

# Physics BS Course Requirements

Ideal for a student planning to pursue graduate work in physics or a closely related field. With a strong emphasis on technical physics, the BS degree requires twelve physics courses, five math courses, as well as a course in each electronics and computer programming.

For more information please see [www.stthomas.edu/physics](http://www.stthomas.edu/physics)

## Major Courses:

|          |                                      |             |
|----------|--------------------------------------|-------------|
| PHYS 211 | Introduction to Classical Physics I  | (4 credits) |
| PHYS 212 | Introduction to Classical Physics II | (4 credits) |
| PHYS 215 | Foundations of Modern Physics        | (4 credits) |
| PHYS 225 | Applications of Modern Physics       | (4 credits) |
| PHYS 331 | Theoretical Mechanics                | (4 credits) |
| PHYS 341 | Electricity and Magnetism            | (4 credits) |
| PHYS 410 | Statistical Mech. & Thermodynamics   | (4 credits) |
| PHYS 431 | Quantum Mechanics                    | (4 credits) |

Plus

8 credits from the following: (8 credits)

|          |                                  |
|----------|----------------------------------|
| PHYS 323 | Methods of Experimental Physics  |
| PHYS 325 | Methods of Computational Physics |
| ENGR 481 | Engineering Design Clinic II     |

Plus

4 additional Physics elective credits (4 credits)

Plus

4 additional Physics or Allied elective credits (4 credits)

## Allied Courses:

|          |                                  |             |
|----------|----------------------------------|-------------|
| MATH 113 | Calculus I                       | (4 credits) |
| MATH 114 | Calculus II                      | (4 credits) |
| MATH 200 | Multi-Variable Calculus          | (4 credits) |
| MATH 210 | Intro to Differential Equations  | (4 credits) |
| MATH 240 | Linear Algebra                   | (4 credits) |
| ENGR 240 | Circuit Analysis                 | (4 credits) |
| or       |                                  |             |
| ENGR 350 | Intro to Electronics             |             |
| CISC 130 | Intro to Programming in Sciences | (4 credits) |
| or       |                                  |             |
| CISC 131 | Intro to Programming             |             |

## Physics Elective Courses:

|                                                   |                                  |                  |
|---------------------------------------------------|----------------------------------|------------------|
| PHYS 104                                          | Astronomy                        | (4 credits)      |
| Any PHYS course numbered 150 and above including: |                                  |                  |
| PHYS 323                                          | Methods of Experimental Physics  | (4 credits)      |
| PHYS 325                                          | Methods of Computational Physics | (4 credits)      |
| PHYS 347                                          | Optics                           | (4 credits)      |
| PHYS 354                                          | Astrophysics                     | (4 credits)      |
| PHYS 491                                          | Individual Research              | (2 or 4 credits) |

## Allied Elective Courses: \*

|          |                              |             |
|----------|------------------------------|-------------|
| CHEM 331 | Chemical Thermodynamics      | (4 credits) |
| CHEM 332 | Quantum Chemistry            | (4 credits) |
| ENGR 342 | Electromagnetic Waves        | (4 credits) |
| ENGR 361 | Engineering Materials        | (4 credits) |
| ENGR 368 | Fluid Mechanics for CE       | (4 credits) |
| ENGR 381 | Thermodynamics               | (4 credits) |
| ENGR 385 | Fluid Mechanics              | (4 credits) |
| ENGR 481 | Engineering Design Clinic II | (4 credits) |
| MATH 400 | Dynamical Systems and Chaos  | (4 credits) |

\* Not all possible Allied Elective courses are listed. Check with the Physics Departmental Chair about specific courses.

Major and  
Physics/Allied Elective  
Courses:

48 credits

Allied Courses:  
28 credits

Core Curriculum and  
Free Elective Courses:  
53 credits

129 credits

Physics  
BS



## Degree Planning Guide

These suggested schedules are great planning resources but it is critical that you discuss your specific academic plans with a physics advisor. If you do not have a physics advisor, please contact the Physics Departmental Chair to discuss your options.

### Physics BS (recommended courses starting with MATH 114)

| Freshman<br>(<28 credits)                      | Sophomore<br>(28-59 credits)                               | Junior<br>(60-91 credits)                                                                                          | Senior<br>(92+ credits)                                                                                            |
|------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Semester 1<br>PHYS 211<br>MATH 114             | Semester 1<br>PHYS 215<br>ENGR 240 or ENGR 350<br>MATH 210 | Semester 1<br>PHYS 331 (even fall)<br>PHYS 341 or PHYS elective                                                    | Semester 1<br>PHYS 331 (even fall)<br>PHYS 341 or PHYS elective<br>PHYS or Allied elective                         |
| Semester 2<br>PHYS 212<br>CISC 131<br>MATH 200 | Semester 2<br>PHYS 225<br>MATH 240                         | Semester 2<br>PHYS 323* (even spring)<br>PHYS 410 (even spring)<br>PHYS 325* (odd spring)<br>PHYS 431 (odd spring) | Semester 2<br>PHYS 323* (even spring)<br>PHYS 410 (even spring)<br>PHYS 325* (odd spring)<br>PHYS 431 (odd spring) |

### Physics BS (recommended courses starting with MATH 113)

| Freshman<br>(<28 credits)                                                    | Sophomore<br>(28-59 credits)                   | Junior<br>(60-91 credits)                                                                                                                  | Senior<br>(92+ credits)                                                                                            |
|------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Semester 1<br>MATH 113<br>CISC 131                                           | Semester 1<br>PHYS 212<br>MATH 200<br>MATH 210 | Semester 1<br>PHYS 215<br>PHYS 331 (even fall)<br>PHYS 341 or PHYS elective                                                                | Semester 1<br>PHYS 331 (even fall)<br>PHYS 341 or PHYS elective<br>PHYS or Allied elective                         |
| Semester 2<br>PHYS 211<br>MATH 114<br>CISC 131 *<br>*if NOT taken semester 1 | Semester 2<br>PHYS 225<br>MATH 240             | Semester 2<br>PHYS 323* (even spring)<br>PHYS 410 (even spring)<br>PHYS 325* (odd spring)<br>PHYS 431 (odd spring)<br>ENGR 240 or ENGR 350 | Semester 2<br>PHYS 323* (even spring)<br>PHYS 410 (even spring)<br>PHYS 325* (odd spring)<br>PHYS 431 (odd spring) |

### Physics BS (recommended courses starting with MATH 108)

| Freshman<br>(<28 credits)                                        | Sophomore<br>(28-59 credits)                   | Junior<br>(60-91 credits)                                                                                                                  | Senior<br>(92+ credits)                                                                                            |
|------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Semester 1<br>MATH 108<br>CISC 131                               | Semester 1<br>PHYS 212<br>MATH 200<br>MATH 210 | Semester 1<br>PHYS 215<br>PHYS 331 (even fall)<br>PHYS 341 or PHYS elective                                                                | Semester 1<br>PHYS 331 (even fall)<br>PHYS 341 or PHYS elective<br>PHYS elective                                   |
| Semester 2<br>MATH 109<br>CISC 131 *<br>*if NOT taken semester 1 | Semester 2<br>PHYS 225<br>MATH 240             | Semester 2<br>PHYS 323* (even spring)<br>PHYS 410 (even spring)<br>PHYS 325* (odd spring)<br>PHYS 431 (odd spring)<br>ENGR 240 or ENGR 350 | Semester 2<br>PHYS 323* (even spring)<br>PHYS 410 (even spring)<br>PHYS 325* (odd spring)<br>PHYS 431 (odd spring) |
| Summer I<br>PHYS 211                                             | Summer II<br>MATH 114                          |                                                                                                                                            |                                                                                                                    |

\* 8 credits are required from: PHYS 323, PHYS 325 and ENGR 481. Students may take PHYS 323/325 in the Spring of their Sophomore year after consultation with their advisor.

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<https://www.stthomas.edu/media/officeofgeneralcounsel/policies/EOStatementNoticeofNondiscrimination-Approved20180706.pdf>.

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