

**UNDERGRADUATE AND PROFESSIONAL MAJOR CHANGE BULLETIN NO. 4**  
**Fall 2012**

**Faculty Senate Approved February 14, 2013**

**---REQUIREMENTS---**

The requirements listed below reflect the undergraduate major curricular changes approved by the Catalog Subcommittee since approval of the last Undergraduate Major Change Bulletin. All changes are underlined. Deletions are crossed out. The column to the far right indicates the date each change becomes effective.

<b>Dept</b>	<b>Proposed</b>	<b>Effective Date</b>
<b>Economic Sciences</b> Drop option in International Trade and Development	Drop option in International Trade and Development	<b>8-13</b>
<b>Economic Sciences</b> Add new option in Economic Development	<p><b>Economic Development (120 Hours)</b></p> <p><b>First Year</b></p> <p><i>First Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>ECONS 101 [SSCI] or 102 [SSCI] <span style="float: right;">3</span></p> <p>Humanities [HUM] <span style="float: right;">3</span></p> <p>HISTORY 105 [ROOT] <span style="float: right;">3</span></p> <p>MATH 201<sup>1</sup> <span style="float: right;">3</span></p> <p>Electives <span style="float: right;">3</span></p> <p><i>Second Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>Biological Sciences [BSCI] or SCIENCE 101 [SCI]<sup>2</sup> <span style="float: right;">3 or 4</span></p> <p>ECONS 101 or 102 <span style="float: right;">3</span></p> <p>ENGLISH 101 [WRTG] <span style="float: right;">3</span></p> <p>MATH 202 [QUAN]<sup>1</sup> <span style="float: right;">3</span></p> <p>Electives <span style="float: right;">3</span></p> <p><b>Second Year</b></p> <p><i>First Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>COM 102 , COM 210, or H D 205 [COMM] <span style="float: right;">3 or 4</span></p> <p>Diversity [DIVR] <span style="float: right;">3</span></p> <p>ECONS 302 <span style="float: right;">3</span></p> <p>Physical Sciences [PSCI] or SCIENCE 102 [SCI]<sup>2</sup> <span style="float: right;">3 or 4</span></p> <p>Electives <span style="float: right;">3</span></p>	<b>8-13</b>

<b><i>Second Term</i></b>	<b><i>Hours</i></b>
Creative & Professional Arts [ARTS]	3
ECONS 300-400-level Elective	3
ECONS 301	3
STAT 212 or MGTOP 215	4
Electives	2
Complete Writing Portfolio	

**Third Year**

<b><i>First Term</i></b>	<b><i>Hours</i></b>
ECONS 300-400-level Elective	3
ECONS 311 [M]	3
ECONS 327	3
ECONS 322	3
ECONS 324	3

<b><i>Second Term</i></b>	<b><i>Hours</i></b>
ECONS 300-400-level Elective	3
ECONS 320	3
ECONS 323	3
ECONS 326	3
ECONS 420	3

**Fourth Year**

<b><i>First Term</i></b>	<b><i>Hours</i></b>
ECONS 400-level Elective	3
ECONS 483, 495, 497, 499, or HONORS 450	3
ECONS Option Requirement <sup>3</sup>	3
ECONS 427	3
ECONS 431	3

<b><i>Second Term</i></b>	<b><i>Hours</i></b>
ECONS Option Requirement <sup>3</sup>	3
ECONS 490 [M]	3
Integrative Capstone [CAPS]	3
ENGLISH 402	3
Electives	3

**Footnotes**

<sup>1</sup> Alternative to MATH 201 and 202 is MATH 171 and 220.

<sup>2</sup> For a total of 7 units—one Biological Science [BIOS] and one Physical Science [PSCI] UCORE course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

<sup>3</sup> Two courses from the following option requirements: IBUS 380, ECONS 330, ECONS 428, ECONS 430, POL\_S 435, SOC 340.

<b>Economic Sciences</b> Revise graduation requirements for option in Agricultural Economics	<b>Agricultural Economics (120 Hours)</b>  <b>First Year</b>  <i><b>First Term</b></i> <span style="float: right;"><i><b>Hours</b></i></span> ECONS 101 [SSCI] or 102 [SSCI] <span style="float: right;">3</span> <del>ENGLISH 101 [WRTG]</del> <span style="float: right;"><del>3</del></span> <u>Humanities [HUM]</u> <span style="float: right;">3</span> HISTORY 105 [ROOT] <span style="float: right;">3</span> MATH 201 <sup>1</sup> <span style="float: right;">3</span> Electives <span style="float: right;">3</span>  <i><b>Second Term</b></i> <span style="float: right;"><i><b>Hours</b></i></span> Biological Sciences [BSCI] or <del>SCIENCE 101 [SCI]</del> <sup>2</sup> <span style="float: right;">3 or 4</span> ECONS 101 or 102 <span style="float: right;">3</span> <u>ENGLISH 101 [WRTG]</u> <span style="float: right;">3</span> <del>Humanities [HUM]</del> <span style="float: right;"><del>3</del></span> MATH 202 [QUAN] <sup>1</sup> <span style="float: right;">3</span> <u>Concentrated Area Course</u> <sup>3</sup> <span style="float: right;">3</span> <del>Electives</del> <span style="float: right;"><del>3</del></span>  <b>Second Year</b>  <i><b>First Term</b></i> <span style="float: right;"><i><b>Hours</b></i></span> COM 102, <del>COMSOC 324</del> , <u>COM 210</u> or H D 205 [COMM] <span style="float: right;">3 or 4</span> Diversity [DIVR] <span style="float: right;">3</span> ECONS 301 <span style="float: right;">3</span> Physical Sciences [PSCI] or <del>SCIENCE 102 [SCI]</del> <sup>2</sup> <span style="float: right;">3 or 4</span> <u>CHEM 101 or 105 [PSCI]</u> <span style="float: right;">4</span> <u>Concentrated Area Course</u> <sup>3</sup> <span style="float: right;">3</span> <del>Electives</del> <span style="float: right;"><del>3</del></span>  <i><b>Second Term</b></i> <span style="float: right;"><i><b>Hours</b></i></span> ACCTG 230 <span style="float: right;">3</span> <u>BLAW 210</u> <span style="float: right;">3</span> Creative & Professional Arts [ARTS] <span style="float: right;">3</span> ECONS 302 <span style="float: right;">3</span> STAT 212 or MGTOP 215 <span style="float: right;">4</span> <del>Electives</del> <span style="float: right;"><del>2</del></span> Complete Writing Portfolio  <b>Third Year</b>	<b>8-13</b>

<b><i>First Term</i></b>	<b><i>Hours</i></b>
<u>ACCTG 231</u>	3
<u>Concentrated Area Course</u> <sup>3</sup>	3
<del>ECONS 300-400 level Elective</del>	<del>3</del>
ECONS 311 [M]	3
<u>Sequence Course</u> <sup>4</sup>	3
<del>ECONS 350</del>	<del>3</del>
<del>ECONS 351</del>	<del>3</del>
Electives	1

<b><i>Second Term</i></b>	<b><i>Hours</i></b>
<u>Concentrated Area Course</u> <sup>3</sup>	3
<u>ECONS 335 or FIN 325</u>	3
<u>Sequence Course</u> <sup>4</sup>	3
<del>ECONS 300-400 level Elective</del>	<del>3</del>
<del>ECONS Option Elective</del>	<del>3</del>
Electives	6

#### **Fourth Year**

<b><i>First Term</i></b>	<b><i>Hours</i></b>
<u>ECONS 431</u>	3
ECONS 483, 495, 497, 499 <u>or HONORS 450</u>	3
ECONS 490 [M]	3
<del>ECONS Option Elective</del>	<del>3</del>
ENGLISH 402	3
<u>Sequence Course</u> <sup>4</sup>	3
<del>Electives</del>	<del>3</del>

<b><i>Second Term</i></b>	<b><i>Hours</i></b>
ECONS 400-level Elective	3
Integrated Capstone [CAPS]	3
<u>Sequence Course</u> <sup>4</sup>	3
Electives	6

#### **Footnotes**

<sup>1</sup> Alternative to MATH 201 and 202 is MATH 171 and 220.

<sup>2</sup> For a total of 7 units—one Biological Science [BIOS] and one Physical Science [PSCI] UCORE course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

<sup>3</sup> Four courses from any one of the following concentration areas: (1) Agricultural Production: ANIM SCI 101, CROP SCI 102 or ENTOM 150, CROP SCI 360, MGTOP 340; (2) Real Estate & Land Mgmt: FIN 325, FIN 345 & 346, FIN 445, MGTOP 215, MIS 250; (3) Food Safety & Policy: FS 110, FS 201, FS 220, FS 303; (4) Globalization (4 of the following courses): two semesters foreign lang, CRS 441, ECONS 428, 430, 327, SOC 415; (5) Sustainability: CROP SCI 360, ECONS 326, ENVR SCI 101.

	<p>ENVR SCI 285; (6) Independent Concentration - upon approval of advisor.</p> <p><sup>4</sup> Two sequences (4 courses): <u>ECONS 350 + 450</u>; or <u>ECONS 351 + 451</u>; or <u>ECONS 352 + 452</u>.</p>	
<p><b>Economic Sciences</b> Revise graduation requirements for option in Business Economics</p>	<p><b>Business Economics (120 Hours)</b></p> <p><b>First Year</b></p> <p><i>First Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>ECONS 101 [SSCI] or 102 [SSCI] <span style="float: right;">3</span></p> <p><del>ENGLISH 101 [WRTG]</del> <span style="float: right;"><del>3</del></span></p> <p>HISTORY 105 [ROOT] <span style="float: right;">3</span></p> <p><u>Humanities [HUM]</u> <span style="float: right;">3</span></p> <p>MATH 201<sup>1</sup> <span style="float: right;">3</span></p> <p>Electives <span style="float: right;">3</span></p> <p><i>Second Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>Biological Sciences [BSCI] or SCIENCE 101 [SCI]<sup>2</sup> <span style="float: right;">3 or 4</span></p> <p>ECONS 101 or 102 <span style="float: right;">3</span></p> <p><u>ENGLISH 101 [WRTG]</u> <span style="float: right;">3</span></p> <p><del>Humanities [HUM]</del> <span style="float: right;"><del>3</del></span></p> <p>MATH 202 [QUAN]<sup>1</sup> <span style="float: right;">3</span></p> <p>Electives <span style="float: right;">3</span></p> <p><b>Second Year</b></p> <p><i>First Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>COM 102 [<del>COMM</del>], <del>COMSOC 324</del>, <u>COM 210</u>, or H D 205 [COMM] <span style="float: right;">3 or 4</span></p> <p>Diversity [DIVR] <span style="float: right;">3</span></p> <p>ECONS 301 <span style="float: right;">3</span></p> <p>Physical Sciences [PSCI] or SCIENCE 102 [SCI]<sup>2</sup> <span style="float: right;">3 or 4</span></p> <p>Electives <span style="float: right;">3</span></p> <p><i>Second Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>Creative &amp; Professional Arts [ARTS] <span style="float: right;">3</span></p> <p>ECONS 300-400-level Elective <span style="float: right;">3</span></p> <p>ECONS 302 <span style="float: right;">3</span></p> <p>STAT 212 or MGTOP 215 <span style="float: right;">4</span></p> <p>Electives <span style="float: right;">2</span></p> <p><i>Complete Writing Portfolio</i></p> <p><b>Third Year</b></p> <p><i>First Term</i> <span style="float: right;"><i>Hours</i></span></p> <p>ACCTG 230 <span style="float: right;">3</span></p>	<p><b>8-13</b></p>

	ECONS 300-400-level Elective	3	
	ECONS 311 [M]	3	
	<u>ECONS 323</u>	3	
	Electives	3	
	<b><i>Second Term</i></b>		<b><i>Hours</i></b>
	<u>ECONS 320</u>	3	
	<del>ECONS 300-400-level Elective</del>	<del>3</del>	
	ECONS 335	3	
	ECONS 352	3	
	<del>ECONS Option Requirement</del>	<del>3</del>	
	<u>ECONS 400-level Elective</u>	3	
	<u>Concentrated Area Course<sup>3</sup></u>	3	
	<b>Fourth Year</b>		
	<b><i>First Term</i></b>		<b><i>Hours</i></b>
	ECONS 452	3	
	ECONS 483, 495, 497, 499 or <u>HONORS 450</u>	3	
	<u>Concentrated Area Course<sup>3</sup></u>	3	
	<del>ECONS Option Requirement</del>	<del>3</del>	
	ENGLISH 402	3	
	Electives	3	
	<b><i>Second Term</i></b>		<b><i>Hours</i></b>
	ECONS 400-level Elective	3	
	<u>ECONS 425</u>	3	
	ECONS 490 [M]	3	
	Integrated Capstone [CAPS]	3	
	<u>Concentrated Area Course<sup>3</sup></u>	3	
	<del>Electives</del>	<del>6</del>	
	<b>Footnotes</b>		
	<sup>1</sup> Alternative to MATH 201 and 202 is MATH 171 and 220.		
	<sup>2</sup> For a total of 7 units—one Biological Science [BIOS] and one Physical Science [PSCI] UCORE course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].		
	<sup>3</sup> <u>Completion of one of the following concentration areas: (1) Commodity Marketing: ECONS 351, 451, 426; (2) Consumer Marketing: MKTG 360, 300/400 level MKTG course, 300/400 level MKTG course; (3) Management: MGMT 301, 300/400 level MGMT course, 300/400 level MGMT course; (5) Logistics: MGTOP 340, MGTOP 452, ECONS 426.</u>		
<b>Economic Sciences</b> Revise graduation requirements for	Environmental and Resource Economics (120 Hours)		<b>8-13</b>
	<b>First Year</b> <b><i>First Term</i></b>		<b><i>Hours</i></b>

option in Environmental and Resource Economics	ECONS 101 [SSCI] or 102 [SSCI]	3
	<del>ENGLISH 101 [WRTG]</del>	<del>3</del>
	HISTORY 105 [ROOT]	3
	Humanities [HUM]	3
	MATH 201 <sup>1</sup>	3
	Electives	3
	<b>Second Term</b>	<b>Hours</b>
	Biological Sciences [BSCI] or SCIENCE 101 [SCI] <sup>2</sup>	3 or 4
	<u>ECONS 101 or 102</u>	3
	<u>ENGLISH 101 [WRTG]</u>	3
	<del>Humanities [HUM]</del>	<del>3</del>
	MATH 202 [QUAN] <sup>1</sup>	3
	Electives	3
	<b>Second Year</b>	
	<b>First Term</b>	<b>Hours</b>
	COM 102 , <u>COM 210, or H D 205 [COMM]</u>	3 or 4
	Diversity [DIVR]	3
	ECONS 301	3
	<u>ECONS 322 [M]</u>	3
	Physical Sciences [PSCI] or SCIENCE 102 [SCI] <sup>2</sup>	3 or 4
	<del>Electives</del>	<del>3</del>
	<b>Second Term</b>	<b>Hours</b>
	Creative & Professional Arts [ARTS]	3
	ECONS 302	3
	<del>ECONS 322 [M]</del>	<del>3</del>
	STAT 212 or MGTOP 215	4
	<u>Concentration Area Course<sup>4</sup></u>	3
	Electives	2 <del>3</del>
	Complete Writing Portfolio	
	<b>Third Year</b>	
	<b>First Term</b>	<b>Hours</b>
	ECONS 300-400-level Elective	3
	ECONS 311 [M]	3
ECONS 330	3	
<u>Concentration Area Course<sup>4</sup></u>	3	
Electives	<del>6</del> <u>3</u>	
<b>Second Term</b>	<b>Hours</b>	
ECONS 326	3	
<del>ECONS 432</del>	<del>3</del>	

	<u>ECONS 300-400-level Elective</u> 3 <u>Concentration Area Course</u> <sup>4</sup> 3 Electives 9 6  <b>Fourth Year</b> <b><i>First Term</i></b> <b><i>Hours</i></b> <u>ECONS 427</u> 3 ECONS 430 3 ECONS 431 3 ECONS 483, 495, 497, 499, <u>or HONORS 450</u> 3 <u>ENGLISH 402</u> 3 <u>Environmental Option Course</u> <sup>3</sup> 3 Electives 3 <b><i>Second Term</i></b> <b><i>Hours</i></b> <del>ECONS 300-400-level Elective</del> 3 ECONS 490 [M] 3 <u>ENGLISH 402</u> 3 <u>Environmental Option Course</u> <sup>3</sup> 3 Integrative Capstone [CAPS] 3 Electives 5 3	
	<b>Footnotes</b> <sup>1</sup> Alternative to MATH 201 and 202 is MATH 171 and 220. <sup>2</sup> For a total of 7 units—one Biological Science [BIOS] and one Physical Science [PSCI] UCORE course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI]. <sup>3</sup> <u>Environmental Option courses: ENVR SCI 310, ENVR SCI 444, NATRS 204, SOIL SCI 368</u> <sup>4</sup> <u>Three courses from any one of the following concentration areas: (1) Human Health &amp; the Environment: ANTH 405, CE 341, ENVR SCI 402, ENVR SCI 445, IPM 452, PHIL 370; (2) Global Environment: CROP SCI 360, ENVR SCI 285, ENVR SCI 335, GEOLOGY 315, HISTORY 494, PHIL 370, SOC 332; (3) Renewable Resources: Forest, Wildlife &amp; Biosystems: BIOLOGY 330, BIOLOGY 401, CROP SCI 411, NATRS 300, NATRS 301, NATRS 312, PHIL 370; (4) Non-Renewable Resources: Energy &amp; Minerals: GEOLOGY 340, GEOLOGY 350, GEOLOGY 470, PHIL 370, PHYSICS 380; (5) Independent Concentration - upon approval of advisor (choose 3 courses).</u>	
<b>Economic Sciences</b> Revise graduation requirements for option in Financial Markets	<b>Financial Markets(120 Hours)</b>  <b>First Year</b> <b><i>First Term</i></b> <b><i>Hours</i></b> ECONS 101 [SSCI] or 102 [SSCI] 3 <u>ENGLISH 101 [WRTG]</u> 3 HISTORY 105 [ROOT] 3 <u>Humanities [HUM]</u> 3 MATH 201 <sup>1</sup> 3 Electives 3	



<b><i>Second Term</i></b>	<b><i>Hours</i></b>
Biological Sciences [BSCI] or SCIENCE 101 [SCI] <sup>2</sup>	3 or 4
ECONS 101 or 102	3
<u>ENGLISH 101 [WRTG]</u>	<u>3</u>
<del>Humanities [HUM]</del>	<del>3</del>
MATH 202 [QUAN] <sup>3</sup>	3
Electives	3
<b>Second Year</b>	
<b><i>First Term</i></b>	<b><i>Hours</i></b>
ACCTG 230	3
COM 102 [COMM], <u>COM 210 [COMM]</u> , or H D 205 [COMM]	3 or 4
ECONS 301	3
MIS 250	3
Physical Sciences [PSCI] or SCIENCE 102 [SCI] <sup>2</sup>	3 or 4
<b><i>Second Term</i></b>	<b><i>Hours</i></b>
ACCTG 231	3
Creative & Professional Arts [ARTS]	3
ECONS 302	3
MGTOP 215	4
Electives	2
<b>Third Year</b>	
<b><i>First Term</i></b>	<b><i>Hours</i></b>
Diversity [DIVR]	3
ECONS 311 [M]	3
ECONS 320	3
<u>ECONS 322</u>	<u>3</u>
Electives	<del>6</del> <u>3</u>
<b><i>Second Term</i></b>	<b><i>Hours</i></b>
ECONS 300-400-level Elective	3
<u>ECONS 420</u>	<u>3</u>
FIN 325	3
<u>Financial Markets Option Required Course</u>	<u>3</u>
Electives	<del>9</del> <u>3</u>
<b>Fourth Year</b>	
<b><i>First Term</i></b>	<b><i>Hours</i></b>
ECONS 300-400-level Elective	3
<del>ECONS 420</del>	<del>3</del>
ECONS 483, 495, 497, <del>or</del> 499, <u>or HONORS 450</u>	3

	ENGLISH 402 3 <u>FIN 421 or 427</u> 3 Electives 3 <b>Second Term</b> <i>Hours</i> <del>ECONS 300-400-level Option Elective</del> 3 ECONS 400-level Elective 3 <u>ECONS 425</u> 3 ECONS 490 [M] 3 <u>Financial Markets Option Required Course</u> 3 Integrative Capstone [CAPS] 3 <del>Electives</del> 3  <b>Footnotes</b> (No change)	
<b>Economic Sciences</b> Change name of option in Graduate School Preparation	<del>Graduate School Preparation-Quantitative Economics</del>	8-13
<b>Economic Sciences</b> Revise graduation requirements for option in Quantitative Economics	<u>Quantitative Economics</u> (120 Hours)  <b>First Year</b> <b>First Term</b> <i>Hours</i> ECONS 101 [SSCI] or 102 [SSCI] 3 <del>ENGLISH 101 [WRTG]</del> 3 HISTORY 105 [ROOT] 3 <u>Humanities [HUM]</u> 3 MATH 171 [QUAN] <sup>1</sup> 4 Electives 2 3 <b>Second Term</b> <i>Hours</i> Biological Sciences [BSCI] or SCIENCE 101 [SCI] <sup>2</sup> 3 or 4 ECONS 101 or 102 3 <u>ENGLISH 101 [WRTG]</u> 3 <del>Humanities [HUM]</del> 3 MATH 172 4 Electives 2 3  <b>Second Year</b> <b>First Term</b> <i>Hours</i> COM 102 [COMM] or H D 205 [COMM] 3 or 4	8-13

Diversity [DIVR]	3
ECONS 301	3
<u>ECONS Emphasis Course</u> <sup>3</sup>	3
<del>MATH 273</del>	<del>2</del>
Physical Sciences [PSCI] or SCIENCE 102 [SCI] <sup>2</sup>	3 or 4
<b><i>Second Term</i></b>	<b><i>Hours</i></b>
Creative & Professional Arts [ARTS]	3
ECONS 302	3
MATH 220 <sup>1</sup>	2
STAT 212 or MGTOP 215	4
<u>ECONS Emphasis Course</u> <sup>3</sup>	3
<u>Electives</u>	3
<i>Complete Writing Portfolio</i>	
<b>Third Year</b>	
<b><i>First Term</i></b>	<b><i>Hours</i></b>
ECONS 300-400-level Elective	<del>6</del> <u>3</u>
ECONS 311 [M]	3
<u>ECONS Emphasis Course</u> <sup>3</sup>	3
<u>Electives</u>	6
<del>MATH 301 or Elective</del>	<del>3</del>
MATH 315	3
<b><i>Second Term</i></b>	<b><i>Hours</i></b>
ECONS 300-400-level Elective	3
<u>ECONS 420</u>	3
<u>ECONS 424</u>	3
<del>MATH 401 or Elective</del>	<del>3</del>
Electives	<del>8</del> <u>6</u>
<b>Fourth Year</b>	
<b><i>First Term</i></b>	<b><i>Hours</i></b>
<del>ECONS 420</del>	<del>3</del>
ECONS 483, 495, 497, 499, or <u>HONORS 450</u>	3
<del>ECONS 525, STAT 360, or STAT 443</del>	<del>3</del>
ECONS 526	3
ECONS 527 or MATH 420	3
<u>ECONS 400-500 level Elective</u>	3
<u>Electives</u>	3
<b><i>Second Term</i></b>	<b><i>Hours</i></b>
ECONS 400- <u>500</u> level Elective	3
ECONS 490 [M]	3

<u>ECONS 525, STAT 360, or STAT 443</u>	3
ENGLISH 402	3
Integrative Capstone [CAPS]	3
<u>Electives</u>	<u>3</u>

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**Footnotes**

<sup>1</sup> MATH 171 and 220 are required.

<sup>2</sup> For a total of 7 units—one Biological Science [BIOS] and one Physical Science [PSCI] UCORE course, including one lab course, or 8 units of SCIENCE 101 [SCI] and 102 [SCI].

<sup>3</sup> Economics Emphasis Courses (3 courses required from one area): (1) Math: MATH 273, MATH 301, and MATH 315; (2) Management Operations: MGTOP 340, MGTOP 412, MGTOP 452; (3) Computer Science: CPT\_S 121, CPT\_S 122, CPT\_S 224