PHYS 155  The Physics Behind the Internet  Winter 2005

Class times: UH 12:00 – 13:20 Location: 110 WIL

Instructor: Miriam Deutsch
Office: 275 WIL  Tel: 6-5973
Email: miriamd@darkwing
Office hours: MF 1:00 – 2:30

TA: Peter Hugger
Office: 154-A WIL  Tel: 6-5853
Email: phugger@darkwing
Office hours: TBA

Course description:

Required text: The Physics Behind the Internet, M. Raymer (University of Oregon, 2003).

Course outline: This is an introductory physics course designated for students with no scientific background. During this term we will get acquainted with the technological aspects of the Internet, as well as some of the key physical principles governing its operation. Only elementary algebra will be used. We will examine what really makes up the Internet: how computers operate, and what are the technologies that allow computers to communicate in various networks. For this purpose will touch on such topics in physics as electricity and magnetism, solid state physics, lasers and quantum mechanics. We will also discuss digital electronics, mathematical logic and binary computation. If you stop and think about it, this sounds like an incredibly ambitious program. Each of these topics usually fills a course by itself. But then think again – the Internet would not exist if it were not for scientists’, engineers’ and mathematicians’ knowledge of these fields, synthesized through great vision. Naturally, we will not be able to go into much detail most of the time. The main aim therefore is to develop an appreciation of the immense complexity of this system, while becoming acquainted with its key enabling technologies.

Course web site: http://blackboard.uoregon.edu/
I will post homework assignments, course announcements and handouts. Solutions to homework problem which require calculations will also be posted. You will need to check regularly for updates.

Homework: Homework will be assigned weekly, usually on Thursdays. Assignments will be submitted in class directly to me. You should always make an effort to submit your assignments on time. Homework submitted up to 24 hours late will receive at most 80% credit.
Assignments received later than that will not get credit. Special circumstances and emergencies may be accommodated on a case-by-case basis. In such cases you should contact me as soon as possible to discuss your specific needs.

Grade determination:

Homework – 30%
Quiz (1/27 in class) – 15%
Quiz (2/22 in class) – 15%
Final (3/18 8:00am) – 40%