RECOMMENDED PREREQUISITE REQUIREMENTS for BIOENGINEERING

The Bioengineering Department at UCLA offers the following fields and subfields

- Biosystem Science and Engineering
- Biomedical Instrumentation
- Biomedical Signal and Image Processing
- Molecular Cellular Tissue Therepeutics
- NeuroEngineering
- Medical Imaging Informatics

The following is a suggested list of prerequisite courses for each of the above areas of study. It is recommended that these courses be taken during undergraduate study.

BE Prerequisites		
Area of Study	**Engineering Major**	**Non-Engineering Major**
Biomedical Signal and Image Processing (BSIP)	▪ 1 yr Computer Programming (in C++) ▪ 1 yr Physics + Lab ▪ 1 sem. Gen. Biology + Lab ▪ 1 sem. Gen. Chemistry +Lab	▪ Calculus and Analytic Geometry ▪ 1 sem. Matrices and Differential Equations ▪ 1 sem. Linear Algebra ▪ 1 sem. Systems and Signals ▪ 1 yr Computer Programming (in C++) ▪ 1 yr Physics + Lab ▪ 1 sem. Gen. Biology + Lab ▪ 1 sem. Gen. Chemistry + Lab
Biomedical Instrumentation (BMI)	▪ 1 undergrad Biology ▪ 1 undergrad Chemistry ▪ 1 **year** of Physics ▪ Calculus & Analytical Geometry ▪ Calculus of Several Variables ▪ Matrices & Differential Equations	▪ Differential equations ▪ Linear algebra ▪ Min. 1 year organic and biochemistry, physics, and biology ▪ Calculus & Analytical Geometry ▪ Calculus of Several Variables ▪ Matrices & Differential Equations
Molecular Cellular Tissue Therapeutics (MCTT)	▪ 1 sem. Biology + Lab ▪ 1 sem. Chemistry + Lab ▪ 1 **year** of Physics + Lab ▪ Calculus & Analytical Geometry ▪ Calculus of Several Variables ▪ Matrices & Differential Equations	▪ 1 sem. Biology + Lab ▪ 1 sem. Chemistry + Lab ▪ 1 **year** of Physics + Lab ▪ Calculus & Analytical Geometry ▪ Calculus of Several Variables ▪ Matrices & Differential Equations
	The following courses are *strongly* recommended: Matrices and Differential Equations, Infinite Series, Mathematics of Engineering and Science of Engineering Materials	
Biosystem Science and Engineering (BSSE)	▪ 2 years of math; with linear algebra recommended ▪ 1 year of physics ▪ 1 year of chemistry; some organic recommended ▪ Some life science (e.g. basic cell & molec biology recommended.)	▪ 2 years of math; with linear algebra recommended ▪ 1 year of physics ▪ 1 year of chemistry; some organic recommended ▪ Some life science (e.g. basic cell & molec biology recommended.)
NeuroEngineering (NE)	▪ 1 undergrad Biology ▪ 1 undergrad Chemistry ▪ 1 **year** of Physics ▪ Calculus & Analytical Geometry ▪ Calculus of Several Variables ▪ Matrices & Differential Equations	▪ Differential equations ▪ Linear algebra ▪ Min. 1 year organic and biochemistry, physics, and biology ▪ Calculus & Analytical Geometry ▪ Calculus of Several Variables ▪ Matrices & Differential Equations
	* Additional courses in undergraduate neurophysiology are highly encouraged.	
Medical Imaging Informatics (MII)	▪ 1 yr. calculus ▪ 1 yr. linear algebra ▪ 1 yr. chemistry ▪ 1 yr. physics ▪ 1 yr. computer science	▪ 1 yr. calculus ▪ 1 yr. linear algebra ▪ 1 yr. chemistry ▪ 1 yr. physics ▪ 1 yr. computer science