

## Fundamentals of Physics

**Instructor:** Alexander Wagner  
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**Meetings:** 15:30 - 16:45 Tuesday, Thursday in A. Glenn Hill Center, room 114

**Office hours:** 10:00 - 11:00 Wednesday, or by arrangement

**Text:** Physics, Concepts & Connections, Art Hobson (recommended)  
 Optional: Shawn Otto, *The War on Science*  
 Optional: David C. Lindberg, *The Beginnings of Western Science*

**Topics:** What is science?, Astronomy  
 Atoms, how things move, why things move,  
 Newton's universe, conservation of energy,  
 Second law of thermodynamics, electromagnetism,  
 Waves & light & climate change, special theory of relativity,  
 Einstein's universe and the new cosmology, the quantum idea,  
 The quantum universe, the nucleus and radioactivity,  
 Fusion and fission, the energy challenge, quantum fields  
 We will cover about one chapter each week.

**Grading:**

Problems in LON-CAPA:	100pts
Test 1, Sept. 17:	100pts*
Test 2, Oct. 15:	100pts*
Test 3, Nov. 12:	100pts*
Final, Dec. 17, 10:30am-12:30pm:	100pts
Participation, extra essay homework:	bonus points (up to 100)

\* No makeup exams will be scheduled. Only the two best grades of the three tests count towards the final grade.

- Any students with disabilities who need accommodation in this course are encouraged to speak with the instructor as soon as possible to make appropriate arrangements.
- All work done in this course must be completed in a manner consistent with NDSU University Senate Policy, section 355: Code of Academic Responsibility and Conduct (<http://www.ndsu.nodak.edu/policy/355.htm>)