Physics 3327 Class Projects (2016):

Now that you have learned something about Electricity and Magnetism (theories that were developed in the 1800's and early 1900's) it is time to investigate how this knowledge applies to current research being conducted around the world. You will be split into teams and asked to write up a five page paper and make a 10min in-class Power Point presentation on any subject you choose so long as it has some relevance to the material you have learned in the course. To ensure relevance, if you do not choose one of the topics listed below you will need to get the project subject matter approved by me. The grading of the paper will be conducted by me. The grade for the in class presentation will consist 50/50 of a grade given by Shovan and me and a grade given by your fellow classmates. During such presentations it becomes very clear which teams have done a good job preparing and which have not. I therefore urge you to put in the work and practice giving the presentation with your team members before your in-class presentation. In addition, any of the team members can be asked questions during the presentation. It therefore behooves you to make sure that everyone understands the subject matter being presented. The projects are very open ended so you get to have some fun figuring out what you would like to focus on and the manner in which you would like to present the topic.

<u>Suggested topics:</u>
X Animal E&M
Optical Ring Cavities and nano scale wave guides
X Meta Materials
Screening potentials in colloidal systems
X Slowing down the speed of light
X Nanotubes as Transistors
X Fusion and controlling Plasmas
X Sun arches
Antenna arrays and phase array antennas beam steering
Microchip Radars
MIMO multiple in multiple out for cell phones (antenna and system engineering)
CHESS physics: Beam steering
CHESS physics: wigglers
CHESS physics: RF cavities
X Neuroscience

Teams:
1) Katherin Ding, Weigang Liang, Yuhui Tang (Wed 1) Sun Arches
2) Roman Marcarelli, Daniel Vicuna, Maya Levanon, Charles Motzer (Fri Afternoon 3) Animal E&M
3) Jiaxing Geng, Xiaoning wang, Colin Bundschu (Wed 3) Nanotubes as transistors
4) Christopher Silvia, Jesse Hoke, Erin Yandel (Wed 2)
5) Edward Esposito, Ryan Meredith, Rayne Milner, Kyle Barnes (Fri Afternoon 1) metamaterials
6) Carter Brown, Avinash Deshmukh, Yishen Xu (Fri Morning 2) Light Slow Down
7) Kaiwen Zheng, Kenny Vetter, Charles Howland (Fri Afternoon 2) Neuroscience
8) Zachary Mayle, Nic Pavao, Brian Perez (Fri Morning 3) wireless power transmission
9) Siddhant Rao, Sumner Hearth, Richard Zachary Murray (Fri Morning 1) Fusion

Dear Class,

I wanted to give some pointers for the Power point presentations.

The presentation will last 10 minute. A general rule of thumb is 2 slides every minute. That means a maximum of 20 substantial slides in total.

Every presentation is a story. It needs a beginning middle and end. Your first slide or two should introduce the topic and get the audience to care about what they are about to hear. It should also set up the mystery or problem that needs to be solved.

The last two slides should summarize what was said and relate the material to future work or broader implications.

This leaves the middle slides for talking about your material in detail.

In general, words in paragraph form are distracting. Try to keep the word count down. There is nothing worse than having someone read out their slide. The slides are there to guide you. The information has to be in your head. Images, plots etc. will be very important. If you present an image you need to tell the audience what they are looking at. If you present a plot, please describe each axis and then tell us what the data is doing. If you decide to present an equation, you must tell us what each term means and then give the audience an overall feel for what the equation says.

I hope these comments are helpful.

All the best,

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