

REAL Curriculum Program Alignment Proposal

Department or School: Department of Information Technology Date: 3/16/2020

Degree type: BS BA BBA BSN BM BFA BSW Minor Certificate

Program: Computer Science and Technology

REAL Area Program Designation Sought (check all that apply): R E A L

Dept/School Contact: Art Carter, aecarter@radford.edu

Student concentrating in Computer Science must choose two courses from the following list (for a total of 7 or 8 credit hours): [ASTR 111](#):[ASTR 112](#); any Biology (except [BIOL 301](#):[BIOL 302](#)); any Chemistry; any Geology; any Physics (except [PHYS 111](#):[PHYS 112](#) and [PHYS 221](#):[PHYS 222](#) and [PHYS 231](#)); [PHSC 301](#).

Students concentrating in Database, Software Engineering, or Networks must choose two courses from the following list: [MATH 172](#); any 200-level or above Math course; [ASTR 111](#), [ASTR 112](#), any Biology (except [BIOL 301](#) and [BIOL 302](#)); any Chemistry; any Geology, [GEOS 250](#) or [ITEC 250](#), any Physics, or [PHSC 301](#).

BS/BA Requirements: _____

-
- Any degree program that fulfills a REAL area must include at least 9 unique credit hours for each area covered. At least 3 of these 9 credit hours must be at the 300 level or above
 - A single major degree program may fulfill no more than three REAL areas for any one student, unless all four REAL areas are fulfilled by accreditation or licensure requirements.
 - A single minor or certificate degree program may fulfill no more than two REAL areas.
 - Degree program may cover up to two REAL areas using a single prefix.
 - All courses documenting the coverage of a REAL area must fulfill all learning outcomes and be designated in that area.
 - All courses that document fulfillment of a REAL area within a degree program of study are NOT required to be taught by the department/school. However, departments/schools are expected to formally communicate with other departments about reliance on and inclusion of courses in their degree program plans of study. Indicate this through signature of chair or director of the partnering department or school in the areas below.
 - Departments or schools that seek to fulfill REAL areas must acknowledge assessment requirements for those areas. Assessment of degree seeking students is required to be conducted yearly by the department or school offering the degree program.
 - If departments or schools want to use a menu of courses to fulfill a particular area, please duplicate the sections below for each REAL area and include information for each course included in the menu of options.

01/14/2020

- Please save this file for submission as PROGRAM NAME_ProgramType.docx (Example: Criminal Justice_BS.docx)

By signing, the department/school acknowledges the above conditions and considerations:

Dept/School Signature	Date:
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Official Program Description:

Please paste the entire official program description from the Radford University catalog in the space within this box. Find those here: <https://catalog.radford.edu/>

Please note that every department/school will have to submit a catalog change proposal for program that asks the Registrar's Office to insert language about the program coverage of the REAL areas into the official Radford University catalog upon approval.

Degree Core Requirements (28-30 credits)

Information Technology (24 credits)

- [ITEC 120 - Principles of Computer Science I](#) *
- [ITEC 122 - Discrete Mathematics](#)
- [ITEC 110 - Principles of Information Technology](#) *
- [ITEC 220 - Principles of Computer Science II](#) *
- [ITEC 225 - Web Programming I](#) *
- [ITEC 324 - Principles of Computer Science III](#)
- [ITEC 345 - Introduction to Information Security](#) *
- [ITEC 490 - IT Professionalism](#)

Mathematics (4-6 credits)

- [MATH 171 - Calculus and Analytic Geometry I](#) **
- or
-
- [MATH 168 - Calculus I with Integrated Precalculus I](#) **
- and
- [MATH 169 - Calculus I with Integrated Precalculus II](#) **

Note(s):

* A grade of "C" or better is required in these courses for all department majors.

**This course has been approved for Core Curriculum credit in Mathematical Sciences.

Concentrations

Computer Science Concentration

In addition to the Core Curriculum, Degree Core, B.S. requirements, and electives, students in the Computer Science Concentration are required to complete the following:

Information Technology (24 credits)

- [ITEC 320 - Procedural Analysis and Design](#)
- [ITEC 352 - Computer Organization](#)
- [ITEC 360 - Data Structures and Analysis of Algorithms](#)
- [ITEC 370 - Software Engineering I](#)
- [ITEC 371 - Operating Systems](#)
- [ITEC 380 - Organization of Programming Languages](#)
- [ITEC 420 - Computability Theory and Formal Languages](#)

One course selected from the following:

- [ITEC 335 - Software Testing](#)
- [ITEC 340 - Database I](#)
- [ITEC 350 - Introduction to Computer Networking](#)
- [ITEC 410 - Modeling and Simulation](#)
- [ITEC 430 - Computer Graphics](#)
- [ITEC 460 - Translator Design and Construction](#)
- [ITEC 480 - Artificial Intelligence](#)

Mathematics (8 credits)

- [MATH 172 - Calculus and Analytic Geometry II](#)
- [STAT 301 - Probability and Statistics I](#)

Physics (8 credits)

- [PHYS 221 - Physics](#) *
- [PHYS 222 - Physics](#) *
-

*This course has been approved for Core Curriculum credit in Natural Sciences.

Graduation Requirements

Each student majoring in the Computer Science Concentration of the Computer Science and Technology degree must take the Major Field Test in Computer Science or an equivalent exam as determined by the department during her or his last semester. Each student majoring in the Computer Science Concentration of the Computer Science and Technology degree must earn a

grade of “C” or better in each information technology course applied toward the major. All majors require a minimum 2.0 GPA in the major in order to be eligible for graduation.

Database Concentration

In addition to the Core Curriculum, Degree Core, B.S. requirements, and electives, students in the Database concentration are required to complete the following:

Information Technology (27 credits)

- [ITEC 320 - Procedural Analysis and Design](#)
- [ITEC 325 - Web Programming II](#)
- [ITEC 340 - Database I](#)
- [ITEC 441 - Database II](#) (or ITEC 541)
- [ITEC 442 - Data Warehousing, Mining, and Reporting](#) (or ITEC 542)
- [ITEC 445 - Computer System and Database Security](#) (or ITEC 645)
- Plus 9 additional credit hours chosen from any 300 or 400-level ITEC courses (except [ITEC 301](#), [ITEC 304](#), [ITEC 307](#), [ITEC 369](#), [ITEC 381](#), [ITEC 395](#), [ITEC 398](#), [ITEC 466](#), [ITEC 493](#), [ITEC 495](#), [ITEC 496](#), [ITEC 497](#), or [ITEC 498](#)) or any 500 or 600-level ITEC course approved by the Department Chair.

Statistics (3-4 credits)

- [STAT 200 - Introduction to Statistics](#) or
- [STAT 301 - Probability and Statistics I](#)

Networks Concentration

In addition to the Core Curriculum, Degree Core, B.S. requirements, and electives, students in the Networks Concentration are required to complete the following:

Information Technology (27 credits)

- [ITEC 310 - Programming in C and Unix](#)
- [ITEC 340 - Database I](#)
- [ITEC 350 - Introduction to Computer Networking](#)
- [ITEC 352 - Computer Organization](#)
- [ITEC 371 - Operating Systems](#)
- [ITEC 451 - Network Design and Analysis](#)
- [ITEC 452 - Distributed Computing](#)
- [ITEC 455 - Applied Cryptography and Network Security](#)
- Plus 3 additional credit hours chosen from any 300 or 400-level ITEC courses (except [ITEC 301](#), [ITEC 304](#), [ITEC 307](#), [ITEC 369](#), [ITEC 381](#), [ITEC 395](#), [ITEC 398](#), [ITEC 466](#), [ITEC 493](#), [ITEC](#)

[495](#), [ITEC 496](#), [ITEC 497](#), or [ITEC 498](#)) or any 500 or 600-level ITEC course approved by the Department Chair.

Mathematics (3-4 credits)

- [STAT 301 - Probability and Statistics I](#) or
- [STAT 200 - Introduction to Statistics](#)

Software Engineering Concentration

In addition to the Core Curriculum, Degree Core, B.S. requirements, and electives, students in the Software Engineering Concentration are required to complete the following:

Information Technology (27 credits)

- [ITEC 320 - Procedural Analysis and Design](#)
- [ITEC 335 - Software Testing](#)
- [ITEC 370 - Software Engineering I](#)
- [ITEC 380 - Organization of Programming Languages](#)
- [ITEC 471 - Software Engineering II](#)
- [ITEC 472 - Software Engineering III](#)
- Plus 9 additional credit hours chosen from any 300 or 400-level ITEC courses (except [ITEC 301](#), [ITEC 304](#), [ITEC 307](#), [ITEC 369](#), [ITEC 381](#), [ITEC 395](#), [ITEC 398](#), [ITEC 466](#), [ITEC 493](#), [ITEC 495](#), [ITEC 496](#), [ITEC 497](#), or [ITEC 498](#)) or any 500 or 600-level ITEC course approved by the Department Chair.

SCIENTIFIC AND QUANTITATIVE REASONING

<p>R Area: Course Prefix: ITEC Course Number: 120 Course Title: Principles of Computer Science 1 Credit Hours: 4 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Projected student enrollment per academic year: 75</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>R Area: Course Prefix: ITEC Course Number: 220 Course Title: Principles of Computer Science II Credit Hours: 4 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Projected student enrollment per academic year: 50</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>R Area: Course Prefix: ITEC Course Number: 324 Course Title: Principles of Computer Science III Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input checked="" type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>R Designated Course Required within the Program of Study Approved for Inclusion in the General Education Coursework: (please list at least one, can also be listed above but does not need to be)</p> <p>ITEC 120 MATH 168, MATH 171</p>	

<p>R Area: Learning Goal: To apply scientific and quantitative reasoning to questions about the natural world, mathematics, or related areas.</p>	
<p>Learning Outcome 1: Students apply scientific and quantitative information to test problems and draw conclusions.</p>	<p>Description of learning outcome assessment plan:</p> <p>Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The</p>

	department's assessment committee will then continue monitoring the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.
Learning Outcome 2: Students evaluate the quality of data, methods, or inferences used to generate scientific and quantitative knowledge.	Description of learning outcome assessment plan: Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The department's assessment committee will then continue monitoring the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.
Additional information for REAL Council consideration:	

APPLIED LEARNING

L Area: Course Prefix: ITEC Course Number: 225 Course Title: Web Programming 1 Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year:	Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below) Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Area: Course Prefix: ITEC Course Number: 345 Course Title: Introduction to Security Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year:	Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below) Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:
L Area: (Computer Science and Software	Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.

<p>Engineering Concentrations</p> <p>Course Prefix: ITEC Course Number: 370 Course Title: Software Engineering I Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Projected student enrollment per academic year:</p>	<p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>L Area: (Networks Concentration)</p> <p>Course Prefix: ITEC Course Number: 350 Course Title: Introduction to Computer Networking Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>L Area: (Database Concentration)</p> <p>Course Prefix: ITEC Course Number: 340 Course Title: Database 1 Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>L Designated Course Required within the Program of Study Approved for Inclusion in the General Education Coursework: (please list at least one, can also be listed above but does not need to be)</p>	

<p>L Area: Learning Goal: To explore professional practice through the application of knowledge, skills, and critical reflection.</p>	
<p>Learning Outcome 1: Students apply acquired knowledge and skills to develop professional identity or professional practice.</p>	<p>Description of learning outcome assessment plan:</p> <p>Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The department's assessment committee will then continue monitoring</p>

	the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.
Learning Outcome 2: Students critically reflect on their learning, abilities, experiences, or role within professional contexts.	<p>Description of learning outcome assessment plan:</p> <p>Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The department's assessment committee will then continue monitoring the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.</p>
Additional information for REAL Council consideration:	

Are existing material resources adequate to support this program alignment proposal?

Yes No If not, what additional material resources would be needed?

Are existing space resources adequate to support this program alignment proposal?

Yes No If not, what additional space resources would be needed?

Are existing human resources adequate to support this program alignment proposal?

Yes No If not, what additional human resources would be needed?

Department Curriculum Committee Recommendation:	Signature:	Date:
Chair/Dean on Behalf of Dept/School:	Signature:	Date:
College Curriculum Committee Approval:	Signature:	Date:
Dean/AVP Approval:	Signature:	Date:
REAL Council Recommendation:	Signature:	Date:
Faculty Senate Curriculum Committee Recommendation:	Signature:	Date:
Faculty Senate Approval:	Signature:	Date:
Provost Approval:	Signature:	Date:

REAL Curriculum Program Alignment Proposal

Department or School: Department of Information Technology Date: 3/16/2020

Degree type: BS BA BBA BSN BM BFA BSW Minor Certificate

Program: Information Science and Systems

REAL Area Program Designation Sought (check all that apply): R E A L

Dept/School Contact: Art Carter, aecarter@radford.edu

-
- [MATH 172 - Calculus and Analytic Geometry II](#)
 - Any 200-level or above Math course
 - [ASTR 111 - General Astronomy I](#)
 - [ASTR 112 - General Astronomy II](#)
 - Any Biology (except [BIOL 301](#) and [BIOL 302](#))
 - Any Chemistry
 - Any Geology
 - Any Physics
 - [GEOS 250 - Introduction to GIS \(T\)](#)
 - [PHYS 301 - Meteorology](#)

Note(s):

BS/BA Requirements: _____

-
- Any degree program that fulfills a REAL area must include at least 9 unique credit hours for each area covered. At least 3 of these 9 credit hours must be at the 300 level or above
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01/14/2020

- Please save this file for submission as PROGRAM NAME_ProgramType.docx (Example: Criminal Justice_BS.docx)

By signing, the department/school acknowledges the above conditions and considerations:

Dept/School Signature	Date:
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Official Program Description:

Please paste the entire official program description from the Radford University catalog in the space within this box. Find those here: <https://catalog.radford.edu/>

Please note that every department/school will have to submit a catalog change proposal for program that asks the Registrar's Office to insert language about the program coverage of the REAL areas into the official Radford University catalog upon approval.

Degree Core Requirements (64-65 credits)

Information Technology:

- [ITEC 110 - Principles of Information Technology](#)¹
- [ITEC 120 - Principles of Computer Science I](#)¹
- [ITEC 220 - Principles of Computer Science II](#)¹
- OR
- [ITEC 315 - Graphical User Interface Design and Implementation](#)¹
- [ITEC 225 - Web Programming I](#)¹
- [ITEC 281 - Data Management and Analysis with Spreadsheets](#)
- [ITEC 340 - Database I](#)
- OR
- [ITEC 304 - Database from the Manager's Perspective](#)
- [ITEC 345 - Introduction to Information Security](#)¹
- [ITEC 350 - Introduction to Computer Networking](#)
- OR
- [ITEC 205 - Data Communications and Networking](#)
- [ITEC 369 - Systems Analysis and Design](#)
- OR
- [ITEC 370 - Software Engineering I](#)
- [ITEC 395 - Information Technology Project Management](#)
- [ITEC 466 - Information Assurance Management](#)
- [ITEC 490 - IT Professionalism](#)
- [ITEC 495 - Information Systems Capstone](#)

Note(s):

1 - A grade of "C" or better is required in these courses for all information systems majors.

Business:

- [ACTG 211 - Fundamentals of Financial Accounting](#)
- [ACTG 212 - Fundamentals of Managerial Accounting](#)
- [ECON 205 - Principles of Macroeconomics](#) *
- [MGNT 322 - Organizational Behavior](#)

- [MGNT 333 - Business Analytics for Decision Making](#)
- [MGNT 357 - Operations Management](#)
- [MKTG 340 - Principles of Marketing](#)

Note(s):

*This course has been approved for Core Curriculum credit.

Math/Statistics:

- [MATH 126 - Business Calculus](#) *
- or
- [MATH 169 - Calculus I with Integrated Precalculus II](#)
- or
- [MATH 171 - Calculus and Analytic Geometry I](#) *
- [STAT 200 - Introduction to Statistics](#)
- or
- [STAT 301 - Probability and Statistics I](#)

Students must choose one of four concentrations from the following list:

Healthcare Information Systems, Information Systems and Decision Science, Information Systems and Web Development and Information Systems Security. See below for specific concentration requirements.

Concentrations

Healthcare Information Systems Concentration

In addition to the Core Curriculum, Department Core, B.S. requirements, and electives, students in the Healthcare Information Systems Concentration are required to complete the following:

Information Technology (9 credits)

- [ITEC 200 - Healthcare Information Systems](#)
- [ITEC 375 - Data Science](#)
- [ITEC 496 - ERP Systems for Healthcare](#)

Information Systems and Decision Science Concentration

In addition to the Core Curriculum, Department Core, B.S. requirements, and electives, students in the Information Systems and Decision Science Concentration are required to complete the following:

Information Technology (9 credits)

- [ITEC 375 - Data Science](#)
- [ITEC 485 - Decision Support Systems](#)
- [ITEC 497 - ERP Systems](#)

Information Systems and Web Development Concentration

In addition to the Core Curriculum, Department Core, B.S. requirements, and electives, students in the Information Systems and Web Development Concentration are required to complete the following:

Information Technology (9 credits)

- [ITEC 325 - Web Programming II](#)
- [ITEC 375 - Data Science](#)
- [ITEC 425 - Advanced Web Development](#)

Information Systems Security Concentration

In addition to the Core Curriculum, Department Core, B.S. requirements, and electives, students in the Information Systems Security Concentration are required to complete the following:

Information Technology (6 credits)

- [ITEC 445 - Computer System and Database Security](#)
- [ITEC 455 - Applied Cryptography and Network Security](#)

Criminal Justice (3 credits)

- [CRJU 412 - Security Administration and Crime Prevention](#)

SCIENTIFIC AND QUANTITATIVE REASONING

Students in all the ISAS concentrations must take either MATH 126, 169 or 171.	
<p>R Area: Course Prefix: MATH Course Number: 126 Course Title: Business Calculus Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year: 20</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>R Area: Course Prefix: MATH Course Number: 169 Course Title: Calculus 1 with Integrated Precalculus II Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year: 20</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>R Area: Course Prefix: MATH Course Number: 171 Course Title: Calculus and Analytic Geometry I Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year: 20</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
Every concentration in ISAS major must take either STAT 200 or STAT 301	
<p>R Area: Course Prefix: STAT Course Number: 200 Course Title: Introduction to Statistics Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>R Area: Course Prefix: STAT Course Number: 301 Course Title: Probability and Statistics 1 Credit Hours: 4 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>

<p>R Area: Course Prefix: MGNT Course Number: 333 Course Title: Business Analytics for Decision Making Credit Hours: New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below.</p> <p>Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below)</p> <p>Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other</p> <p>Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>R Designated Course Required within the Program of Study Approved for Inclusion in the General Education Coursework: (please list at least one, can also be listed above but does not need to be)</p>	

<p>R Area: Learning Goal: To apply scientific and quantitative reasoning to questions about the natural world, mathematics, or related areas.</p>	
<p>Learning Outcome 1: Students apply scientific and quantitative information to test problems and draw conclusions.</p>	<p>Description of learning outcome assessment plan:</p> <p>Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The department's assessment committee will then continue monitoring the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.</p>
<p>Learning Outcome 2: Students evaluate the quality of data, methods, or inferences used to generate scientific and quantitative knowledge.</p>	<p>Description of learning outcome assessment plan:</p> <p>Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The department's assessment committee will then continue monitoring the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.</p>
<p>Additional information for REAL Council consideration:</p>	

APPLIED LEARNING

<p>L Area: Course Prefix: ITEC Course Number: 225 Course Title: Web Programming I Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below) Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>L Area: Course Prefix: ITEC Course Number: 281 Course Title: Data Management and Analysis with Spreadsheets Credit Hours: New course: <input type="checkbox"/> Yes <input type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input type="checkbox"/> No Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below) Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>Every concentration in the ISAS program must take either ITEC 304 or 340.</p>	
<p>L Area: Course Prefix: ITEC Course Number: 304 Course Title: Database for Managers Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below) Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>L Area: Course Prefix: ITEC Course Number: 340 Course Title: Database I Credit Hours: 3 New course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Revised course: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Projected student enrollment per academic year:</p>	<p>Is this course required or an elective for your degree program? <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective Is this course offered within your dept/school? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, collaborating dept/school must also complete the remaining elements, and must sign below. Course Rotation: <input checked="" type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Intersession <input type="checkbox"/> Other (Explain below) Intended Frequency: <input type="checkbox"/> Every academic year <input checked="" type="checkbox"/> Every semester <input type="checkbox"/> Every other year <input type="checkbox"/> At least once every three years <input type="checkbox"/> Other Signature of collaborating chair/director indicating acknowledgement for inclusion and designation if not offered in dept/school:</p>
<p>L Designated Course Required within the Program of Study Approved for Inclusion in the General Education Coursework: (please list at least one, can also be listed above but does not need to be)</p>	

L Area:

Learning Goal: To explore professional practice through the application of knowledge, skills, and critical reflection.	
Learning Outcome 1: Students apply acquired knowledge and skills to develop professional identity or professional practice.	<p>Description of learning outcome assessment plan:</p> <p>Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The department's assessment committee will then continue monitoring the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.</p>
Learning Outcome 2: Students critically reflect on their learning, abilities, experiences, or role within professional contexts.	<p>Description of learning outcome assessment plan:</p> <p>Data will be collected from the REAL General Studies Minor assessments conducted by the university in the student's senior year. Once the data is received in the department the department's assessment committee will review the data to determine if corrective action is necessary. If needed the assessment committee will develop an improvement plan in combination with faculty teaching classes in this area and the department's curriculum committee. The agreed upon changes will be incorporated into the classes. The department's assessment committee will then continue monitoring the collected assessment data to determine the effectiveness of the corrective action and determine further actions if necessary.</p>
Additional information for REAL Council consideration:	

Are existing material resources adequate to support this program alignment proposal?

Yes No If not, what additional material resources would be needed?

Are existing space resources adequate to support this program alignment proposal?

Yes No If not, what additional space resources would be needed?

Are existing human resources adequate to support this program alignment proposal?

Yes No If not, what additional human resources would be needed?

Department Curriculum Committee Recommendation:	Signature:	Date:
Chair/Dean on Behalf of Dept/School:	Signature:	Date:
College Curriculum Committee Approval:	Signature:	Date:
Dean/AVP Approval:	Signature:	Date:
REAL Council Recommendation:	Signature:	Date:
Faculty Senate Curriculum Committee Recommendation:	Signature:	Date:
Faculty Senate Approval:	Signature:	Date:
Provost Approval:	Signature:	Date: