## COLLEGE OF ARTS AND SCIENCES

## ENGINEERING 3+2

## Faculty

- Jonas D'Andrea


## Objectives

Westminster offers a 3+2 Engineering Program in conjunction with the University of Southern California, in Los Angeles, California (USC), and Washington University in St. Louis, Missouri. Students who successfully complete the requirements for this program will earn two degrees:

- A Bachelor of Science or Arts with a major either in Biology, Chemistry, Computer Science, Physics, or Mathematics. (Students may pursue other majors, but it may take them longer than 5 years to complete the two degrees.)
- A Bachelor of Science in an engineering discipline from either Washington University or USC.

The 3+2 program is perfect for the student who wants to enhance and broaden their undergraduate education as a prelude to the focused work of engineering school. In all their pre-engineering classes, students receive the benefits of Westminster's small class sizes and tradition of teaching excellence. Westminster's math and science programs offer "learning communities" that couple courses like math and biology and utilize group-based, hands-on learning. Moreover, students often develop close nurturing relationships with faculty and their peers at Westminster that might not happen at a larger school.

Under the 3+2 program, a student attends Westminster University for approximately three years and then transfers to either the University of Southern California (USC) or Washington University for an additional two years of study in the selected engineering discipline.

1. As a Westminster first-year, students must meet entrance requirements for USC or Washington University.
2. The $3+2$ program advisor at Westminster University must recommend them. (To be considered for this recommendation a students must satisfy all the program requirements listed below, maintain a cumulative grade point average of 3.00 , and maintain a 3.00 average in the major courses.)
3. Students must complete at least four semesters of full-time study at Westminster before transferring to the engineering school.
4. Students must have completed 12 upper division credits in their major prior to transfer. Students who complete the $3+2$ program by transferring to either USC or Washington University of St. Louis automatically have the Westminster residency requirement waived. (Westminster requires that the last 36 hours of course work be completed at Westminster.)
5. Students must file a Leave of Absence Request with the Registrar's Office.

## Fields of Engineering Offered by the University of Southern California and Washington University:

| University of Southern California | Washington University of St. Louis |
| :--- | :--- |
| Astronautics/Space Technology | Chemical |
| Biomedical | Civil |
| Chemical/Materials Science | Computer Science |
| Civil/Environmental | Computer Engineering |
| Computer Science | Electrical |
| Electrical | Mechanical |
| Industrial and Systems Engineering |  |

*After successful completion of both portions of the program the student is awarded degrees from both institutions.

## Program Requirements at Westminster University

Students in this program are encouraged to meet with the $3+2$ program advisor at Westminster during their first year to ensure satisfaction of all the requirements for their chosen field of engineering during their time at Westminster University and to learn about the coursework that will be required during their two years at the other institution. Students must complete all of their WCore requirements and the following set of engineering core courses:

| Requirement Description | Credit Hours | Prerequisites |
| :--- | :---: | :---: |
| I. Required Core Courses | 48 | Co-requisites: MATH <br> 144, CHEM 111R <br> recommended |
| CHEM 111 Principles of Chemistry I | 4 | CHEM 1111 |
| CHEM 112 Principles of Chemistry II | 4 | Consent of <br> instructor |
| CMPT 201 Introduction to Computer Science | 4 |  |



## Sample Student Timetable

In order for the student to complete the dual degree program in five years, it is important to follow closely the timetable set up by the advisor.

The following is a sample timetable for a student majoring in Physics at Westminster and desiring a dual degree in Electrical Engineering. A particular student's course schedule will depend upon their prior coursework, their major at Westminster, the desired engineering discipline, and the specific requirements of the engineering school.*

|  | Fall Semester | Spring Semester |
| :---: | :---: | :---: |
| Year 1: FirstYear See the 3+2 advisor** | MATH 201 Calculus I or higher <br> CHEM 111 Principles of Chemistry I and Lab PHYS 211 Phys for Scientists \& Engineers I and Lab Other required WCore courses*** | MATH 202 Calculus II or higher <br> CHEM 112 Principles of Chemistry II and Lab <br> PHYS 212 Phys for Scientists \& Engineers II and Lab <br> Other required WCore courses |
| Year 2: Sophomore Review program with advisor | MATH 203 Multivariate Calculus PHYS 301 Introduction to Modern Physics Other required WCore courses | WCSAM 203 Linear Algebra <br> PHYS 309 Mathematical Methods of Physics <br> PHYS 370 Scientific Computing <br> Other required WCore courses |
| Year 3: Junior Review program with advisor. At the end of Fall semester, apply to desired engineering school. Meet with 3+2 advisor and request letter of recommendation File for Leave of Absence from Westminster. | PHYS 305 Principles of Optics PHYS 311 Analytic Mechanics Other required WCore courses | PHYS 431 Principles of Electrodynamics Remaining WCore courses |
| Year 4: First year at engineering school | Summer after completing Year 4: Send copy of transcripts from engineering school to Registrar's Office at Westminster. |  |
| Year 5: Second year at engineering school | Student applies for graduation from both Westminster and the engineering school in the spring. | After spring semester, student receives degrees from the engineering school and from Westminster University. |

*Some engineering disciplines require specific pre-engineering classes. These can be taken at the engineering school.
**The current 3+2 advisor is Dr. Jonas D'Andrea, Professor of Mathematics.
***Westminster University requires all first-year to enroll in one learning community. These are classes linked with a common theme. Typically at least one of these courses will satisfy a WCore requirement.

## Financial Aid

Merit-based and need-based financial aid is available from Westminster University and the engineering schools. However, these programs are not linked. Students receiving financial aid from Westminster must reapply for financial aid at the engineering school.

