Health Physics
- Idaho State University delivers this program
- Collaboration
- ABET accreditation
- Will need a MOU to spell all of this out
- GPIEDA model
  - Tuition rate
- Will be interest from Avera, etc.
- 3M internships

GTA's
- Challenge to us
- Chemistry grad student is one place
  - Mechanical engineering, etc
- Stipends are of concern

211-213
- 112 lab sections
- Learning Assistants
  - Still using as a model

Space
- Research
- Teaching
- Collaborative
- Resource rooms to learn, etc.

340
- Thin film lab
- Photovoltaic

Undergraduate Research Opportunities
- National programs
- Space and time to do this here
- Structurally – Physics + College → 3 papers

**Technology**
- Network fiber needs
- Internet 2
  - Going through ND or NE
  - We will need to go up or down to connect

**Computational Data Analysis**
- Somewhere that we could go with Lead DEEP → particle physics

**STEM Education Center**
- Potential give the K-12 funding for teachers

**25 years**
- Look like our peers
Physics

THE FOUNDATIONAL SCIENCE

- Successes
- Opportunities
- Goals
- Challenges
Recent Successes
Curriculum and Partnered Research

❄ Minor in Nuclear Engineering
  ✰ First two graduates in Spring 2012
  ✰ NEUP approved university – (Nuclear Energy University Program – US DOE)

❄ Undergraduate Research
  ✰ REU participation – Eric Krage (Huh & UNL)
  ✰ Internships – Dan Nehlich (NASA), Spitznagel (Avera)
  ✰ PHYS 498 – Halstrom (McTaggart)

❄ Image Processing Laboratory (satellite calibration)
  ✰ David Aaron, Larry Leigh

❄ Materials Science & Nano-Physics
  ✰ Thin Film Laboratory (Yung Huh)

❄ SURF (Sanford Underground Research Facility)
  ✰ CUBED 2010 Center – Robert McTaggart and Joel Rauber
  ✰ Virtual SURF (νSURF) – Judy Vondruska
Successes
Education and Outreach

STEM Field Teacher Preparation/Training
- NSF NOYCE (ReMast)
- Funded Teacher Workshops – Larry Browning, Judy Vondruska
- Science Methods Course – Larry Browning

Accredited Programs — NCATE, BS in Physics -Teaching Specialization

Service Courses: (~4,800 Credit hours per year)

Outreach
- Physics Bowl (38th year) – Sally Krueger et. al.
- YEA Camp – Geoffrey Bonvallet
- Kirby Science Center, Engineering Expo, SDSTA, DOE–Science Bowl,
- Girl Scout Science Day - Sarah McMahon
Opportunities

National & State Interest in STEM Fields
- Teacher training & Workforce development
- Research and Scholarship
  - Land Grant Mission, Extramural Funding,
- State Dollars for Graduate Physics Programming
- Energy Research – photovoltaics, nuclear, . . .
- Materials Science Research
- Physics Education Research (PER)
- ISEE – Institute for STEM Education Enhancement
Goals – The Immediate Future

0-12 month time frame

❄ Successfully Negotiate Transitions
  ❄ Move to College of Arts and Sciences (Now)
  ❄ Complete last year’s canceled IPR (Now)
    ❄ Maximize its utility for the departmental strategic planning
  ❄ Move to the EECS Building (Summer 2012)
  ❄ New university expectations
    ❄ Alignment of Department to University Standards
Goals – The Near Term
1-6 year time frame

- Recruitment and Retention
  - Numbers
  - Quality
- Develop Focus Areas
  - “accreditation ready” Health Physics Elective Group
  - Professional Physics
  - Applied Physics/Materials Science
- Maintain a stable base of quality GTAs (9-11)
- Develop a culture of UG research amongst physics majors
Goals – The Long Term
5-10 years and beyond

Facilities
- Academic
  - Physics appropriate lecture hall for large section intro courses
  - Physics Learning Center – perhaps similar to new math LC
- Research
  - Facilities to match university expectations
  - Provide UG research opportunities

Academic and Curricular
- Develop REU programs within the department
- Summer Programming – courses, certificate programs, . . .
- Graduate Programming???
Challenges

- **Land Grant Mission** – Resources to match expectations of a 1862 Land Grant Physics Department (peer institutions as benchmark)
  - **Staffing to Achieve Goals**
    - Diminished ability to flexibly offer service courses
    - Provide for UG research opportunities
  - **Facilities to Achieve Goals**
    - Currently moving to smaller footprint
Challenges

Graduation Numbers and Productivity Standards

- National Statistics
  - Per Annum – 59% of all Bachelor’s only programs graduate 4 or fewer<sup>1</sup>
  - Per Annum – 70% graduate 5 or fewer<sup>1</sup>

- Bureaucratic Accounting
  - Combine SDSU, USD, SDSM&T numbers
  - Combine numbers among programs that require no additional resources
    - BS in Physics
    - BS in Physics, Science Teaching Specialization
    - Future accredited specialization in Health Physics

<sup>1</sup>Publication of American Institute of Physics, May 2011, “Physics Undergraduate Degrees” (N = 506)
(62 – MS only programs and 181 – PhD Programs)