**Sample Plan to Graduation for a BS in Engineering Physics**

***Applied Physics Concentration***

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|  | **Fall Semester** | **Spring Semester** |
| **Freshman Year** | Math 140 - 4 cr  Physics 101\*\* - 1 cr  Physics 113 & 181 - 6 cr  English 101 - 3 cr  Gen Ed - 3 cr | Math 141 - 4 cr  Physics 114 & 182 - 6 cr  First Year Seminar - 4 cr  English 102 - 3 cr |
| (17 credits) | (17 credits) |
| **Sophomore Year** | \*Physics 211 - 3 cr  \*Physics 281 - 3 cr  Math 242 - 4 cr  Chemistry 115 & 117 - 5 cr | \*Physics 214 - 3 cr  Math 270 - 3 cr  Chemistry 116 & 118 - 5 cr  Engineering 104 - 3 cr  Intermediate Seminar - 3 cr |
| (15 credits) | (17 credits) |
| **Junior Year †** | Engineering 231 & 271 - 4 cr  CS 110 - 4 cr  Gen Ed- 3 cr  Engineering Elective I - 3 cr  Gen Ed- 3 cr | Engineering 232 & 272 - 4 cr  \*Physics 312 - 3 cr  \*Physics 382 - 3 cr  Applied Physics Elective I - 3 cr  Gen Ed - 3 cr |
| (17 credits) | (16 credits) |
| **Senior Year** | \*Physics 321 - 3 cr  \*Physics 421 - 3 cr  Engineering Elective II - 3 cr  Applied Physics Elective II - 3 cr  Gen Ed - 3 cr | \*Physics 322 - 3 cr  Engineering Elective III - 3 cr  Applied Physics Elective III - 3 cr  Gen Ed- 3 cr  Lab Elective - 4 cr |
| (15 credits) | (16 credits) |

\* - Class may be offered only once a year.

\*- Students should select general education courses that fulfill multiple requirements.

\*\* - Recommended.

† - The Writing Proficiency Requirement (WPR) is recommended to be completed at 60-75 credits. Please consult the WPR website:

[www.umb.edu/academics/vpass/undergraduate\_studies/writing\_proficiency](http://www.umb.edu/academics/vpass/undergraduate_studies/writing_proficiency)

This course guide provides the detailed names of courses listed by number on the plan to graduation. It is not a comprehensive list of courses for your major or a substitute for an advising appointment! Consult with your faculty advisor when choosing courses, and check your degree audit regularly.

**APPLIED PHYSICS ELECTIVE – Select 3 from:**

PHYSIC 247 Fundamentals of Quantum Physics

PHYSIC 297 Special Topics in Physics

PHYSIC 331 Optics

PHYSIC 347 Quantum Information II: Quantum Computation

PHYSIC 350 Statistical Physics

PHYSIC 351 Quantum Information III: Physics & Information

PHYSIC 362 Computational Science

PHYSIC 397 Special Topics in Physics

PHYSIC 447 Quantum Information IV: Quantum Science Applications

PHYSIC 479 Reading in Physics I

PHYSIC 480 Readings in Physics II

PHYSIC 487 Research in Physics I

PHYSIC 488 Research Physics II

PHYSIC 497 Special Topics in Physics

PHYSIC 498 Special Topics in Laboratory

*Consult your advisor if you are interested in taking any graduate level courses.*

Chemistry 115 & 117 – Chemical Principles I Lecture & Lab

Chemistry 116 & 118 – Chemical Principles II Lecture & Lab

CS 110 – Introduction to Computing

Engineering 104 – Introduction to Electrical & Computer Engineering

Engineering 231 & 271 – Circuit Analysis I & Circuit Lab II

Engineering 232 & 272 – Circuit Analysis II & Circuit Lab II

Math 140 – Calculus I

Math 141 – Calculus II

Math 242 – Multivariable and Vector Calculus

Math 270 – Applied Ordinary Differential Equations

Physics 113 & 181 – Fundamentals of Physics I Lecture & Lab

Physics 114 & 182 – Fundamentals of Physics II Lecture & Lab

Physics 211 & 281 – Introduction to Contemporary Physics & Physics

**LAB ELECTIVE – Select 1 from:**

ENGIN 241 Digital Systems with Lab

ENGIN 304 Engineering Design

ENGIN 365 Electronics I with Lab

PHYSIC 298 Special Topics Laboratory

PHYSIC 398 Special Topics Laboratory

Lab I Physics 214 – Thermodynamics

Physics 312 – Mechanics

Physics 321 – Theory of Electricity and Magnetism I

Physics 322 – Theory of Electricity and Magnetism II

Physics 382 – Intermediate Laboratory

Physics 421 – Atomic Physics and Introduction to Quantum Mechanics

**ENGINEERING ELECTIVE – Select 3 from:**

ENGIN 202 Statics (Mechanical Engineering)

ENGIN 211L Engineering Mathematics

ENGIN 221 Strength of material I

ENGIN 321 Signals and Systems

ENGIN 322 Probability and Random Processes

ENGIN 331 Field and Waves

ENGIN 332 Field and Waves II

ENGIN 346 Microcontrollers

ENGIN 351 Fundamentals of Semiconductor Devices

ENGIN 362 Fluid Mechanics

ENGIN 366 Electronics II with Lab