Name: _____

ID: _____

# NORTH DAKOTA STATE UNIVERSITY

College of Science & Mathematics

**PHYSICS w/ Computational Physics Option** — **Fall 2012**

| GENERAL EDUCATION REQUIREMENTS - 40 Credits Required | | | | |
|---|---|---|---|---|
| **Course** | **Number** | **Course Title** | **Credits** | **Grade** |
| **First Year Experience (F)** | | | **1 credit** | |
| UNIV | 189[1] | Skills for Academic Success | 1 | |
| **Communication (C)** | | | **12 credits** | |
| ENGL | 110 | College Composition I | 3 | |
| ENGL | 120 | College Composition II | 3 | |
| COMM | 110 | Fundamentals of Public Speaking | 3 | |
| ENGL | | *(Upper-Division Writing)* | 3 | |
| **Quantitative Reasoning (R)** | | | **3 credits** | |
| MATH | 165 | Calculus I | 4 | |
| **Science & Technology (S)** | | | **10 credits** | |
| PHYS | 251/251L | Univ. Physics I/Lab | 4/1 | |
| PHYS | 252/252L | Univ. Physics II/Lab | 4/1 | |
| **Humanities & Fine Arts (A)** (Max of 3 cr in FA performance) | | | **6 credits** | |
| | | | 3 | |
| | | | 3 | |
| **Social & Behavioral Sciences (B)** | | | **6 credits** | |
| | | | 3 | |
| | | | 3 | |
| **Wellness (W)** | | | **2 credits** | |
| | | | 2 | |
| **Cultural Diversity (D)** | | | | |
| | | | | |
| **Global Perspectives (G)** | | | | |
| | | | | |

| COLLEGE REQUIREMENTS for a BS or BA Degree | | | |
|---|---|---|---|
| **The College of Science & Mathematics requires an additional 6 credits in Humanities or Social Sciences for the BS degree and an additional 12 credits for the BA degree and two years proficiency of a modern foreign language.** | | | |
| **BA** Degree Requirements: | | | |
| 2nd Yr Lang Proficiency | | | |
| HUM or Soc Sci | | 3 | |
| HUM or Soc Sci | | 3 | |
| HUM or Soc Sci | | 3 | |
| HUM or Soc Sci | | 3 | |
| **BS** Degree Requirements: | | | |
| HUM or Soc Sci | | 3 | |
| HUM or Soc Sci | | 3 | |

[1]Students transferring in 24 or more credits do not need to take UNIV 189.

**A grade of 'C' or better is required for ALL PHYS or AST prefix courses.**

NR = Not Required IP = In Progress T = Transfer Credit

| MAJOR REQUIREMENTS - 39 Credits Required | | | | |
|---|---|---|---|---|
| **Course** | **Number** | **Course Title** | **Credits** | **Grade** |
| PHYS | 251R | Univ. Physics I Recitation | 1 | |
| PHYS | 252R | Univ. Physics II Recitation | 1 | |
| PHYS | 330 **or** 455 | Interm Mechanics (**MSUM**) **OR** Classical Mechanics (**NDSU**) | 4 **or** 3 | |
| PHYS | 350 | Modern Physics | 3 | |
| PHYS | 360 | Modern Physics II | 3 | |
| PHYS | 361 **or** 370 | Electromagnetic Theory (NDSU) **or** Electromagnetic Theory (MSUM) | 3 **or** 4 | |
| PHYS | 370 | Intro to Computational Physics | 3 | |
| PHYS | 411/411L | Optics for Scientists & Engineers/L | 3/1 | |
| PHYS | 462 | Heat & Thermodynamics | 3 | |
| PHYS | 463 | Statistical Mechanics | 3 | |
| PHYS | 485 | Quantum Mechanics I | 3 | |
| PHYS | 486 | Quantum Mechanics II | 3 | |
| PHYS | 489 | Sr. Project/Capstone | 3 | |
| **ELECTIVES - 3 credits (Choose one)** | | | | |
| PHYS | 215 | Research for Undergraduates | 3 | |
| PHYS | 481 | Intro to Solid State Physics | 3 | |
| PHYS | 413 | Lasers for Scientists & Engineers | 3 | |
| PHYS | 415 | Elements of Photonics | 3 | |
| **MSUM courses** | | | | |
| AST | 365 | Cosmology | 3 | |
| PHYS | 410 | Astrophysics | 3 | |
| **RELATED REQUIRED COURSES - 39 Credits Required** | | | | |
| CSCI | 160 | Computer Science I | 4 | |
| CSCI | 161 | Computer Science II | 4 | |
| MATH | 166 | Calculus II | 4 | |
| MATH | 265 | Calculus III | 4 | |
| MATH | 266 | Intro to Differential Equations | 3 | |
| *(A coreq of MATH 128, 129, or 429 is required)* | | | | |
| STAT | 367 | Probability | 3 | |
| STAT | 368 | Statistics | 3 | |
| **Math Courses 400 level or Higher - 6 Credits Required (Choose 2; Math 488 & 489 are recommended)** | | | | |
| | | | | |
| | | | | |
| **CHEMISTRY: 8 Credits Required (CHEM 150 sequence recommended)** | | | | |
| CHEM | 150/160 **or** 121/121 Lab | Principles of Chemistry I and Lab **or** General Chemistry I and Lab | 3/1 | |
| CHEM | 151/161 **or** 122/122 Lab | Principles of Chemistry II and Lab **or** General Chemistry II and Lab | 3/1 | |

**Graduation requirements and program notes continued on the backside of this guide.**

| PROGRAM NOTES | UNIVERSITY GRADUATION REQUIREMENTS | | |
|---|---|---|---|
| **ALL COURSES ON THIS CURRICULUM ARE REQUIRED FOR THE MAJOR** | **Residency at NDSU** (15 cr. @ NDSU)**:** | **36 Credits** | |
| | **Credits at 4-year University:** | **60 Credits** | |
| | **Courses numbered 300+** (Min. 15 cr @ NDSU): | **37 Credits** | |
| **All courses taken to fulfill gen ed, college or major requirements may NOT be taken P/F.** | **Total Credits Required:** | **122 Credits** | |