

**College of Science and Mathematics**

**Program Changes**

**Fall 2003**

# College of Science and Mathematics

## Program Changes for Fall 2003

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## College of Science and Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Science**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: BIO 112, 114, 115 MTH 228 or 229 and 230, or STT264 and 265	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 210, 211, 212, 252, 253 or 254, 255 or 256  BIO 410, 492	12 27  6
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 228, STT264 and 265 or MTH 229, 230, 231  CS 205 or 141, or 142 or CHM 312/314	33  15-16  13-15  4-7.5
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. At least 15 credits must have BIO prefix. Up to 15 credits may be selected from the Departments of ANT, BMB, M&I, P&B. Up to 10 credits may be selected from CHM, GL, MTH, STT, PHY, or PSY. With departmental permission, one additional course from departmental core requirements may be used. Up to eight credits of independent study courses (BIO 399, 488, 490, 492, and 499) may apply. Departmental honors students may apply up to 12 credits of BIO 495.	30
<b>V. General Electives</b>	7.5-14
<b>Total</b>	196

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 228 or 229 and 230, or STT264 and 265 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  <b>AREA VI</b> EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 111, 112, 115 BIO 210, 211, 212, 213, 230, 231, 492	12 24
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 228, STT264 and 265 or MTH 229, 230, 231	33  15-16  13-15
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. A minimum of 25 credits must have BIO, M&I, or EXB prefix. A maximum of 15 credits may be selected from the Departments of ANT, BMB, P&B, PHR, CHM, GL, MTH, STT, PHY, PSY, ATH, CL, EH. A maximum of eight credits of independent study courses may apply: i.e. BIO 399, 488, 490, 492, 499, CHM 488, ANT 499, BMB 499, P&B 499. Departmental honors students may apply up to 12 credits of BIO 495.	40
<b>V. General Electives</b>	7-10
<b>Total</b>	187

**Notes:**

## College of Science & Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Science – Bioinformatics Option**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: BIO 112, 114, 115 MTH 229, 230, 231	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 210, 211, 212, 252, 253 or 254, 255 or 256  BIO 410, 492	12 27  6
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 229, 230, 231, 253, 257, BIO 420	33  15-16  24
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. At least 15 credits must have BIO prefix. Up to 15 credits may be selected from the Departments of ANT, BMB, M&I, P&B. Up to 10 credits may be selected from CHM, GL, MTH, STT, PHY, or PSY. With departmental permission, one additional course from departmental core requirements may be used. 8 credit hours of CS 400 and 405 can be used. Up to eight credits of independent study courses (BIO 399, 488, 490, 492, and 499) may apply. Departmental honors students may apply up to 12 credits of BIO 495.	30
<b>V. Computer Science Requirements</b> CS 240, 241, 242, 400, 405	20
<b>Total</b>	210

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230, 231 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  <b>AREA VI</b> EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 111, 112, 115 BIO 210, 211, 212, 213, 230, 231, 492	12 24
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 229, 230, 231, 253, 257, BIO 420	33  15-16  24
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. A minimum of 25 credits must have BIO, M&I, EXB prefix. A maximum of 15 credits may be selected from the Departments of ANT, BMB, P&B, PHR. CHM, GL, MTH, STT, PHY, PSY, ATH, CL, EH. A maximum of eight credits of independent study courses may apply: i.e. BIO 399, 488, 490, 492, 499, CHM 488, ANT 499, BMB 499, P&B 499. 8 credit hours of CS 400 and 405 can be used. Departmental honors students may apply up to 12 credits of BIO 495.	40
<b>V. Computer Science Requirements</b> CS 240, 241, 242, 400, 405	20
<b>Total</b>	208

**Notes:**

## College of Science & Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Science—Exercise Biology Option**

**Minor Program:**

**Certificate Program:**

Current	Hrs
<b>I. General Education</b>  Required Substitutions: BIO 112, 114, 115 STT264 and 265	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 194, 210, 212, 221, 352, 353, 354, 360, 451, 456, and 482  BIO 266, 366, 466	12 40  8-10
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, BMB 210  PHY 111/101, 112/102  MTH 130, STT 264, 265  ANT 201, 202, BIO 278, 279, PHR 340 or 410, BMB 250, PSY 391 and NUR 212	31  10 13 31
<b>IV. Life Science Electives</b> A minimum of 10 credit hours selected from 300- and 400- level courses in the COSM, ANT, BMB, M&I, and/or P&B and Nursing	10
V. General Electives	2-4
<b>Total</b>	201

New	Hrs
<b>I. General Education</b>  Required Substitutions: Area I: STT264 and 265 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  <b>AREA VI</b> EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b>  BIO 111, 112, 115, 210, 212,  EXB 194, 260, 261, 321, 352, 353, 354, 355, 450, 451, 466, 482	20  44
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213 or BMB 423  PHY 111/101, 112/102  MTH 130, STT 264, 265  ANT 201, 202, BIO 278, 279, BMB 250	31  10 13  21
<b>IV. Life Science Electives</b> A minimum of 10 credit hours selected from 300- and 400- level courses in the COSM, ANT, BMB, M71, and/or P&B and Nursing	10
<b>Total</b>	189

**Notes:**

## College of Science and Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Science in Environmental Health Sciences**

**Minor Program:**

**Certificate Program:**

Current	
	Hours
<b>I. General Education</b>  Required Substitutions: MTH 228, STT 264, 265 BIO 112, 114, 115	42
<b>II. Science Core Requirements</b> BIO 112, 114, 115, 252, 278, 279, 408, 415 CHM 121, 122, 123, 211, 212, 213, 215, 216, 217 PHY 101, 102, 111, 112 MTH 228, STT 264, 265	33 33 10 13
<b>III. Environmental Health Sciences Core</b> EH 292, 360, 362, 364, 366, 368, 401, 492, 416, 431, 451, 461, 462, 466, 467, 472	52
<b>IV. Environmental Specialty</b>  <b>Option A</b> EH 463, BIO 464, 475, 476, 477 and 3 additional credit hours of approved science elective  <b>Option B</b> EH 468, 401, 413, BIO 413, CHM 302  <b>Option C</b> EH 453, BIO 306, 407 or 411 or 473, GL 461	16
<b>Total</b>	199

New	
	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 228, STT 264, 265 (counted in Section II) Area V: BIO 111, 112, 115 (counted in Section II) Required Selections: <b>AREA III</b> EC 200 <b>AREA VI</b> EH 205	40
<b>II. Science Core</b>  BIO 111, 112, 115, 230, 231, 252, 408, 415 CHM 121, 122, 123, 211, 212, 213, 215, 216, 217 PHY 101, 102, 111, 112 MTH 228, STT 264, 265	32 33 10 13
<b>III. Environmental Health Sciences Core</b>  EH 292, 360, 362, 364, 366, 368, 401, 492, 416, 431, 454, 461, 462, 466, 467, 472 BIO 413, 464	49 8
<b>IV. Environmental Electives</b>  Choose from: EH 401, 453 CHM 302 BIO 407, 411, 473, 475, 476, 477 GL 461	5
<b>Total</b>	190

**Notes:**

## College of Science & Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Science in Clinical Laboratory Science**

**Minor Program:**

**Certificate Program:**

Current	Hrs
<b>I. General Education</b>  Required Substitutions: BIO 112, 278, 279 STT264 and 265	42
<b>II. Departmental Core Requirements</b> BIO 112, 278, 279 BIO 252, 303, 210, 211, 410, 476/477	13 27
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, CHM 213/217, 312/314  MTH 129, STT 264, 265  M&I 426, 427, 428  CS 205	40.5  11  9  4
IV. Clinical Program CL 420 through 493	65
<b>Total</b>	211.5

New	Hrs
<b>I. General Education</b>  Required Substitutions: Area I: STT264 and 265 (counted in Section III) Area V: CHM 121, 122, 123 (counted in Section III)  <b>AREA VI</b> EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 112 BIO 252, 303, 210, 211, 213, 476/477	4 25
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, CHM 213/217, 312/314  MTH 129, STT 264, 265  M&I 426, BMB 427  CS 205	40.5  11  7  4
IV. Clinical Program CL 420 through 493	65
<b>Total</b>	196.5

**Notes:**

## College of Science & Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Science—Dual Chemistry**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: BIO 112, 114, 115 MTH 229 and 230	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 210, 211, 212, 252, 253 or 254, 255 or 256  Area C BIO 410, 492	12 27  6
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 229, 230, 231	33  15-16  15
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. At least 15 credits must have BIO prefix. Up to 15 credits may be selected from the Departments of ANT, BMB, M&I, P&B. Up to 10 credits may be selected from CHM, GL, MTH, STT, PHY, or PSY. With departmental permission, one additional course from departmental core requirements may be used. Up to eight credits of independent study courses (BIO 399, 488, 490, 492, and 499) may apply. Departmental honors students may apply up to 12 credits of BIO 495.	30
<b>V. Additional Chemistry Requirements</b> CHM 213/314, 451, 452/457, 453/458	22.5
<b>Total</b>	202.5- 203.5

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  <b>AREA VI</b> EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 111, 112, 115 BIO 210, 211, 212, 213, 230, 231, 492	12 24
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 229, 230, 231	33  15-16  15
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. A minimum of 25 credits must have BIO, M&I, EXB prefix. A maximum of 15 credits may be selected from the Departments of ANT, BMB, P&B, PHR, CHM, GL, MTH, STT, PHY, PSY, ATH, CL, EH. A maximum of eight credits of independent study courses may apply: i.e. BIO 399, 488, 490, 492, 499, CHM 488, ANT 499, BMB 499, P&B 499. Departmental honors students may apply up to 12 credits of BIO 495.	40
<b>V. Additional Chemistry Requirements</b> CHM 213/314, 451, 452/457, 453/458	22.5
<b>Total</b>	201.5

**Notes:**

## College of Science & Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Arts**

**Minor Program:**

**Certificate Program:**

Current	Hrs
<b>I. General Education</b>  Required Substitutions: BIO 112, 114, 115 MTH 130 & 145 or MTH 130, STT264 and 265	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 210, 211, 212, 252, 253 or 254, 255 or 256  Area C BIO 410, 492	12 27  6
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212, 213 PHY 111/101, 112/102, 113/103 MTH 130 & 145 or MTH 130, STT264 and 265	29 15 9-13
<b>IV. Electives</b> Area D 1. Select a minimum of 15 credits from 300- and 400-level courses in Biology (BIO prefix). You may apply up to 5 credits of independent study courses (BIO 399, 488, 490, 492, 495, or 499) 2. Select a minimum of 15 credits from 300- and 400-level courses and a minimum of 15 credits from 100- and 200- level courses all outside the COSM and CESC. 3. At least 3 courses in a department in the COSM or CESC other than department requirements or general education.	42
<b>V. General Electives</b>	10 - 14
<b>Total</b>	196

New	Hrs
<b>I. General Education</b>  Required Substitutions Area I: MTH 130 & 145 or MTH 130, STT264 and 265 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  <b>AREA VI</b> EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 111, 112, 115 BIO 210, 211, 212, 213, 230, 231, 492	12 24
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212, 213 PHY 111/101, 112/102, 113/103 MTH 130 & 145 or MTH 130, STT264 and 265	29 15 9-13
<b>IV. Life Science Electives</b> Area D 1. Select a minimum of 15 credits from 300- and 400-level courses in Biology (BIO prefix). You may apply up to 5 credits of independent study courses (BIO 399, 488, 490, 492, 499, CHM 488, ANT 499, BMB 499, P&B 499)	15
<b>V. College Requirement</b> Twenty-seven credit hours outside the College of Science and Mathematics and the College of Engineering and Computer Science.  Select a minimum of 13 credits from additional 300-400 level courses from any department.	27
<b>VI. General Electives</b> Must include 3 courses in a department in the College of Science and Mathematics or the College of Engineering and Computer Science, other than departmental requirements or general education	12-16
<b>Total</b>	187

**Notes:**

## College of Science & Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Science – Biology Education**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: BIO 112, 114, 115 MTH 228 or 229 and 230, or STT264 and 265	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 210, 211, 212, 252, 253 or 254, 255 or 256  BIO 410, 492	12 27  6
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 228, STT264 and 265 or MTH 229, 230, 231  GL 251/252, 253/254, 255/256 (Note: 10 credits apply to Life Science Electives)  CS 205 or 141, or 142 or CHM 312/314	33  15-16  13-15  3.5  4-7.5
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. At least 15 credits must have BIO prefix. Up to 15 credits may be selected from the Departments of ANT, BMB, M&I, P&B. Up to 10 credits may be selected from CHM, GL, MTH, STT, PHY, or PSY. With departmental permission, one additional course from departmental core requirements may be used. Up to eight credits of independent study courses (BIO 399, 488, 490, 492, and 499) may apply. Departmental honors students may apply up to 12 credits of BIO 495.	30
<b>V. Phase One Professional Education Courses</b> ED 221, 223, 301, 303, EDS 333	15
<b>Total</b>	200.5-207

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 228 or 229 and 230, or STT264 and 265 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  AREA VI EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 111, 112, 115 BIO 210, 211, 212, 213, 230, 231, 492	12 24
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  MTH 228, STT264 and 265 or MTH 229, 230, 231  CS 205 or 141, or 142 or CHM 312/314	33  15-16  13-15  4-7.5
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. A minimum of 25 credits must have BIO, M&I, or EXB prefix. A maximum of 15 credits may be selected from the Departments of ANT, BMB, P&B, PHR, CHM, GL, MTH, STT, PHY, PSY, ATH, CL, EH. GL 251/252, 253/254, 255/256 required electives counted as life science electives. A maximum of eight credits of independent study courses may apply: i.e. BIO 399, 488, 490, 492, 499, CHM 488, ANT 499, BMB 499, P&B 499. Departmental honors students may apply up to 12 credits of BIO 495.	43.5
<b>V. Phase One Professional Education Courses</b> ED 221, 223, 301, 303, EDS 333	15
<b>Total</b>	199.5

**Notes:**

## College of Science & Mathematics

**Department: Biological Sciences**

**Major Program: Bachelor of Arts – Biology Education**

**Minor Program:**

**Certificate Program:**

Current	Hrs
<b>I. General Education</b>  Required Substitutions: BIO 112, 114, 115 MTH 130 & 145 or MTH 130, STT264 and 265	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 210, 211, 212, 252, 253 or 254, 255 or 256  Area C BIO 410, 492	12 27  6
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212, 213 PHY 111/101, 112/102, 113/103 MTH 130 & 145 or MTH 130, STT264 and 265 GL 251/252, 253/254, 255/256 (Note: 10 credits apply to Life Science Electives)	29 15  9-13 3.5
<b>IV. Electives</b> Area D 1. Select a minimum of 15 credits from 300- and 400-level courses in Biology (BIO prefix). You may apply up to 5 credits of independent study courses (BIO 399, 488, 490, 492, 495, or 499) 2. Select a minimum of 15 credits from 300- and 400-level courses and a minimum of 15 credits from 100- and 200- level courses all outside the COSM and CESC. 3. At least 3 courses in a department in the COSM or CESC.	42
<b>V. Phase One Professional Education Courses</b> ED 221, 223, 301, 303, EDS 333	15
<b>Total</b>	206- 210

New	Hrs
<b>I. General Education</b>  Required Substitutions: Area I: MTH 130 & 145 or (counted in Section III) MTH 130, STT264 and 265 Area V: BIO 111, 112, 115 (counted in Section II)  <b>AREA VI</b> EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 111, 112, 115 BIO 210, 211, 212, 213, 230, 231, 492	12 24
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212, 213 PHY 111/101, 112/102, 113/103 MTH 130 & 145 or MTH 130, STT264 and 265	29 15  9-13
<b>IV. Life Science Electives</b> Area D 1. Select a minimum of 15 credits from 300- and 400-level courses in Biology (BIO prefix). GL 251/252, 253/254, 255/256 required electives counted toward life science electives. You may apply up to 5 credits of independent study courses (BIO 399, 488, 490, 492, 499, CHM 488, ANT 499, BMB 499, P&B 499)	18.5
<b>V. College Requirement</b> Twenty-seven credit hours outside the College of Science and Mathematics and the College of Engineering and Computer Science.  Select a minimum of 13 credits from additional 300-400 level courses from any department.	27
<b>VI. Phase One Professional Education Courses</b> ED 221, 223, 301, 303, EDS 333	15
<b>Total</b>	189.5

**Notes:**

## College of Science & Mathematics

Department: Biological Sciences

Major Program: Bachelor of Science – Life Sciences/Chemistry

Minor Program:

Certificate Program:

Current	Hours
<b>I. General Education</b> BIO 112, 114, 115  MTH 228 or 229 and 230, or STT264 and 265	42
<b>II. Departmental Core Requirements</b> BIO 112, 114, 115 BIO 210, 211, 212, 252, 253 or 254, 255 or 256  BIO 410, 492	12 27  6
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  GL 251/252  MTH 228, STT264 and 265 or MTH 229, 230, 231	33  15-16  4.5  13-15
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. At least 15 credits must have BIO prefix. Up to 15 credits may be selected from the Departments of ANT, BMB, M&I, P&B. Up to 10 credits may be selected from CHM, GL, MTH, STT, PHY, or PSY. With departmental permission, one additional course from departmental core requirements may be used. Up to eight credits of independent study courses (BIO 399, 488, 490, 492, and 499) may apply. Departmental honors students may apply up to 12 credits of BIO 495. Must include CHM 312/314 and 451	30
<b>V. Phase One Professional Education Courses</b> ED 221, 223, 301, 303, EDS 333	15
<b>Total</b>	200.5

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 228 or 229 and 230, or STT264 and 265 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  AREA VI EH 205 or PSY 110	40
<b>II. Departmental Core Requirements</b> BIO 111, 112, 115 BIO 210, 211, 212, 213, 230, 231, 492	12 24
<b>III. Supporting Requirements</b> CHM 121, 122, 123, 211/215, 212/216, 213/217  PHY 111/101, 112/102, 113/103, or 240/200, 242/202, 244/204  GL 251/252  MTH 228, STT264 and 265 or MTH 229, 230, 231	33  15-16  4.5  13-15
<b>IV. Life Science Electives</b> Area D Selected from 300- and 400- level courses. A minimum of 25 credits must have BIO, M&I, or EXB prefix. A maximum of 15 credits may be selected from the Departments of ANT, BMB, P&B, PHR, CHM, GL, MTH, STT, PHY, PSY, ATH, CL, EH. A maximum of eight credits of independent study courses may apply: i.e. BIO 399, 488, 490, 492, 499, CHM 488, ANT 499, BMB 499, P&B 499. Departmental honors students may apply up to 12 credits of BIO 495. Must include CHM 312/314 and 451	30
<b>V. Phase One Professional Education Courses</b> ED 221, 223, 301, 303, EDS 333	15
<b>Total</b>	186.5

Notes:

## College of Science & Mathematics

Department: Biological Sciences

Major Program:

Minor Program: Minor in Biological Sciences

Certificate Program:

Current	
	Hrs
<b>II. Departmental Core Requirements</b>	
BIO 112, 114, 115, 492	14
22 credit hours of BIO or approved EH courses	22
<b>Total</b>	<b>36</b>

New	
	Hrs
<b>II. Departmental Core Requirements</b>	
BIO 111, 112, 115, 492	14
22 credit hours of BIO or approved EH courses	22
<b>Total</b>	<b>36</b>

Notes:

## College of Science and Mathematics

**Department: Chemistry**

**Major Program: Bachelor of Science in Chemistry (with ACS certification)**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230 (counted in section II) CHM 121, 122, 123 (counted in section III)	42
<b>II. Core Requirements</b>  MTH 229, 230, 231 PHY 240/200, 242/202, 244/204	15 16
<b>III. Departmental Core and Elective Requirements</b>  CHM 121, 122, 123 CHM 211/215, 212/216, 213/217 CHM 312/314, 417, 419, 451, 452, 453, 457, 458 CHM 420, 421, 425, 435/436, BMB 421	15 18 28.5 20.5
<b>IV. Electives</b>  CHM 499 and EGR 153 are recommended along with at least one year of a foreign language.	41
<b>Total</b>	196

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in section II) Area V: CHM 121, 122, 123 (counted in section III)  <b>Area VI:</b> EH 205 or PSY 110	40
<b>II. Core Requirements</b>  MTH 229, 230, 231 PHY 240/200, 242/202, 244/204	15 16
<b>III. Departmental Core and Elective Requirements</b>  CHM 121, 122, 123 CHM 211/215, 212/216, 213/217 CHM 312/314, 417, 419, 451, 452, 453, 457, 458 CHM 420, 421, 425, 435/436, BMB 421	15 18 28.5 20.5
<b>IV. Electives</b>  CHM 499 and EGR 153 are recommended along with at least one year of a foreign language.	43
<b>Total</b>	196

**Notes:**

## College of Science and Mathematics

**Department: Chemistry**

**Major Program: Bachelor of Science in Chemistry (premed option)**

**Minor Program:**

**Certificate Program:**

Current	
	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229, 230 (counted in section II) CHM 121, 122, 123 (counted in section III)	
<b>II. Core Requirements</b>	
BIO 112, 114, 115	12
Two from BIO 210, 211, 212, 252, 256, 303, 305, 403	7-10
MTH 229, 230, 231	15
PHY 240/200, 242/202, 244/204, or 111/101, 112/102, 113/103	15-16
<b>III. Departmental Core and Elective Requirements</b>	
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217	18
CHM 312/314, 451, 452, 453, 457, 458	22.5
CHM 435/436	7.5
Eight hours from BMB 421, 423, CHM 402, 417, 420, 421, 440, 441, 443, 444, 461, 465/467	8
<b>IV. Electives</b>	30-34
CHM 499 and EGR 153 are recommended along with at least one year of a foreign language.	
<b>Total</b>	196

New	
	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229, 230 (counted in section II) Area V: CHM 121, 122, 123 (counted in section III)	
<b>Area VI:</b> EH 205 or PSY 110	
<b>II. Core Requirements</b>	
BIO 111, 112, 115	12
Two from BIO 210, 211, 212, 252, 256, 303, 305, 403	7-10
MTH 229, 230, 231	15
PHY 240/200, 242/202, 244/204, or 111/101, 112/102, 113/103	15-16
<b>III. Departmental Core and Elective Requirements</b>	
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217	18
CHM 312/314, 451, 452, 453, 457, 458	28.5
CHM 435/436	7.5
Eight hours from BMB 421, 423, CHM 402, 417, 420, 421, 440, 441, 443, 444, 461, 465/467	8
<b>IV. Electives</b>	26-30
CHM 499 and EGR 153 are recommended along with at least one year of a foreign language.	
<b>Total</b>	196

**Notes:**

## College of Science and Mathematics

**Department: Chemistry**

**Major Program: Bachelor of Arts in Chemistry**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230 (counted in section II) CHM 121, 122, 123 (counted in section III)	42
<b>II. Core Requirements</b>  MTH 229, 230, 231 PHY 240/200, 242/202, 244/204, or 111/101, 112/102, 113/103 Science electives	15 15-16 12
<b>III. Departmental Core and Elective Requirements</b>  CHM 121, 122, 123 CHM 211/215, 212/216, 213/217 CHM 312/314, 451, 452/457, 453/458	15 18 20.5
<b>IV. Electives</b>	7-8
<b>V.</b>  Foreign language Additional courses outside COSM and CECS	21 27
<b>Total (minimum requirement)</b>	193.5

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in section II) Area V: CHM 121, 122, 123 (counted in section III)  <b>Area VI:</b> EH 205 or PSY 110	40
<b>II. Core Requirements</b>  MTH 229, 230, 231 PHY 240/200, 242/202, 244/204, or 111/101, 112/102, 113/103 Science electives	15 15-16 12
<b>III. Departmental Core and Elective Requirements</b>  CHM 121, 122, 123 CHM 211/215, 212/216, 213/217 CHM 312/314, 451, 452/457, 453/458	15 18 20.5
<b>IV. Electives</b>	9-10
<b>V.</b>  Foreign language Additional courses outside COSM and CECS	21 27
<b>Total (minimum requirement)</b>	193.5

**Notes:**

## College of Science and Mathematics

**Department: Chemistry**

**Major Program: Bachelor of Science in Chemistry – Chemistry Education**

**Minor Program:**

**Certificate Program:**

<b>Current</b>	
	<b>Hours</b>
<b>I. General Education</b>	42
Required Substitutions: MTH 229, 230 (counted in section II) CHM 121, 122, 123 (counted in section III) Area VI:	
<b>II. Core Requirements</b>	
BIO 112, 114	8
MTH 229, 230, 231	15
PHY 240/200, 242/202, 244/204	16
GL 251/252, 253/254, 255/256	13.5
ED 221, 223, 301, 303; EDS 333	15
<b>III. Departmental Core and Elective Requirements</b>	
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217, 312/314	25.5
CHM 451, 452, 453, 457, 458	15
CHM 499	9
CHM electives from CHM 417, 420, 421, 435/436; BMB 421	9
<b>IV. Electives</b>	13
<b>Total</b>	196

<b>New</b>	
	<b>Hours</b>
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229, 230 (counted in section II) Area V: CHM 121, 122, 123 (counted in section III)  <b>Area VI:</b> EH 205 or PSY 110	
<b>II. Core Requirements</b>	
BIO 111, 112	8
MTH 229, 230, 231	15
PHY 240/200, 242/202, 244/204	16
GL 251/252, 253/254, 255/256	13.5
ED 221, 223, 301, 303; EDS 333	15
<b>III. Departmental Core and Elective Requirements</b>	
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217, 312/314	25.5
CHM 451, 452, 453, 457, 458	15
CHM 499	9
CHM electives from CHM 417, 420, 421, 435/436; BMB 421	9
<b>IV. Electives</b>	15
<b>Total</b>	196

**Notes:**

## College of Science and Mathematics

**Department: Chemistry**

**Major Program: Dual Major Requirements in Chemistry**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230 (counted in section II) CHM 121, 122, 123 (counted in section III)	42
<b>II. Core Requirements</b>  MTH 229, 230, 231 PHY 240/200, 242/202, 244/204, or 111/101, 112/102, 113/103	15 15-16
<b>III. Departmental Core and Elective Requirements</b>  CHM 121, 122, 123 CHM 211/215, 212/216, 213/217 CHM 312/314, 451, 452/457, 453/458	15 18 20.5
<b>IV. Second Component of Dual Major</b>	67-68
<b>Total (minimum requirement)</b>	193.5

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in Section II) Area V: CHM 121, 122, 123 (counted in Section III)  <b>Area VI:</b> EH 205 or PSY 110	40
<b>II. Core Requirements</b>  MTH 229, 230, 231 PHY 240/200, 242/202, 244/204, or 111/101, 112/102, 113/103	15 15-16
<b>III. Departmental Core and Elective Requirements</b>  CHM 121, 122, 123 CHM 211/215, 212/216, 213/217 CHM 312/314, 451, 452/457, 453/458	15 18 20.5
<b>IV. Second Component of Dual Major</b>	69-70
<b>Total (minimum requirement)</b>	192.5

**Notes:**

## College of Science and Mathematics

**Department: Geological Sciences**

**Major Program: BS General Geology**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions Area One: MTH 229, 230, (counted in section III) Area Four: GL 251/252, 253/254, 255/256 (counted in section II)	42
<b>II. Departmental Requirements</b>  GL 251/252, 253/254, 255/256 GL 381, 383, 385 GL 485, 486, 487 GL 311, 428 (three quarters, 1.5 credits), 434 Geological Science Electives	13.5 15 13 15 21
<b>III. Related Course Requirements</b>  CHM 121, 122, 123 CEG 220 or EGR 153 or CS 141 MTH 229, 230 PHY 240/200, 242/202, 244/204 STT 264 or 360 One course from MTH 231, STT 265, or STT 361 Supporting electives	15 4 10 16 4 4-5 16-17
<b>IV. Unrestricted Electives</b>	13
<b>Total</b>	202.5

New	Hours
<b>I. General Education</b>  Required Substitutions Area I: MTH 229, 230 (counted in Section III) Area V: GL 251/252, 253/254, 255/256 (counted in Section II)  <b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	40
<b>II. Departmental Requirements</b>  GL 251/252, 253/254, 255/256 GL 381, 383, 385 GL 485, 486, 487 GL 311, 428 (three quarters, 1.5 credits), 434 Geological Science Electives	13.5 15 13 15 21
<b>III. Related Course Requirements</b>  CHM 121, 122, 123 CEG 220 or EGR 153 or CS 141 MTH 229, 230 PHY 240/200, 242/202, 244/204 STT 264 or 360 One course from MTH 231, STT 265, or STT 361 Supporting electives	15 4 10 16 4 4-5 16-17
<b>IV. Unrestricted Electives</b>	13
<b>Total</b>	200.5

**Notes:**

## College of Science and Mathematics

Department: Geological Sciences

Major Program: BA General Geology

Minor Program:

Certificate Program:

Current	
	Hours
<b>I. General Education</b>	45
Required Substitutions GL 251/252, 253/254, 255/256 (counted in section II)	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 311, 485, 486, 428 (three quarters, 1.5 credits), 434	24
Geological Science Electives	22.5
<b>III. Related Course Requirements</b>	
BIO 112, 114, 115 or PHY 111, 112, 113 or CHM 121, 122, 123	12-15
Supporting electives	25
Mathematics and statistics	10
<b>IV. Electives outside Colleges of Science and Mathematics and Engineering and Computer Science</b>	27
<b>V. Unrestricted Electives</b>	10
<b>Total</b>	189-192

New	
	Hours
<b>I. General Education</b>	44
Required Substitutions Area I: GL 251/252, 253/254. 255/256 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 311, 485, 486, 428 (three quarters, 1.5 credits), 434	24
Geological Science Electives	22.5
<b>III Related Course Requirements</b>	
BIO 111, 112, 115 or PHY 111, 112, 113 or CHM 121, 122, 123	12-15
Supporting electives	25
Mathematics and statistics	10
<b>IV. Electives outside Colleges of Science and Mathematics and Engineering and Computer Science</b>	27
<b>V. Unrestricted Electives</b>	10
<b>Total</b>	188

Notes:

**College of Science and Mathematics**

**Department: Geological Sciences**

**Major Program: BS Environmental Geosciences**

**Minor Program:**

**Certificate Program:**

<b>Current</b>	
	<b>Hours</b>
<b>I. General Education</b>	42
Required Substitutions MTH 229, 230, (counted in section III) GL 251/252, 253/254, 255/256 (counted in section II)	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 381, 383, 385 or GL 401, 486, 487	13-15
GL 311, 422, 428 (three quarters, 1.5 credits), 434, 450, 485	28.5
Choose 27.5-29.5 hours from non-chosen option above or from below: GL 201, 304, 309, 405, 413, 421, 431, 444, 455, 461, 463, 470, 495, 499	27.5-29.5
<b>III. Related Course Requirements</b>	
CHM 121,122, 123	15
CHM 302	4
MTH 229, 230	10
PHY 240/200, 242/202, 244/204	16
STT 264, 265 or 360, 361	8
CEG 220 or EGR 153 or CS 141	4
<b>Supporting Electives</b>	8
<b>IV. Unrestricted Electives</b>	6
<b>Total</b>	197.5

<b>New</b>	
	<b>Hours</b>
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229, 230 (counted in Section III) Area V: GL 251/252, 253/254. 255/256 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 381, 383, 385 or GL 401, 486, 487	13-15
GL 311, 422, 428 (three quarters, 1.5 credits), 434, 450, 485	28.5
Choose 27.5-29.5 hours from non-chosen option above or from below: GL 201, 304, 309, 405, 421, 431, 444, 455, 461, 463, 470, 499	27.5-29.5
<b>III. Related Course Requirements</b>	
CHM 121,122, 123	15
CHM 302	4
MTH 229, 230	10
PHY 240/200, 242/202, 244/204	16
STT 264, 265 or 360, 361	8
CEG 220 or EGR 153 or CS 141	4
<b>Supporting Electives</b>	8
<b>IV. Unrestricted Electives</b>	6
<b>Total</b>	195.5

**Notes:**

## College of Science and Mathematics

Department: Geological Sciences

Major Program: BA Environmental Geosciences

Minor Program:

Certificate Program:

Current	
	Hours
<b>I. General Education</b>	45
Required Substitutions GL 251/252, 253/254, 255/256 (counted in section II)	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 201, 309, 311, 401, 428 (three quarters, 1.5 credits), 434, 485	32
Choose 15.5 hours among: 405, 413, 421, 431, 444, 450, 455, 461, 463, 470, 486, 487, 495, 499	15.5
<b>III. Related Course Requirements</b>	
BIO 112, 114, 115 or PHY 111, 112, 113 or CHM 121, 122, 123	12-15
Supporting Electives	25
Mathematics and Statistics	10
<b>IV. Electives outside Colleges of Science and Mathematics and Engineering and Computer Science</b>	27
<b>V. Unrestricted Electives</b>	10
<b>Total</b>	190-193

New	
	Hours
<b>I. General Education</b>	44
Required Substitutions Area V: GL 251/252, 253/254, 255/256 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 201, 309, 311, 401, 428 (three quarters, 1.5 credits), 434, 485	32
Choose 15.5 hours among: 405, 421, 422, 431, 444, 450, 455, 461, 463, 470, 486, 487, 499	15.5
<b>III Related Course Requirements</b>	
BIO 111, 112, 115 or PHY 111, 112, 113 or CHM 121, 122, 123	12-15
Supporting Electives	25
Mathematics and Statistics	10
<b>IV. Electives outside Colleges of Science and Mathematics and Engineering and Computer Science</b>	27
<b>V. Unrestricted Electives</b>	10
<b>Total</b>	189

Notes:

## College of Science and Math

Department: Geological Sciences

Major Program: BS Geophysics

Minor Program:

Certificate Program:

Current	
	Hours
<b>I. General Education</b>	42
Required Substitutions MTH 229, 230, (counted in section III) GL 251/252, 253/254, 255/256 (counted in section II)	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 381, 383, 385	15
GL 311, 428 (three quarters, 1.5 credits), 434, 485, 487	23.5
GL 422, 423, 424, 426	14
Geological Sciences or Physics Electives	24
<b>III. Related Course Requirements</b>	
CHM 121,122, 123	15
PHY 240/200, 242/202, 244/204, 260	20
MTH 229, 230, 231, 232, 233	25
CEG 220 or EGR 153	4
<b>IV. Unrestricted Electives</b>	11
<b>Total</b>	<b>207</b>

New	
	Hours
<b>I. General Education</b>	40
Required Substitutions Area I: MTH 229, 230 (counted in Section III) Area V: GL 251/252, 253/254. 255/256 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 381, 383, 385	15
GL 311, 428 (three quarters, 1.5 credits), 434, 485, 487	23.5
GL 422, 423, 424, 426	14
Geological Sciences or Physics Electives	24
<b>III. Related Course Requirements</b>	
CHM 121,122, 123	15
PHY 240/200, 242/202, 244/204, 260	20
MTH 229, 230, 231, 232, 233	25
CEG 220 or EGR 153	4
<b>IV. Unrestricted Electives</b>	11
<b>Total</b>	<b>205</b>

Notes:

## College of Science and Math

**Department: Geological Sciences**

**Major Program: BA Earth Sciences and Chemistry**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions MTH 229, 230 GL 251/252, 253/254, 255/256	42
<b>II. Departmental Requirements</b>  GL 251/252, 253/254, 255/256 GL 311, 485, 486, 428 (three quarters, 1.5 credits), 434 Geological Sciences Electives (must include GL 201 or 304, and GL 309, 401, and 499 (Oceanography))	13.5 24 22.5
<b>III. Related Course Requirements</b>  BIO 112 CHM 121,122, 123 CHM 211/215, 212/216, 213/217, 312/314, 451 MTH 229, 230, 231 PHY 107/117, 240/200, 242/202, 244/204  Electives outside the Colleges of Science and Mathematics and Engineering and Computer Science Must include GEO 330 or 331, and ED 221, 223, 301, 303, EDS 333	4 15 28.5 15 20  27
<b>Total</b>	211.5

New	Hours
<b>I. General Education</b>  Required Substitutions Area I: MTH 229, 230 (counted in Section III) Area V: GL 251/252, 253/254, 255/256 (counted in Section II)  <b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	40
<b>II. Departmental Requirements</b>  GL 251/252, 253/254, 255/256 GL 201 or 304, 311, 309, 401, 428 (three quarters, 1.5 credits), 434, 485, 486, and 499 (Oceanography)  Geological Sciences Electives	13.5 39.5 7
<b>III. Related Course Requirements</b>  BIO 112 CHM 121,122, 123 CHM 211/215, 212.216, 213/217, 312/314, 451 MTH 229, 230, 231 PHY 107/117, 240/200, 242/202, 244/204  Electives outside the Colleges of Science and Mathematics and Engineering and Computer Science Must include GEO 430 or 331, and ED 221, 223, 301, 303, EDS 333	4 15 28.5 15 20  27
<b>Total</b>	209.5

**Notes:**

## College of Science and Math

**Department: Geological Sciences**

**Major Program: BA Life Sciences/Earth Sciences**

**Minor Program:**

**Certificate Program:**

Current	
	Hours
<b>I. General Education</b>  Required Substitutions: MTH 228 GL 251/252, 253/254, 255/256	42
<b>II. Departmental Requirements</b>  GL 251/252, 253/254, 255/256 GL 311, 485, 486, 428 (three quarters, 1.5 credits), 434 Geological Sciences Electives (must include GL 201 or 304, and GL 309, 401, and 499 (Oceanography))	13.5 24 22.5
<b>III. Related Course Requirements</b>  BIO 112, 114, 115, 210, 211, 212, 252, 278, 279, 426, 492 CHM 121, 122, 123 Mathematics and Statistics (Must include MTH 228 and STT 264) PHY 107/117, 101/111  Electives outside the Colleges of Science and Mathematics and Engineering and Computer Science Must include GEO 330 or 331, and ED 221, 223, 301, 303, EDS 333	43 15 10 8  27
<b>Total</b>	205

New	
	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 228 (counted in Section III) Area V: GL 251/252, 253/254, 255/256 (counted in Section II)  <b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	40
<b>II. Departmental Requirements</b>  GL 251/252, 253/254, 255/256 GL 201 or 304, 311, 309, 401, 428 (three quarters, 1.5 credits), 434, 485, 486, and 499 (Oceanography)  Geological Sciences Electives	13.5 39.5 7
<b>III. Related Course Requirements</b>  BIO 112, 114, 115, 210, 211, 212, 252, 278, 279, 426, 492 CHM 121, 122, 123 MTH (must include MTH 228 and STT 264) PHY 107/117, 111/101  Electives outside the Colleges of Science and Mathematics and Engineering and Computer Science Must include GEO 430 or 331, and ED 221, 223, 301, 303, EDS 333	43 15 10 9  27
<b>Total</b>	204

**Notes:**

## College of Science and Math

**Department: Geological Sciences**

**Major Program: BA Earth and Space Sciences**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions MTH 228 GL 251/252, 253/254, 255/256	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 311, 485, 486, 428 (three quarters, 1.5 credits), 434	24
GL 201, 304, 309, 401, 499 (Oceanography)	19.5
Geological Sciences elective	3
<b>III. Related Course Requirements</b>	
BIO 112, 114, 115	12
CHM 121, 122, 123	15
PHY 107/117, 101/111, 102/112, 103/113	19
Mathematics and Statistics (must include MTH 228 and STT 264)	10
Electives outside the Colleges of Science and Mathematics and Engineering and Computer Science Must include GEO 330 or 331, and ED 221, 223, 301, 303, EDS 333	27
<b>IV. Unrestricted Electives</b>	10
<b>Total</b>	195

New	Hours
<b>I. General Education</b>	40
Required Substitutions Area I: MTH 228 (counted in Section III) Area V: GL 251/252, 253/254, 255/256 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Requirements</b>	
GL 251/252, 253/254, 255/256	13.5
GL 311, 485, 486, 428 (three quarters, 1.5 credits), 434	24
GL 201, 304, 309, 401, 499 (Oceanography)	19.5
Geological Sciences elective	3
<b>III. Related Course Requirements</b>	
BIO 111, 112, 115	12
CHM 121, 122, 123	15
PHY 107/117, 101/111, 102/112, 103/113	19
MTH 228 and STT 264	9
Electives outside the Colleges of Science and Mathematics and Engineering and Computer Science Must include GEO 330 or 331, and ED 221, 223, 301, 303, EDS 333	27
<b>IV. Unrestricted Electives</b>	10
<b>Total</b>	192

**Notes:**

## College of Science and Mathematics

**Department: College of Science and Mathematics**

**Major Program: Bachelor of Science – Integrated Science**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: BIO 112, 114, 115 MTH 229, 230 Area VI:	
<b>II. Core Requirements</b>	131
BIO 112, 114, 115, 252, 254, 278, 279, 426	34
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217	18
GL 201, 251/252, 253/254, 255/256, 309, 486 or 342 or 399 (four crs.) 499 Oceanography	30
PHY 107/117, 240/202, 242/202, 244/204, 260, 315, 420, 446	34
<b>III. Required Supporting Courses</b>	18
GEO 330 or 331 MTH 229, 230 STT 264	
<b>IV. Phase One Professional Education Courses</b>	15
ED 221, 223, 301, 303: EDS 333	
<b>Total</b>	206

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229, 230 (counted in Section III) Area V: BIO 111, 112, 115 (counted in Section II)  Area VI: EH 205 or PSY 110	
<b>II. Core Requirements</b>	
BIO 111, 112, 115, 252, 254, 278, 279, 426	34
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217	18
GL 201, 251/252, 253/254, 255/256, 309, 486 or 342 or 399 (four crs.) 499 Oceanography	30
PHY 107/117, 240/202, 242/202, 244/204, 260, 315, 420, 446	34
<b>III. Required Supporting Courses</b>	18
GEO 430 or 331 MTH 229, 230 STT 264	
<b>IV. Phase One Professional Education Courses</b>	15
ED 221, 223, 301, 303: EDS 333	
<b>Total</b>	204

**Notes:**

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:** Mathematics/ Pure Mathematics Concentration – Bachelor of Science Degree

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230 PHY 240/200, 242/202, 244/204	42
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 232, 233, 255, 280, 355, 431, 432, 433, 451, 452, 492  Recommended Course: MTH 332  Elective Courses: MTH 306, 316, 317, 332, 333, 381, 407, 410, 419 456, 457, 458, 471, 480, 481, 482; STT 360, 361, 461, 462	73
<b>III. Related Course Requirements</b>  PHY 240/200, 242/202, 244/204 CS 141 and either CS 142 or 240, or equivalent	24
<b>IV. Electives</b>  Foreign language study recommended.	44
<b>Total</b>	183

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in Section II) Area V: PHY 240/200, 242/202, 244/204 (counted in Section III)  Area Six: any of AFS 200, ATH 241, ATH 242, ED 210, EH 205, FIN 205, HST 220, HST 221, PHL 200, PSY 110	40
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 232, 233, 255, 280, 355, 431, 432, 433, 451, 452, 492  Recommended Course: MTH 332  Elective Courses: MTH 306, 316, 317, 332, 333, 381, 407, 410, 419 456, 457, 458, 471, 480, 481, 482; STT 360, 361, 461, 462	73
<b>III. Related Course Requirements</b>  PHY 240/200, 242/202, 244/204 CS 141 and either CS 142 or 240, or equivalent	24
<b>IV. Electives</b>  Foreign language study recommended.	46
<b>Total</b>	183

**Notes:** Also acceptable for Area Six: any course approved by the College of Science and Mathematics Curriculum Committee. Contact the department for particulars.

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:** Mathematics/Computing Concentration – Bachelor of Science Degree

**Minor Program:**

**Certificate Program:**

Current	
	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230  In area four, physics is recommended for the natural sciences requirement. If physics is chosen, then PHY 240/200, 242/202, 244/204 is a required substitution.	42
<b>II. Departmental Requirements</b>  MTH 229, 230, 231, 232, 233, 255, 257, 280, 316, 317 or 381, 355, 492 STT 360, 361 MTH 431 or 451 Two courses selected from MTH 381, 407, 410, 419, 456, 457, 458 One additional course selected from MTH 306, 381, 407, 410, 419, 431, 432, 451, 452, 456, 457, 458	68
<b>III. Related Course Requirements</b>  CS 240, 241, 242, 400 PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science) At least three from: CEG 320, 433, 434; CS 405, 466, 470, 480; MTH 476, 477	40-44
<b>IV. Electives</b>	29-33
<b>Total</b>	183

New	
	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in Section II)  Area V: Physics is recommended for the natural sciences requirement. If physics is chosen, then PHY 240/200, 242/202, 244/204 is a required substitution. (counted in Section III)  Area Six: any of AFS 200, ATH 241, ATH 242, ED 210, EH 205, FIN 205, HST 220, HST 221, PHL 200, PSY 110	40
<b>II. Departmental Requirements</b>  MTH 229, 230, 231, 232, 233, 255, 257, 280, 316, 317 or 381, 355, 492 STT 360, 361 MTH 431 or 451 Two courses selected from MTH 381, 407, 410, 419, 456, 457, 458 One additional course selected from MTH 306, 381, 407, 410, 419, 431, 432, 451, 452, 456, 457, 458	68
<b>III. Related Course Requirements</b>  CS 240, 241, 242, 400 PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science) At least three from: CEG 320, 433, 434; CS 405, 466, 470, 480; MTH 476, 477	40-44
<b>IV. Electives</b>	31-35
<b>Total</b>	183

**Notes:** Also acceptable for Area Six: any course approved by the College of Science and Mathematics Curriculum Committee. Contact the department for particulars.

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:** Mathematics/Statistics Concentration – Bachelor of Science Degree

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b> Required Substitutions: MTH 229, 230 In area four, if physics is chosen for the natural sciences requirement, then PHY 240/200, 242/202, 244/204 is a required substitution.	42
<b>II. Departmental Requirements</b> Required Courses: MTH 229, 230, 231, 232, 255, 280, 355 STT 360, 361, 461, 462, 466, 467, 492 Elective Courses: STT courses numbered above 367, except 430 MTH 233, 306, 316, 317, 332, 333, 381, 407, 410, 419, 431, 432, 433, 451, 452, 456, 457, 458, 471, 476, 477, 480, 481, 482 CS 470 Electives selected to complete the departmental requirements must include at least two 400-level courses in the department, at least one of which must be a statistics course. Recommended Electives: STT courses numbered above 367 MTH 431, 432	71
<b>III. Related Course Requirements</b> CS 141 and either CS 142 or 240, or equivalent PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science) At least 16 hours chosen with the approval of a statistics faculty advisor, in any area in which statistical techniques can be applied. At least 9 of the 16 hours must be at 300-level or above.	36-40
<b>IV. Electives</b>	30-34
<b>Total</b>	183

New	Hours
<b>I. General Education</b> Required Substitutions: Area I: MTH 229, 230 (counted in Section II) Area V: If physics is chosen for the natural sciences requirement, then PHY 240/200, 242/202, 244/204 is a required substitution. (counted in Section III) Area Six: any of AFS 200, ATH 241, ATH 242, ED 210, EH 205, FIN 205, HST 220, HST 221, PHL 200, PSY 110	40
<b>II. Departmental Requirements</b> Required Courses: MTH 229, 230, 231, 232, 255, 280, 355 STT 360, 361, 461, 462, 466, 467, 492 Elective Courses: STT courses numbered above 367, except 430 MTH 233, 306, 316, 317, 332, 333, 381, 407, 410, 419, 431, 432, 433, 451, 452, 456, 457, 458, 471, 476, 477, 480, 481, 482 CS 470 Electives selected to complete the departmental requirements must include at least two 400-level courses in the department, at least one of which must be a statistics course. Recommended Electives: STT courses numbered above 367 MTH 431, 432	71
<b>III. Related Course Requirements</b> CS 141 and either CS 142 or 240, or equivalent PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science) At least 16 hours chosen with the approval of a statistics faculty advisor, in any area in which statistical techniques can be applied. At least 9 of the 16 hours must be at 300-level or above.	36-40
<b>IV. Electives</b>	32-36
<b>Total</b>	183

**Notes:** Also acceptable for Area Six: any course approved by the College of Science and Mathematics Curriculum Committee. Contact the department for particulars.

**College of Science and Mathematics**

**Department:** Mathematics and Statistics

**Major Program:** Mathematics/Applied Mathematics Concentration – Bachelor of Science Degree

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230 PHY 240/200, 242/202, 244/204	42
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 232, 233, 255, 280, 355, 431,432, 492 At least four courses chosen from: MTH 306, 316, 317, 332, 333 STT 360, 361 Two courses chosen from: MTH 407, 419, 456, 458, 480, 481, 482 Two additional 400-level elective courses  Elective Courses: Those listed above plus: MTH 433, 451, 452, 457 STT 461, 462	72
<b>III. Related Course Requirements</b>  PHY 240/200, 242/202, 244/204 Either PHY 371, 372 or ME 212, 213 CS 141 and either CS 142 or 240, or equivalent At least 12 hours of advanced technical electives, which must be approved by the department.	42
<b>IV. Electives</b>	27
<b>Total</b>	183

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in Section II) Area V: PHY 240/200, 242/202, 244/204 (counted in Section III)  Area Six: any of AFS 200, ATH 241, ATH 242, ED 210, EH 205, FIN 205, HST 220, HST 221, PHL 200, PSY 110	40
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 232, 233, 255, 280, 355, 431,432, 492 At least four courses chosen from: MTH 306, 316, 317, 332, 333 STT 360, 361 Two courses chosen from: MTH 407, 419, 456, 458, 480, 481, 482 Two additional 400-level elective courses  Elective Courses: Those listed above plus: MTH 433, 451, 452, 457 STT 461, 462	72
<b>III. Related Course Requirements</b>  PHY 240/200, 242/202, 244/204 Either PHY 371, 372 or ME 212, 213 CS 141 and either CS 142 or 240, or equivalent At least 12 hours of advanced technical electives, which must be approved by the department.	42
<b>IV. Electives</b>	29
<b>Total</b>	183

**Notes:** Also acceptable for Area Six: any course approved by the College of Science and Mathematics Curriculum Committee. Contact the department for particulars.

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:** Mathematics/Mathematics Education Concentration – Bachelor of Science Degree  
(Integrated Mathematics)

**Minor Program:**  
**Certificate Program:**

Current	Hours
<b>I. General Education</b>  MTH 229, 230 If physics is chosen for the natural sciences requirement, then PHY 240/200, 242/202, 244/204 is a required substitution.	42
<b>II. Departmental Requirements</b>  MTH 229, 230, 231, 232, 255, 280, 355, 381, 431, 432, 440, 451, 457, 471, 491 STT 360, 361 Two courses selected from MTH 233, 306, 332, 433, 452, 458	68-70
<b>III. Related Course Requirements</b>  CS 141, 142 (or 240), 206 ED 301/221, 303/223 EDS 333 PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science) At least eight hours, appropriate preparation for grades 7-12 teaching, chosen with the approval of a mathematics education faculty advisor. Recommended courses: MTH 343, 344, 345, 348, 446; STT 342	47-53
<b>IV. Electives</b>	26-27
<b>Total</b>	183

New	Hours
<b>I. General Education</b>  Area I: MTH 229, 230 (counted in Section II) Area V: If physics is chosen, then PHY 240/200, 242/202, 244/204 is a required substitution. (counted in Section III)  Area Six: ED 210	40
<b>II. Departmental Requirements</b>  MTH 229, 230, 231, 232, 255, 280, 355, 381, 431, 432, 440, 451, 457, 471, 491 STT 360, 361 Two courses selected from MTH 233, 306, 332, 433, 452, 458	68-70
<b>III. Related Course Requirements</b>  CS 141, 142 (or 240), 206 ED 301/221, 303/223 EDS 333 PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science) At least eight hours, appropriate preparation for grades 7-12 teaching, chosen with the approval of a mathematics education faculty advisor. Recommended courses: MTH 343, 344, 345, 348, 446; STT 342	47-53
<b>IV. Electives</b>	28-29
<b>Total</b>	183

**Notes:**

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:** Mathematics – Bachelor of Arts Degree

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	54
Required Substitutions: MTH 229, 230	
<b>II. Departmental Requirements</b>	64
Required Courses: MTH 229, 230, 231, 232, 255, 280, 355, 431, 440, 451, 471, 492 STT 360, 361 MTH 432 or 452	
Elective Courses: MTH 233, 306, 332, 333, 381, 407, 410, 419, 432, 433, 452, 456, 457, 458, 480, 481, 482 STT 401, 461, 462, 466, 467	
<b>III. Related Course Requirements</b>	38
CS 141 and either CS 142 or CS 240, or equivalent Twenty-seven hours (at least eight hours in one department) in departments belonging to neither the College of Science and Mathematics nor the College of Engineering and Computer Science; one additional course within the College of Science and Mathematics or the College of Engineering and Computer Science, but outside the Department of Mathematics and Statistics. These courses are in addition to those needed to fulfill General Education requirements.	
<b>IV. Electives</b>	27
Foreign language study is recommended.	
<b>Total</b>	183

New	Hours
<b>I. General Education</b>	52
Required Substitutions: Area I: MTH 229, 230 (counted in Section II)	
Area Six: any of AFS 200, ATH 241, ATH 242, ED 210, EH 205, FIN 205, HST 220, HST 221, PHL 200, PSY 110	
<b>II. Departmental Requirements</b>	64
Required Courses: MTH 229, 230, 231, 232, 255, 280, 355, 431, 440, 451, 471, 492 STT 360, 361 MTH 432 or 452	
Elective Courses: MTH 233, 306, 332, 333, 381, 407, 410, 419, 432, 433, 452, 456, 457, 458, 480, 481, 482 STT 401, 461, 462, 466, 467	
<b>III. Related Course Requirements</b>	38
CS 141 and either CS 142 or CS 240, or equivalent Twenty-seven hours (at least eight hours in one department) in departments belonging to neither the College of Science and Mathematics nor the College of Engineering and Computer Science; one additional course within the College of Science and Mathematics or the College of Engineering and Computer Science, but outside the Department of Mathematics and Statistics. These courses are in addition to those needed to fulfill General Education requirements.	
<b>IV. Electives</b>	29
Foreign language study is recommended.	
<b>Total</b>	183

**Notes:** Also acceptable for Area Six: any course approved by the College of Science and Mathematics Curriculum Committee. Contact the department for particulars.

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:** Dual Major Degree – Mathematics – Bachelor of Science Degree

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230 In area four, if physics is chosen for the natural sciences requirement, then PHY 240/200, 242/202, 244/204 is a required substitution.	42
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 232, 255, 355 At least two of the following: MTH 431, 432, 451, 452, 457, 458, 480, 481, 482 STT 461, 462  Elective Courses: MTH 233, 280, 306, 316, 317, 332, 333, 381, 407, 419, 431, 432, 433, 451, 452, 456, 457, 458, 480, 481, 482, 492 STT 360 or 363, 361, 461, 462, 466, 467	45
<b>III. Related Course Requirements</b>  CS 141 and either CS 142 or CS 240, or equivalent PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science)	20-24
<b>Total</b>	183

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in Section II) Area V: If physics is chosen, then PHY 240/200, 242/202, 244/204 is a required substitution. (counted in Section III)  Area Six: any of AFS 200, ATH 241, ATH 242, ED 210, EH 205, FIN 205, HST 220, HST 221, PHL 200, PSY 110	40
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 232, 255, 355 At least two of the following: MTH 431, 432, 451, 452, 457, 458, 480, 481, 482 STT 461, 462  Elective Courses: MTH 233, 280, 306, 316, 317, 332, 333, 381, 407, 419, 431, 432, 433, 451, 452, 456, 457, 458, 480, 481, 482, 492 STT 360 or 363, 361, 461, 462, 466, 467	45
<b>III. Related Course Requirements</b>  CS 141 and either CS 142 or CS 240, or equivalent PHY 240/200, 242/202, 244/204 (if physics is selected for General Education natural science)	20-24
<b>Total</b>	183

**Notes:** Also acceptable for Area Six: any course approved by the College of Science and Mathematics Curriculum Committee. Contact the department for particulars.

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:** Dual Major – Mathematics – Bachelor of Arts Degree

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229, 230	54
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 255, 355 At least two of the following: MTH 431, 432, 451, 452, 457, 458 STT 461, 462  Elective Courses: (maximum of two at the 200 level) MTH 232, 233, 280, 306, 381, 410, 419, 431, 432, 433, 440, 451, 452, 456, 457, 458, 471, 492 STT 360 or 363, 361, 461, 462, 466, 467	45
<b>III. Related Course Requirements</b>  CS 141 and either CS 142 or CS 240, or equivalent	8
<b>Total</b>	183

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229, 230 (counted in Section II)  Area Six: any of AFS 200, ATH 241, ATH 242, ED 210, EH 205, FIN 205, HST 220, HST 221, PHL 200, PSY 110	52
<b>II. Departmental Requirements</b>  Required Courses: MTH 229, 230, 231, 255, 355 At least two of the following: MTH 431, 432, 451, 452, 457, 458 STT 461, 462  Elective Courses: (maximum of two at the 200 level) MTH 232, 233, 280, 306, 381, 410, 419, 431, 432, 433, 440, 451, 452, 456, 457, 458, 471, 492 STT 360 or 363, 361, 461, 462, 466, 467	45
<b>III. Related Course Requirements</b>  CS 141 and either CS 142 or CS 240, or equivalent	8
<b>Total</b>	183

**Notes:** Also acceptable for Area Six: any course approved by the College of Science and Mathematics Curriculum Committee. Contact the department for particulars.

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:**

**Minor Program:** Minor - Mathematics

**Certificate Program:**

<b>Current</b>	
	<b>Hours</b>
<b>II. Departmental Requirements</b>	30
<p>Required Courses: MTH 229, 230, 231 and either MTH 253 or 255</p> <p>Elective Courses: MTH 232, 233, 257, 280, 306, 316, 317, 332, 333, 355, 381, 407, 410, 419, 431, 432, 433, 451, 452, 456, 457, 458, 471, 480, 481, 482 STT 360 or 363, 361</p> <p>Only one of MTH 253 and 255 and only one of STT 360 and 363 can count toward the minor. Courses cross-listed with the student's major department cannot be included in the minor. A GPA of at least 2.0 must be attained in all minor courses. The minor must include at least three 300- or 400-level courses; a GPA of at least 2.0 must be earned in all minor courses at this level.</p>	
<b>Total</b>	30

<b>New</b>	
	<b>Hours</b>
<b>II. Departmental Requirements</b>	30
<p>Required Courses: MTH 229, 230, 231 and either MTH 253 or 255</p> <p>Elective Courses: MTH 232, 233, 257, 280, 306, 316, 317, 332, 333, 355, 381, 407, 410, 419, 431, 432, 433, 451, 452, 456, 457, 458, 471, 480, 481, 482 STT 360 or 363, 361</p> <p>Only one of MTH 253 and 255 and only one of STT 360 and 363 can count toward the minor. Courses cross-listed with the student's major department cannot be included in the minor. A GPA of at least 2.0 must be attained in all minor courses. The minor must include at least three 300- or 400-level courses; a GPA of at least 2.0 must be earned in all minor courses at this level.</p>	
<b>Total</b>	30

**Notes:**

## College of Science and Mathematics

**Department:** Mathematics and Statistics

**Major Program:**

**Minor Program:** Minor - Statistics

**Certificate Program:**

Current	
	Hours
<b>II. Departmental Requirements</b>	30
Required Courses: MTH 229, 230, and MTH 253 or 255 STT 360, 361	
Elective Courses: STT courses numbered above 367	
Elective courses must be approved in advance by the Department of Mathematics and Statistics. A GPA of at least 2.0 must be attained in all minor courses, and a GPA of at least 2.0 must be earned in all minor courses at the 300 or 400 level.	
<b>Total</b>	30

New	
	Hours
<b>II. Departmental Requirements</b>	30
Required Courses: MTH 229, 230, and MTH 253 or 255 STT 360, 361	
Elective Courses: STT courses numbered above 367	
Elective courses must be approved in advance by the Department of Mathematics and Statistics. A GPA of at least 2.0 must be attained in all minor courses, and a GPA of at least 2.0 must be earned in all minor courses at the 300 or 400 level.	
<b>Total</b>	30

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Science in Physics

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 253	25
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Electives</b>	33
<b>Total</b>	192

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 253	25
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Electives</b>	33
<b>Total</b>	190

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Science: Dual Major Physics and Math

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Math Course Requirements</b>	
MTH 231, 232, 233, 332, 333	35
MTH 255, 355	6
Electives chosen from:	
MTH 431, 432, 433, 480, 481, 482	8
<b>IV. Related Course Requirements</b>	
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>V. Electives</b>	19
<b>Total</b>	192

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Math Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 332, 333	35
MTH 255, 355	6
Electives chosen from:	
MTH 431, 432, 433, 480, 481, 482	8
<b>IV. Related Course Requirements</b>	
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>V. Electives</b>	15
<b>Total</b>	190

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Science in Physics: Geology Option

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 253	28
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Geology Option Requirements</b>	
GL 251, 253	6
GL 252, 254	3
PHY 422, 423, 424	13
Electives chosen from: GL 255, 311, 333, 420, 450, 463	12
<b>Total</b>	<b>196</b>

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 253	28
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Geology Option Requirements</b>	
GL 251, 253	6
GL 252, 254	3
PHY 422, 423, 424	13
Electives chosen from: GL 255, 311, 333, 420, 450, 463	12
<b>Total</b>	<b>194</b>

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Science in Physics: Biology Option

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 253	28
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Biology Option Requirements</b>	
BIO 112, 114, 115	12
BIO 492 (biophysics emphasis)	2
CHM 211, 212	12
Electives chosen from: BIO 202, 306, 307, 402/405; BMB 421, 422	9
<b>Total</b>	<b>197</b>

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 253	28
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Biology Option Requirements</b>	
BIO 111, 112, 115	12
BIO 492 (biophysics emphasis)	2
CHM 211, 212	12
Electives chosen from: BIO 202, 306, 307, 402/405; BMB 421, 422	9
<b>Total</b>	<b>195</b>

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Science in Physics: Computing Option

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 253	28
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Electives</b>	3
<b>V. Computing Option Requirements</b>	
CS 240, 241, 242	12
MTH 257	4
CS 400	3
CS 316, 317	8
<b>Total</b>	192

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 260, 371, 372	10
PHY 315, 316, 322	10
PHY 420, 450, 451, 452, 460, 461, 462	25
PHY 494	6
<b>III. Related Course Requirements</b>	
MTH 229, 230, 231, 232, 233, 253	28
MTH 332, 333	6
CHM 121, 122, 123	15
EGR 153 or equivalent	4
<b>IV. Electives</b>	3
<b>V. Computing Option Requirements</b>	
CS 240, 241, 242	12
MTH 257	4
CS 400	3
CS 316, 317	8
<b>Total</b>	190

**Notes:** Students who wish to learn about microprocessors may choose to take further courses in computer engineering, such as CEG 260, 320, and 360. For these students, CEG 430 and 431 may be taken in place of CS 316 and 317

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Arts in Physics

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	42
<b>II. Departmental Core Requirements</b>  PHY 240/200, 242/202, 244/204 PHY 260, 371, 372  PHY 315, 316, 322, 372, 420, 451	16 10  13
<b>III. Related Course Requirements</b>  MTH 229, 230,231, 232, 233  CHM 121, 122, 123  EGR 153 or equivalent	25  15  4
<b>IV. Electives</b>  <b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science	27
<b>V. General Electives</b>	31
<b>Total</b>	183

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)  <b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	40
<b>II. Departmental Core Requirements</b>  PHY 240/200, 242/202, 244/204 PHY 260, 371, 372  PHY 315, 316, 322, 372, 420, 451	16 10  13
<b>III. Related Course Requirements</b>  MTH 229, 230,231, 232, 233  CHM 121, 122, 123  EGR 153 or equivalent	25  15  4
<b>IV. Electives</b>  <b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science	27
	33
<b>Total</b>	183

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Arts in Physics: Physics Licensure Program

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	42
<b>II. Departmental Core Requirements</b>  PHY 240/200, 242/202, 244/204  PHY 107/117, 260, 315, 316, 371, 420, 446, 447, 450  Physics Elective: PHY 322 or 372 or 451	16  31  3
<b>III. Related Course Requirements</b>  BIO 112, 114, 115  CHM 121, 122, 123  GL 251/252, 253/254, 255/256  MTH 229, 230, 231, 232, 233  MTH 253 or 255	12  25  13.5  15  3
<b>IV. Electives</b>  <b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	27
<b>Total</b>	187.5

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)  <b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	40
<b>II. Departmental Core Requirements</b>  PHY 240/200, 242/202, 244/204  PHY 107/117, 260, 315, 316, 371, 420, 446, 447, 450  Physics Elective: PHY 322 or 372 or 451	16  31  3
<b>III. Related Course Requirements</b>  BIO 111, 112, 115  CHM 121, 122, 123  GL 251/252, 253/254, 255/256  MTH 229, 230, 231, 232, 233  MTH 253 or 255	12  25  13.5  15  3
<b>IV. Electives</b>  <b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	27
<b>Total</b>	185.5

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Arts Physics: Physical Sciences Licensure Program

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	
<b>II. Departmental Core Requirements</b>	16
PHY 240/200, 242/202, 244/204	16
PHY 107/117, 260, 315, 316 371, 420, 446, 447, 450	31
Physics elective: PHY 322 or 372 or 451	3
<b>III. Related Course Requirements</b>	
BIO 112, 114	8
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217, 312/314, 451	28.5
GL 251/252, 253/354, 255/256	13.5
Math 253 or 255	3
MTH 229, 230, 231, 232, 233	25
<b>IV. Electives</b>	27
<b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	
<b>Total</b>	212

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Core Requirements</b>	16
PHY 240/200, 242/202, 244/204	16
PHY 107/117, 260, 315, 316 371, 420, 446, 447, 450	31
Physics elective: PHY 322 or 372 or 451	3
<b>III. Related Course Requirements</b>	
BIO 111, 112	8
CHM 121, 122, 123	15
CHM 211/215, 212/216, 213/217, 312/314, 451	28.5
GL 251/252, 253/254, 255/256	13.5
Math 253 or 255	3
MTH 229, 230, 231, 232, 233	25
<b>IV. Electives</b>	27
<b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	
<b>Total</b>	210

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Arts in Physics: Life Sciences/Physics Licensure Program

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	42
Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 107/117, 260, 315, 316 371, 420, 446, 447, 450	31
Physics elective: PHY 322 or 372 or 451	3
<b>III. Related Course Requirements</b>	
BIO 112, 114, 115, 210, 211, 212, 252, 278, 279, 426, 492	43
CHM 121, 122, 123	15
GL 251/252	4.5
MTH 229, 230, 231, 232, 233	25
MTH 253 or 255	3
<b>IV. Electives</b>	27
<b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	
<b>Total</b>	209.5

New	Hours
<b>I. General Education</b>	40
Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)	
<b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	
<b>II. Departmental Core Requirements</b>	
PHY 240/200, 242/202, 244/204	16
PHY 107/117, 260, 315, 316 371, 420, 446, 447, 450	31
Physics elective: PHY 322 or 372 or 451	3
<b>III. Related Course Requirements</b>	
BIO 112, 114, 115, 210, 211, 212, 252, 278, 279, 426, 492	43
CHM 121, 122, 123	15
GL 251/252	4.5
MTH 229, 230, 231, 232, 233	25
MTH 253 or 255	3
<b>IV. Electives</b>	27
<b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	
<b>Total</b>	207.5

**Notes:**

## College of Science and Mathematics

**Department:** Physics

**Major Program:** Bachelor of Arts in Physics: Earth Sciences/Physics Licensure Program

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: MTH 229 and 230 PHY 240/200, 242/202, 244/204	42
<b>II. Departmental Core Requirements</b>  PHY 240/200, 242/202, 244/204  PHY 107/117, 260, 315, 316, 371, 420, 446, 447, 450  Physics elective: PHY 322 or 372 or 451	16  31  3
<b>III. Related Course Requirements</b>  BIO 112  CHM 121, 122, 123  GL 201 or 304, 251/252, 253/354, 255/256, 309, 311 or 420, 401, 485, 486 or 342 or 399 (four cr.), 499 (Oceanography)  MTH 229, 230, 231, 232, 233  MTH 253 or 255	4  15  43.5  25  3
<b>IV. Electives</b>  <b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	27
<b>Total</b>	209.5

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: MTH 229 and 230 (counted in Section III) Area V: PHY 240/200, 242/202, 244/204 (counted in Section II)  <b>Area VI:</b> Choose one AFS 200, ATH 241, ATH 242, HST 220, HST 221, PHL 200, FIN 205, EH 205, PSY 110	40
<b>II. Departmental Core Requirements</b>  PHY 240/200, 242/202, 244/204  PHY 107/117, 260, 315, 316 371, 420, 446, 447, 450  Physics elective: PHY 322 or 372 or 451	16  31  3
<b>III. Related Course Requirements</b>  BIO 112  CHM 121, 122, 123  GL 201 or 304, 251/252, 253/354, 255/256, 309, 311 or 420, 401, 485, 486 or 342 or 399 (four cr.), 499 (Oceanography)  MTH 229, 230, 231, 232, 233  MTH 253 or 255	4  15  43.5  25  3
<b>IV. Electives</b>  <b>Electives</b> outside the College of Science & Mathematics and College of Engineering & Computer Science (must include ED 221, 223, 301, 303, EDS 333)	27
<b>Total</b>	207.5

**Notes:**

## College of Science and Mathematics

**Department: Psychology**

**Major Program: BS in Psychology**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>	54
Required Substitutions: STT 264, 265	
<b>II. Psychology Core Requirements</b>	
PSY 110	4
5 core courses	20
PSY 300, 400	9
4 400-level PSY courses	16
2 Methods courses	8
Psychology electives	12
<b>III. Other Psychology Requirements</b>	
MTH 128 or 129, and STT 264,265	3 or 5
CS 141, 142	8
<b>IV. General Electives</b>	39-41
<b>Total</b>	183

New	Hours
<b>I. General Education</b>	52
Required Substitutions: Area I: STT 264, 265 (counted in Section III)	
<b>Area III</b> PSY 105 required selection	
<b>Area VI</b> PSY 110	
<b>II. Psychology Core Requirements</b>	
5 of the following (at least 2 from each group)	20
PSY 311, 331, 341, 351	
PSY 321, 361, 371, 391	
PSY 300, 400	9
4 400-level PSY courses (excluding PSY 432, 489, 490, 498, 499)	16
2 courses from the following	8
PSY323, 333, 343, 353, 363, 373, 393	
Psychology electives	12
<b>III. Required Supporting Courses</b>	
MTH 128 or 129, and STT 264,265	11-13
CS 141, 142 or 208, 209	8
<b>IV. General Electives</b>	47-49
<b>Total</b>	183

**Notes:**

## College of Science and Mathematics

**Department: Psychology**

**Major Program: BA in Psychology**

**Minor Program:**

**Certificate Program:**

Current	Hours
<b>I. General Education</b>  Required Substitutions: STT 264, 265	54
<b>II. Psychology Core Requirements</b>  PSY 110 4 core courses PSY 300 4 400-level PSY courses Psychology electives	4 16 5 16 20
<b>III. Other Psychology Requirements</b>  MTH 126 or 127, and STT 264, 265	11-13
<b>IV. College Requirement</b>  27 credit hours outside the College of Science and Mathematics and the College of Engineering and Computer Science	27
<b>V. General Electives</b>	28-30
<b>Total</b>	183

New	Hours
<b>I. General Education</b>  Required Substitutions: Area I: STT 264, 265 (counted in Section III)  <b>Area III</b> PSY 105 required selection <b>Area VI</b> PSY 110	52
<b>II. Psychology Core Requirements</b>  4 of the following (at least 2 from each group) PSY 311, 331, 341, 351 PSY 321, 361, 371, 391 PSY 300 4 400-level PSY courses (excluding PSY 432, 489, 490, 498, 499) Psychology electives	16   4 16 20
<b>III. Required Supporting Courses</b>  MTH 126 or 127, and STT 264, 265	11-13
<b>IV. College Requirement</b>  27 credit hours outside the College of Science and Mathematics and the College of Engineering and Computer Science	27
<b>V. General Electives</b>	37-39
<b>Total</b>	183

**Notes:**

## College of Science and Mathematics

**Department: Psychology**

**Major Program:**

**Minor Program: Psychology**

**Certificate Program:**

<b>Current</b>	
	<b>Hours</b>
<b>Departmental Core and Elective Requirements</b>	
PSY 105, 110	8
Three of the following: PSY 311, 321, 331, 341, 351, 361, 371, 391	12
Electives in PSY (200-400 level)	16
<b>Total</b>	<b>36</b>

<b>New</b>	
	<b>Hours</b>
<b>Departmental Core and Elective Requirements</b>	
PSY 105, 110	8
Three of the following: PSY 311, 321, 331, 341, 351, 361, 371, 391	12
Electives in PSY (200-400 level)	16
<b>Total</b>	<b>36</b>

**Notes:**