On March 21, 1949, I attended a lecture given by Linus Pauling...
That talk was the best talk by anyone on any subject that I had ever heard...
The talk was more than a talk to me. It filled me with a desire of my own to become a speaker.

— Issac Asimov

Welcome

Welcome to Physics 444: The Art of Communication in Physics! Being a physicist today is about more than just being smart and adventurous. Communication of scientific results and ideas is an integral part of scientific achievements, and consumes a large portion of a physicist's time and effort. Modern scientists interact with many people from all walks of life, and it is extremely important to be able to communicate effectively and efficiently.

Whether you have plans for an academic or industrial career, good communication skills are both a requirement, and a way to get ahead. In your future career, most of you will have to write scientific documents from short e-mails to lengthy manuscripts, and make a variety of presentations from a 30-second “elevator pitch” to hour-long talks.

Besides the traditional forms of scientific writing and presentations, you will also learn about career-related forms of scientific communication, such as graduate school and job applications, handling interviews, networking. You will learn the traditions, style, and culture of scientific communication specific to physics and physical sciences. This course will help you build communication skills required of today’s scientists, and acquire very important practical experience that will assist you in your job search and in your work in most physics-related careers.

In addition, this course covers yet another important aspect of scientific communication: how to work with the various sources of information for the physical sciences. You will learn techniques for reading scientific literature and practice various methods of searching for and organizing technical information. These advanced communication skills are essential in many fields of science and engineering.

Outcomes:  Upon successful completion of the course, you will learn to:

- understand what is expected of a physicist besides the research,
- understand and follow scientific ethics,
- appreciate the importance of effective communication for one’s success as a scientist,
- identify various forms of communication in physics and understand the difference between them,
- distinguish the main components and purposes of different scientific written forms (papers, abstracts, reports),
- read scientific publications more efficiently,
- provide constructive critique (peer-review) for physics papers and presentations,
- know and work with various typical sources of scientific information in physics,
- target your communication to your audience,
- create effective presentation materials (slides, posters, etc.) typical for physical sciences,
- prepare, rehearse, and deliver:
  - technical presentations of physics research,
  - short “elevator-pitch” presentation (useful for job search and networking),
- ask and handle questions,
- have fun talking about physics or other scientific topics,
- and how to apply it all in your physics career.

Catalog Title and Description: (CREDIT 2.0) The Art of Communication in Physics I. – Communicating Science to Scientists. Communication in physics, communicating physics to scientists, scientific presentations; scientific writing; information retrieval; reading technical publications.

Prerequisites: Knowledge of oral and written English; junior or senior classification.

Instructor: Dr. Igor V. Roshchin
E-mail: roshchin@physics.tamu.edu (preferred way!)
Office: MPHY 459
Phone: 979-845-8520
Office hours: TBA

Web Page: http://faculty.physics.tamu.edu/roshchin/444
This page will be updated often. It is student's responsibility to check it often.

Term: Fall 2013
Class times: twice a week (3 hours a week) August 27 - November 1, Tue., Thur., 5:30–6:45pm.

Required text: None

Recommended text: See this list: http://www.worldcat.org/profiles/roshchin/lists/1723072

Required Material: Access to a computer with Microsoft Power Point (or other compatible software for presentations), word processor (Microsoft Word (preferred) or compatible, or LaTeX with REVTeX 4.1). General working familiarity with this software will be beneficial.

Homework: You will be expected to complete a variety of homework assignments: information search, reading, writing, editing, peer reviewing, and preparing presentations.

Written assignments: You will be expected to complete several written assignments of different type and length, totaling over 2300 words. You will be expected to edit your work based on the critique by the instructor and peer-reviewers. You will be expected to review the work of your peers. Unless specified otherwise, the written assignments will be submitted using Turnitin2.

Oral assignments: Several in-class presentations of different length.

Final assignment: The final assignment will be conducted in a form of a final presentation and a take-home written assignment.

Final presentation: Thursday, October 31, 6:45-10pm Place: MPHY-107 (regular classroom)

Late assignments: As a rule, late assignments will not be accepted except in the case of University excused absences.

Classes: Classes will be conducted in a highly interactive form. They will require your active participation through presenting your homework assignments and through your involvement in class discussions. The work of the class participants (presentations and/or written assignments) will be analyzed in class by the instructor and all students in class. Some class activities will be photo-/video- (and audio-) recorded. By participating in this class you give your consent for these recordings to be used in and outside the class, published, and shown to other people.

Class participation: This is a very important part of the course.
(a) Hence, it is crucial that you do not miss any classes
(b) You have to be prepared for each class
(c) If you miss a class due to an authorized excused absence as outlined in the University student rules (http://student-rules.tamu.edu/rule07), you should contact the instructor no later than the next class meeting following the missed class.
(d) If you missed the class for any reason, it is your responsibility to find out about the material discussed in class, including the homework assignments.
Since your attendance is needed for participation, each class missed without an authorized excused absence may lead to the deduction of up to 5% of the total score.

Class communication: Large portion of class communication, including some homework assignments, is done via Texas A&M University e-mail account (neo). It is your responsibility to maintain and check your e-mail account (and read messages) daily. Many class materials are distributed through the course website. It is your responsibility to check it often and when requested by the instructor.

Course Grade: At least 70% of the final grade will be based on the writing and presentation quality. The course grade will be determined from the various components of the course:
- In-class participation (presentations, discussions) (35%)
- Homework assignments (written and oral) (40%)
- Final assignment (25%)
Course grades may be scaled depending on special conditions of the course. In no case will the scale result in a lower letter grade than the standard 90-100% A, 80-89% B, 70-79% C, 60-69% D, and <60% F.

**Your Responsibilities:** Texas A&M University assumes that all students enroll in its programs with a serious learning purpose and expects them to be responsible individuals who demand of themselves high standards of honesty and personal conduct. All students are expected to behave at all times with respect and courtesy toward their fellow students and instructors and are to have the highest standards of honesty and integrity in their academic performance. Any behavior which disrupts the classroom learning environment or any attempt to present work that the student has not actually prepared as their own work, or to pass an examination by improper means, is regarded as a serious offense. The minimum penalty for such an offense is a failing grade for this course. Aiding and abetting the above behavior is also considered a serious offense resulting in equally severe penalties.

**ADA Policy:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 979-845-1637. For additional information visit http://disability.tamu.edu

**Academic Integrity:** The Aggie Honor Code states, “An Aggie does not lie, cheat, or steal or tolerate those who do.” Further information regarding the Honor Council Rules and Procedures may be found on the web at http://www.tamu.edu/aggiehonor.
Main topics and assignments (tentative schedule, subject to change without prior notice)

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>2</td>
<td>How to read scientific articles. Assessing the audience. Selecting the format. Written communication. Different forms. How to write a manuscript/thesis/report. Styles of writing in Physics. How to start writing (outline). Different types of Plagiarism and how to avoid it.</td>
<td>Prepare an outline for a research article Write the “main” part.</td>
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<td>3</td>
<td>Different formats (Journal articles, reviews, reports, instructions, etc.) Discussion of outlines. How to improve your document. Reverse outline. Correspondence. Small organizational details that can be of great help.</td>
<td>Completing the first draft of the research article (~1500-2000 words)</td>
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<td>4</td>
<td>Types of oral presentations. What makes a presentation successful. Breadth, depth and length.</td>
<td>Peer editing/review of the first draft (using Turnitin2) Writing reviewer’s response (250-500 words)</td>
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<td>5</td>
<td>The role of the slides and other props. How to make great slides. Class presentations – discussions and analysis.</td>
<td>Prepare a 5-10-minute presentation Revise your write-up</td>
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<td>6</td>
<td>What makes slides great (continued) How to make a presentation without slides Impromptu presentations</td>
<td>Revise your presentation</td>
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<td>7</td>
<td>Presentations continued. Abstracts: what, why and how.</td>
<td>Write an abstract (~200-400 words) for your write-up</td>
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<td>8</td>
<td>How to write progress report. E-mail as a form of communication How your presentation and writing can help you in your job search</td>
<td>Revise your abstract</td>
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<td>9</td>
<td>How can you further improve your presentations Impromptu presentations</td>
<td>Prepare the final presentation and final assignment.</td>
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<tr>
<td>10</td>
<td>In-class presentations (final)</td>
<td>Prepare &amp; present the final presentation. Prepare and turn in the final written assignment (~200-500 words)</td>
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