

August 31, 2011

Physics 131

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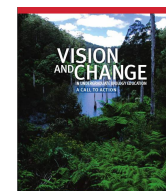
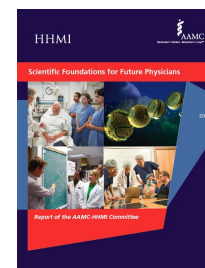
■ Theme Music: John Coltrane *Welcome*

■ Cartoon: Lynn Johnston *For Better or for Worse*



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- Over the past decade there have been increasing calls to modernize the education of biology and pre-med students.
- This class is part of a national project sponsored by the Howard Hughes Medical Institute and the National Science Foundation to respond to the *Scientific Foundations for Future Physicians Report* (2009)
- This report calls for multi-disciplinary competency-based science education to better prepare students for medical, pharmacy, and veterinary schools and also to better educate students who are studying the basic biological sciences.



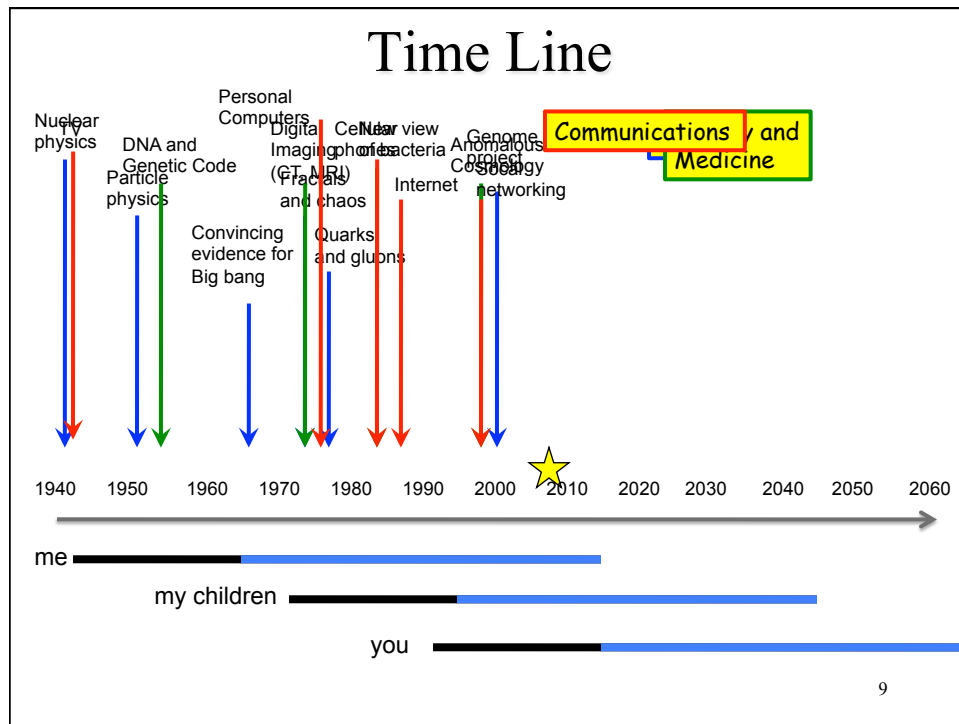
HHMI Project NEXUS

- The goal of this course is to provide you with the understanding of physics that you will need to help you understand advanced biology and (perhaps) medical school classes.
- It is in development so we will be seeking feedback from you to make sure that it works for you.
- Surveys
(one online, one in recitation this week)

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Why do you think leading biologists and the AAMC want to change bio and pre-med education so that it stresses more chemistry, physics, and math?

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Adaptive expertise

- The rapid pace of change in science implies that critical skills for scientists (and health-care professionals) in the next few decades will be
 - the ability to continue to learn
 - the ability to understand the implications of new discoveries
 - the ability to integrate new tools and knowledge into their practice of science.

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Recap of the reading

- 1. The problem of mind
 - How do we know – anything?
- 2. The problem of science
 - How does science know what it knows?

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1. The problem of mind

- How do we know anything?
 - Have you seen The Matrix?

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Some questions you have asked

- How can an individual learn anything for certain if memories can be altered and planted easily, and learning is based on memory?
- What triggers memories to arise?
- If our memory does not work by replaying past events, then how can we learn to string memories together in the correct fashion in order to solve complex problems without mixing memories together incorrectly?

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How do our brains use our knowledge?

- RM activity
- Number strings activity
- Selective attention activity
- The evolutionary model of memory
- Sense making

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2. The problem of science

- How does science know *anything*?

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Some questions you have asked

- The article mentions that certain variables are often excluded from a scientific model because they're not relevant to the intended goal. How do you determine which variables are relevant and which ones aren't?
- What is the line between a theory and when something is considered a scientific truth? How much proof is needed to call something a theory?

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