

# 2+2 PRE-ENGINEERING PROGRAM

## Introduction

Students complete the first two years of an engineering program in Canisius' Liberal Arts environment, taking advantage of small class sizes and individual attention before transferring to a larger institution to complete their studies. Coursework at Canisius is just as rigorous and demanding as at Engineering institutions, so students typically report little difficulty adapting to the transfer. Early consultation with an advisor is required to map out a curriculum, as the choice of desired engineering major will alter the course schedule somewhat. Mathematical preparation is key to timely completion of this program, again requiring close attention to course scheduling. Outside the classroom, our students work with modern fabrication techniques in the university's Maker Space, that includes 3D printers, a laser cutter, and Arduino robots. The students can build standard parts or prototype new pieces.

## Dual Majors

Dual majors in the Engineering 2+2 program would be subject to the regulations of the engineering institution.

## Curriculum

### Major Courses

*This varies depending on the engineering major chosen, but typically includes:*

Code	Title	Credits
MAT 111	Calculus I	4
MAT 112	Calculus II	4
MAT 211	Calculus III	4
MAT 222	Differential Equations	3
CHM 111 & 111L	General Chemistry I and General Chemistry I Laboratory	4
CHM 112 & 112L or PHY 225	General Chemistry II and General Chemistry II Laboratory or General Physics for Physical Science Majors III	4
CSC 111 & 111L	Introduction to Programming and Introduction to Programming Laboratory	4
PHY 223 & 223L	General Physics for Physical Science Majors I and General Physics for Physical Science Majors I Laboratory	4
PHY 224 & 224L	General Physics for Physical Science Majors II and General Physics for Physical Science Majors II Laboratory	4
PHY 225 & 225L or CHM 112	General Physics for Physical Science Majors III and General Physics for Physical Science Majors III Laboratory or General Chemistry II	4
PHY 226 & 226L	Basic Electronics and Basic Electronics Laboratory	4
EGR 111	Introduction to Engineering Design	3
EGR 207	Engineering Statics	3
EGR 208	Engineering Dynamics	3
EGR 214	Strength of Materials	3

EGR 211	Engineering Thermodynamics	3
Total Credits		58

## Additional Course Recommendations

Introduction to the Makerspace (EGR 107), Linear Algebra (MAT 219), additional computer science (CSC 111) and/or Organic Chemistry (CHM 227, CHM 228), depending on choice of engineering major.

## Roadmap

### Recommended Schedule: 2+2 program

#### Freshman

Fall	Spring
EGR 111	MAT 112
MAT 111	PHY 224 & 224L
PHY 223 & 223L	CSC 111 & 111L
CHM 111 & 111L	

#### Sophomore

Fall	Spring
MAT 211	MAT 222
PHY 225 & 225L	PHY 226 & 226L
EGR 207	EGR 208
EGR 211	EGR 214

#### Junior

Fall	Spring
Completed at an Engineering Institution	Completed at an Engineering Institution

#### Senior

Fall	Spring
Completed at an Engineering Institution	Completed at an Engineering Institution

## Additional Course Considerations

Additional courses in some engineering majors may require cross-registration at University at Buffalo (UB).