

**Undergraduate Requirements**  
**Total Units for Options and Minors**  
**2008-09 Catalog**

The Core Institute Requirements for all options total 255 units. Requirements for the options range from 147-204 units (excluding Chemical Engineering which requires 272 units). This leaves the average student with an approximate range of 0-84 "free" electives. That is, units not specified through the Core requirements or options requirements.

Please find listed below the total number units for each option and minor. The details can be found on the following pages. However, while the total number of units was captured, the nuisances and substitution possibilities for each option are not specifically indicated. Enrollment figures for each option are presented on page 6.

**Options Requirements by Division with Total Number of Units**

<b>Division</b>	<b>Option</b>	<b>Number of Units</b>
Biology	Biology	151-166
Chemistry & Chemical Engineering	Chemical Engineering	272-302
	Chemistry	151-171
Engineering & Applied Sciences	Applied/Computational Math	174
	Applied Physics	174-192
	Computer Science	195
	Electrical Engineering	195-204
	Engineering & Applied Science	177-186
	Mechanical Engineering	177-195
Geological & Planetary Science	Geology	180
	Geobiology	189
	Geochemistry	174
	Geophysics	156
	Planetary Science	186
Humanities & Social Sciences	Business, Economics & Management	168
	Economics	168
	English	162
	History	156
	History & Philosophy of Science	150
	Philosophy	153
	Political Science	153
Physics, Math & Astronomy	Astrophysics	203
	Mathematics	147
	Physics	198-201

**Minor Requirements by Division with Total Number of Units**

<b>Division</b>	<b>Minor</b>	<b>Number of Units</b>
Engineering & Applied Sciences	Aerospace	54
	Control & Dynamical Systems	54
	Structural Mechanics	54
Humanities & Social Sciences	English	72
	History	72
	History & Philosophy of Science	72
	Philosophy	72

## Undergraduate Option and Minor Requirements Details - 2008-09 Catalog

<b>Applied and Computational Math</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ma and ACM courses	93
ACM sequence	27
Ma sequence	27
Additional science and engineering sequence	27
	<b>174 units</b>
<b>Applied Physics</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified APh and Ph courses	21-30
Specified APh courses	72
ACM 95abc	36
APH 78abc or APh 77	18-27
APh numbered over 100	27
	<b>174- 192</b>
<b>Astrophysics</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ay and Ph courses	98
Specified Ph course	24
Ay of Ph electives	54
Science and Engineering electives	27
	<b>203 units</b>
<b>Biology</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Bi and Ch courses	73
Advanced lab	9
Additional Bi courses	21-24
Bi 24	6
Bi electives	42-54
	<b>151-166 units</b>
<b>BEM</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ec, BEM, Law courses	42
Specified BEM courses	27
ACM/ESE 118 or Ec 122	9
Specified BEM menu courses	45
Additional science, math, and engineering	45
	<b>168 units</b>
<b>Chemical Engineering</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ch, ACM, ChE, CDS, and Ec/BEM	200-209
Completion of a track	72 - 93
	<b>272-302</b>
<b>Chemistry</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ch courses	63
Ch lab courses	43-54
Advanced Ch 100 level or above	45-54
	<b>151-171 units</b>

<b>Computer Science</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified CS and Ma courses	60
CS 114 and above incl CS Sequence, Lab Project or Thesis	63
Electives in Ma, ACM or CS	36
Electives in E&AS or Ma	18
Non PE or PA electives	18
	<b>195 units</b>
<b>Economics</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ec courses	42
Ma 112a	9
Ec 105 or 145	9
Ec 123 or Ec 140	9
Advanced Ec or SS courses	54
Electives in science, math or E&AS	45
	<b>168 units</b>
<b>Electrical Engineering</b>	
<b>Requirements</b>	<b>Total Units</b>
E 10, E 011	6
ACM 95abc	36
Specified EE courses	66
EE/CS 51, 52, and EE90	30
EE 80abc or 2 courses	18-27
APh/EE 9ab	12
Electives in EE over 100	27
	<b>195-204 units</b>
<b>E&amp;AS</b>	
<b>Requirements</b>	<b>Total Units</b>
CS 1, E 010, E 011	15
E&AS course from specific prefixes	27 (included in track)
Advanced E&AS or science courses	27 (included in track)
E&AS labs	18
Specified ACM or Ma courses	27-36
Completion of a track	117
	<b>177-186 units</b>
<b>English</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified En courses	27
En courses numbered 98 and above	81
Electives in science, math, engineering	54
	<b>162 units</b>
<b>Geology Option</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ge/Ay courses	33
ACM 95abc (or specified Ch & Ge courses)	36
Specified Ge courses	96
Electives in Ge	15
	<b>180 units</b>

<b>Geobiology Option</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ge/Ay courses	33
Ch 41abc and Bi/Ch 110	39
Specified Ge and Bi courses	81
Electives in Ge, Bi, Ch or ESE	36
	<b>189 units</b>
<b>Geochemistry Option</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ge/Ay courses	33
ACM 95abc (or Ch 21/41abc & ACM/ESE 118)	36
Specified Ge and Ch courses	105
	<b>174 units</b>
<b>Geophysics Option</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ge/Ay courses	33
ACM 95abc	36
Specified Ge courses	24
Ph & ME electives	27
Ge Electives	36
	<b>156 units</b>
<b>History Option</b>	
<b>Requirements</b>	<b>Total Units</b>
History Research Tutorial	27
H electives	72
Additional science, math and engineering	54
Oral Communication	3
	<b>156 units</b>
<b>History &amp; Philosophy of Science Option</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Hum/H/HPS courses	51
HPS/H advanced electives	27
HPS/PI advanced electives	27
Additional science, math, and engineering	45
	<b>150 units</b>
<b>Mathematics Option</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified Ma courses	102
Additional Ma or ACM electives numbered 90+	45
	<b>147 units</b>
<b>Mechanical Engineering</b>	
<b>Requirements</b>	<b>Total Units</b>
E 010, E 011	6
ACM 95abc or ACM 101abc	27-36
CS/EE/Ph course	9
Specified ME, CDS courses	90
ME labs	18-27
Specified engineering sequence	27
Design project	9-18 (can also be used in above requirements)
	<b>177-195 units</b>



<b>History</b>	
<b>Requirements</b>	<b>Total Units</b>
H courses 99+	72
	<b>72 units</b>
<b>History &amp; Philosophy of Science</b>	
<b>Requirements</b>	<b>Total Units</b>
HPS courses 99+	72
	<b>72 units</b>
<b>Philosophy</b>	
<b>Requirements</b>	<b>Total Units</b>
Pl courses 99+	72
	<b>72 units</b>
<b>Structural Mechanics</b>	
<b>Requirements</b>	<b>Total Units</b>
Specified E&AS courses	<b>54 units</b>

**Undergraduate Enrollment Figures as of Fall 2008-09**

Division	Option	Number of Students	
		1 <sup>st</sup> Option	2 <sup>nd</sup> Option
Biology	Biology	64	1
Chemistry & Chemical Engineering	Chemical Engineering	72	
	Chemistry	49	
Engineering & Applied Sciences	Applied/Computational Math	45	2
	Applied Physics	32	
	Computer Science	69	2
	Electrical Engineering	62	1
	Engineering & Applied Science	20	1
	Mechanical Engineering	79	
	Independent Studies	1	
Geological & Planetary Science	Geology	6	
	Geobiology	3	
	Geochemistry	2	
	Geophysics	4	
	Planetary Science	3	1
Humanities & Social Sciences	Business, Economics & Mgmt	5	24
	Economics	5	6
	English		6
	History		1
	History & Philosophy of Science		
	Philosophy		1
	Political Science		1
Physics, Math & Astronomy	Astrophysics	11	
	Mathematics	59	4
	Physics	88	3

**Minor statistics from June 2008 Commencement:**

Division	Minor	Number of Students
Engineering & Applied Sciences	Aerospace	5
	Control & Dynamical Systems	6
	Structural Mechanics	0
Humanities & Social Sciences	English	2
	History	4
	History & Philosophy of Science	0
	Philosophy	2