hours studying'. Just change topic when you get to the end of your 30-minute study period.

Before you begin studying, assemble all the materials (books, pens etc.) that you will need. Tightly scheduled 30-minute study periods don't include time to look for books, sharpen pencils and borrow calculators etc! Few of us work well when we are tired. Do feel free to schedule breaks in your study. Just make sure that the 'breaks' don't get too long!

Make a (written) plan before you start to study. Your plan should sketch out what you want to accomplish. Unless you do, lots of time can be spent vaguely thinking about what to do next.) Make this plan as specific as possible: the more precise you are in your goals, the better you know if you reach them. Please be realistic about your aims for a study session. Rather than have a single goal of 'getting an A in a certain course', we often do better by establishing lots of minor goals that involve understanding certain sections of a text or doing certain problems. Modest goals are reached more often than overly ambitious ones and achieving them gives you the feeling of getting things accomplished. The plan does not have to be carefully written. You just don't want to spend a study period 'drifting' along and achieving nothing. Planning the topics to be studied in a study session is not 'studying' and is not part of your 30-minute study period! Just spend a few minutes before you begin studying in deciding what you need to get done.

In addition to the above, I would suggest a very simple strategy that worked very well for me. Review your lecture notes before a day has passed since the lecture (and certainly before the next one in that series of lectures). The aim is to review the lecture before you have time to forget what happened! There are several reasons for doing this. One is that you can't have written everything down (and I don't expect you to.) Some things may have been said but not written on the markerboard. There might have been some connection that you noticed to another topic or another class. While there might not have been enough time to note it down, I don't want you to forget any insight that you had. It will come to you again as you review your notes soon after writing them in the lecture. Another reason for reviewing notes soon after writing them is that after hearing and following along line-by-line during the lecture, the review gives you time to ask yourself about where the topic is going and how it fits into the series of lectures being presented.

The next step is to re-write your lecture notes. Instead of writing them verbatim, include any insights or connections that you have spotted. Also, be on the lookout for anything that doesn't make sense. Maybe a line of algebra has been skipped or maybe there is simply an error.... In any event, make the addition to your notes. (If something question emerges, do ask me! I have office hours quite often and **I don't get nearly enough questions about lecture material.** Lectures do take quite a while to prepare and it is good to know that someone notices links to other topics.)

Finally, summarize your reviewed notes. You will want condensed summaries for study before a test. Generate the summary that makes most sense to you. Notice that most of my comments are on the time-scale of a lecture or two. I have not referred to doing tests. However, doing tests becomes much easier if you truly stay 'on top of things' as I have suggested.

Dishonesty:

I would like to emphasize a point about the use of secondary sources etc. I do not object to people discussing problems that they have already attempted. I do not object to the use of any other textbooks that you come across. I object strongly to any verbatim, unacknowledged work done by anyone other than you that is presented as part of your work. **(This includes any passages from textbooks, any solutions that you come across in hard copy or on eLearning etc. It also includes work produced by any member of the class [past or present]).** Every student in the course agrees to this limitation. Further, all students agree to tell me the source of any solution to any problem assigned in PHYS 3411 that they know about. **No materials posted on the eLearning site become the property of the student. At the conclusion of the course, all students undertake to keep all course materials (posted solutions, graded homework etc.) for their exclusive use. Any distribution of course materials to third parties constitutes academic dishonesty and will be reported to the Dean of Students.**

In order to further the objective of eliminating scholastic dishonesty, the University has a policy on scholastic dishonesty. This policy is clearly articulated in Subchapter F section 49.36 of the policy on student discipline & conduct adopted by the University and used in this course. A link to chapter 49 is at <http://www.utdallas.edu/deanofstudents/titledv/>. Students enrolling in the course are bound by this policy and are encouraged to read it. Any questions about this policy can be asked of the Dean of Students. **Any suspected cases of scholastic dishonesty will be passed along to the Dean of Students.**

Students are welcome to ask questions of my TA or me about homework problems. However, I do not authorize these students to communicate such discussions to other students. These other students are welcome to ask me questions too.

The eLearning site contains postings exclusively for the use of the person with the privilege accessing the site. Materials on this site form another secondary source that is intended to help students in my class during the semester that the posting is made. No materials posted on the eLearning site become the property of a student. **Students acknowledge that distribution/transmission of any posting made on the eLearning site constitutes scholastic dishonesty.** (See parts (d) 1 and (d) 5 of section 49.36 of the policy on student discipline & conduct.)

The question about eLearning can be extended. I will treat in the same way any pre-existing solution to a problem assigned as homework in a previous semester, a solution to a problem asked on a test, or any problem from the book. **As soon as any student in this course comes across any kind of pre-existing solution, that student must inform me of its existence and source. To do otherwise is to aid copying.** (See part d (1) of section 49.36.) In order to maintain privacy, I can be contacted by e-mail if desired.

A note about missing classes

First of all, please try not to! **If something arises that prevents you from attending class, please inform me as to why by e-mail.** Not everything that we do in class is covered in any single textbook. By missing class, you will miss either something not covered by the book that you are reading, or you will miss 'intermediate steps' in an author's argument that will help you follow along. You also pass up the opportunity to ask questions of your own and miss out on hearing the questions of others. (This latter point is significant. Other students may ask questions that haven't occurred to you yet and hence develop your understanding of the subject.)

If you **have** to miss class for some reason then it is your responsibility to get class notes or handouts given in class. Please do this quickly after your absence. (I'm not keeping tabs on your attendance and leave some of the responsibility to you.) In order to understand the next lecture, you will need to have obtained and worked through any notes etc. from the previous lecture. I give lectures from my own 'outline notes' that are probably not what you need. If you miss a lecture then your best source of class notes is another student who wrote down exactly what we actually did.

I tend to return graded homework and tests in class. Again, you'll miss this if you are absent from class. After I have tried to return the graded work to you a class from which you were absent, the responsibility for getting it from me becomes yours.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.
