

## Inamori School of Engineering Minor Requirements

**Overview:** The School of Engineering has minors available to all students pursuing an undergraduate degree at Alfred University. All students must meet the prerequisites for the specified courses. These minors are generally intended for students majoring in engineering, math and the physical sciences. An average of "C" or better must be attained in courses submitted for the minor. Some minors have restrictions which prevent them from being taken by certain engineering majors, see below for majors.

**Biomaterials: Minimum Required Credits 23 or 24**

**Required Courses**

<u>Course</u>	<u>Title</u>	<u>Credits</u>
BIOL 211	Biochemistry and Cell Biology	4
CEMS 214	Materials Structure and Properties	3
CEMS 368	Introduction to Bioengineering	3
CEMS 465 or 468	Biocompatibility or Biomedical Materials	3
CHEM 310 or 315	Basic Organic Chemistry or Organic Chemistry I	3 or 4

**Elective Courses (Choose 2 Courses from the following list)**

BIOL 302	General Microbiology	4
BIOL 307	Anatomy and Physiology: Nerves, Muscles and Skelton	4
BIOL 308	Anatomy and Physiology: Viscera	4
BIOL 375	Comparative Vertebrate Anatomy	4
BIOL 376	Animal Physiology	4
BIOL 402	Immunology	4
BIOL 420	Biochemistry: Proteins and Metabolism	4
BIOL 422	Biochemistry: Nucleic Acids	4
CEMS 466	Skeletal Tissue	3

**Glass Science: Minimum Required Credits 14**

**Required Courses**

<u>Course</u>	<u>Title</u>	<u>Credits</u>
CEMS 322	Introduction to Glass Science	3
CEMS 325	Glass Laboratory	2
CEMS 328	Industrial Glass and Glass-Ceramic	3

**Elective Courses (Choose 2 Courses from the following list)**

CEMS 324	Mass Transport in Glasses and Melts	3
CEMS 420	Optical Glasses	3
CEMS 424	Introduction to Photonics	3
CEMS 425	Optical Spectra of Solids	2
CEMS 426	Advanced Glass Science	3
CEMS 450	Independent Study in Glass	1-3
CEMS 480	Senior Thesis in Glass	4
COOP 385	Co-op Program (in Glass)	3

**\*Materials Science: Minimum Required Credits 15**

**Required Courses**

<u>Course</u>	<u>Title</u>	<u>Credits</u>
CEMS 214	Materials Structure and Properties	3
CEMS 216	Materials Structure and Bonding	3
CEMS 235	Thermodynamics of Materials	3-4
(or CHEM 343 or MECH 320)		

**Elective Courses (Choose minimum of 6 credits from the following list)**

CEMS 203	Introduction of Ceramic Powder Processing	3
CEMS 237	Thermal Processes in Materials	4
CEMS 3xx	Any regularly scheduled CEMS course at 300-level except CEMS 302	
CEMS 4xx	Any regularly scheduled CEMS 400-level course except special topics and independent study	

**Mechanical Engineering: Minimum Required Credits 21**

**Required Courses**

<u>Course</u>	<u>Title</u>	<u>Credits</u>
MECH 211	Statics	3
MECH 212	Dynamics	3
MECH 241	Mechanics of Materials	3
MECH 320	Thermodynamics	3
MECH 324	Fluid Mechanics	3
MECH 326	Heat Transfer	3
Choice of 300 or 400 MECH		3

**Renewable Energy Engineering: Minimum Required Credits 15**

**Required Courses**

<u>Course</u>	<u>Title</u>	<u>Credits</u>
RNEW 201	Sources of Renewable Energy	3
MECH 324	Fluid Mechanics	3
MECH 326	Heat Transfer	3

**Elective Courses (Choose minimum of 6 credits from the following list)**

CEMS 352	Electroceramics	3
RNEW 310	Fuel Cells Principles and Techniques	3
RNEW 431	Wind Energy	3
RNEW 432	Solar Energy Systems	3