BYU Hawaii Curriculum Proposal Number **[16-22 v1]**

Section 1 - Approvals

Approvals

Name of Proposal: InfoSys-MRS-16-22

Submitted by: Stuart L. Wolthuis Signature: Stuart L. Wolthuis

Date: 4 Oct 2016

Procedure	Recommendation/Signature	Date
Faculty Vote: For [7], Against [0], Abstain [0], Absent [0[1]]		
1. Approved by CIS Department	Signature: Stuart L. Wolthuis Chair: **Stuart L. Wolthuis**	1 May 17
2. Approved by Willes Center (ENTR)	Signature: Chair: **Jason Earl**	5/3/17
3. Approved by ACCT Department	Signature: Jennifer Chen Chair: **Jennifer Chen**	May/03/2017
4. Approved by BUSM Department	Signature: Cary C. Countryman Chair: **Cary Countryman**	5/3/17
5. Approved by College	Signature: Dean: **James D. Lee**	5/3/2017
6. Approved by General Education (if any GE course is affected)	Signature: N/A GE: **Russel Carlson**	
7. Approved by University Curriculum Committee	Signature: UCC: **Jennifer Lane**	5/8/17
8. Approved by Deans' Council	Signature: N/A AVP: **John Bell**	
9. Approved by the President's Council (for new majors)	Signature: N/A Pres: **John Tanner**	

1

Section 2 – Overview (Support)

Summary: Proposal summary for the Information Systems MRS:

- Remove CIS 401, Web Application Programming (3), as a core requirement
- Add IS 450, Advanced Database Topics (3), as a core requirement
- Update the Fundamental Skills "Minor" Environment (where IS can be applied) **15 credits**:
  - Require the following class under the Fundamental Skills "Minor" **3 credits**:
    - ACCT 201 (3) Introduction to Financial Accounting (no change)
  - Allow the following list of choices under the Fundamental Skills "Minor", students must complete at least **12 credit hours**:
    - ACCT 203 (3) Introduction to Managerial Accounting
    - ECON 200 (3) Principles of Microeconomics
    - ECON 201 (3) Principles of Macroeconomics
    - ENTR 180 (2) The Cycle of Cash
    - ENTR 283 (3) Small Business Creation
    - ENTR 285 (3) Introduction to Digital Marketing (in proposal status)
    - ENTR 375R (1) Entrepreneurship Lecture Series
    - ENTR 383 (3) Entrepreneurship and Small Business Management
    - ENTR 385 (3) Applied Entrepreneurship Skills
    - BUSM 180 (3) Introduction to Commerce and Enterprise
    - BUSM 304 (3) Principles of Marketing Management
    - BUSM 308 (3) Entrepreneurship Practicum
    - BUSM 310 (3) Leadership in Management
    - BUSM 320 (3) Business Communication
    - BUSM 342 (3) Ethics in the Legal Environment of Business
    - BUSM 361 (3) Operations Management

The information systems bachelor's degree got its start at BYU-Hawaii in 1983, prior to that time we had an Associates degree in computer science established in 1980; the first computer science course was offered in 1975 focusing on algorithms for the use of calculators in science classes.

Some Definitions:

Information Systems bridge technology with an application area (such as business). IS Majors design, plan, and manage the creation of new systems and the re-design of existing systems. Their primary goal is to leverage technology to make organizations run smoother, faster, and more efficiently using technology. IS grads also design and manage databases and larger aggregations of databases called datamarts or datawarehouses.

Computer Science studies algorithms and software development to solve complex problems in science, business, math, medicine, transportation, entertainment, and every other imaginable place. Your favorite animated movie looks realistic due to amazing and complex computer science solutions that make water in "Moana" look real and the hair on James P. Sullivan in "Monsters, Inc." flow with his movements.

Information Technology is typically the hardware side of computing, but its much more with the programming and management of embedded systems (chips and sensors running an autonomous car), optimization and design of enormous server farms (which populate "the cloud"), keeping your data safe and secure with cyber security … this list is growing faster than we can imagine as the Internet of Everything continues to grow.

All three majors, CS, IS, & IT, have many skill sets (knowledge areas) that overlap and graduates are expected to engage in life-long learning to hone their skills. Common foundational knowledge for all three majors includes basic program, logic, and networking. Software engineering, data-base, and ethics serve as additional advanced common knowledge areas.

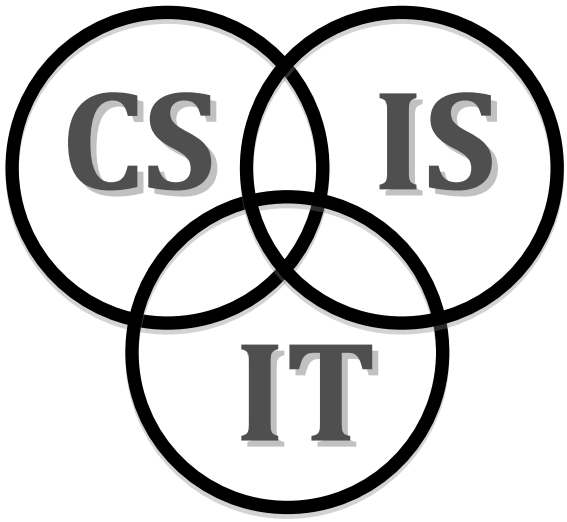


Figure 1

Background:

As a department, CIS has decided to discontinue **CIS 401, Web Application Programming** (3), as a core requirement for all majors based on consistent feedback from our student surveys and input from our graduates working in industry. CS students need deeper web application principles, IT majors have a very difficult time trying to fathom programming principles in this CS class, and IS majors are in "three bears mode" with many finding it "just right" but not beneficial for a long term relationship with their professional direction.

CIS 401 will be re-tooled as CS 401, specifically designed for our computer science majors. (See Curriculum Proposal 16-25, POC: Chris Slade).

The **Advanced Database Topics course, IS 450** (3), has a long reputation as a valuable class for our students and was an optional elective; given the tsunami of information flooding our world and the need to understand patterns, relationships, and networks inside of ever

increasing data sets we feel the class' skill set is essential and **should be required** for Information System majors. Students who take IS 350, Database Management Systems (3) and IS 450, Advanced Database Topics (3), could also take a class that is currently under design: IS 460, Big Data (3), to round out the skills needed for data science. IS 460 will be an elective, other electives for IS majors include a cyber security direction: IT 481 and IT 482. The data science discipline is a very hot commodity and will continue to grow as the "Internet of Everything" captures more and more data from the world around us

Fundamental Skills "Minor" in an Environment where IS can be applied needs expansion to catch up with the dynamic and entrepreneurial nature of our world. The number of organizations leveraging technology is staggering and without it an organization finds itself left in the dust by competitors.

Next Five Years:

All though crystal balls are usually right only 50% of the time when given a yes/no question, we do have data that suggests that our department is headed in the right direction. We're growing our data science and cyber security areas with new minors in both of these areas. For this proposal, the relevant discussion notes that Information Systems covers software engineering, MIS (management information systems), computer and network architecture, database design/management, systems analysis and design, ALL project double digit growth over the next 10 years. Our next effort is underway with the final development of a class for Big Data which will equip our students with talents suited for the booming data science and analysis industry. This class was developed as a 390R class and will be an elective for all CIS majors.

Controversies: none

Student and Faculty Load:

The number of credit hours required for the IS major stays the same, no change.

We're hoping there will be an increase in the number of students pursuing the IS major. In the spirit of full-disclosure, our last Program Review Committee recommended discontinuing the IS Major. Our department reviewed this recommendation and determined there were no advantages to doing this since all the classes for the IS Major are offered for the other majors in our department. Prior to 2008 the IS major encompassed many of the classes now required for the IT major and IS had the highest enrollment. Note the IS trend line change when the IT major was introduced.

Number of Graduates by Major

	CS	IS	IT	
2005	8	60	0	68
2006	11	48	0	59
2007	16	25	0	41
2008	5	31	1	37
2009	4	28	5	37
2010	4	12	11	27
2011	5	12	12	29
2012	5	9	17	31
2013	10	11	9	30
2014	6	7	19	32
2015	10	3	7	20
2016	7	3	16	26
2017				
2018				
Total	91	236	97	424

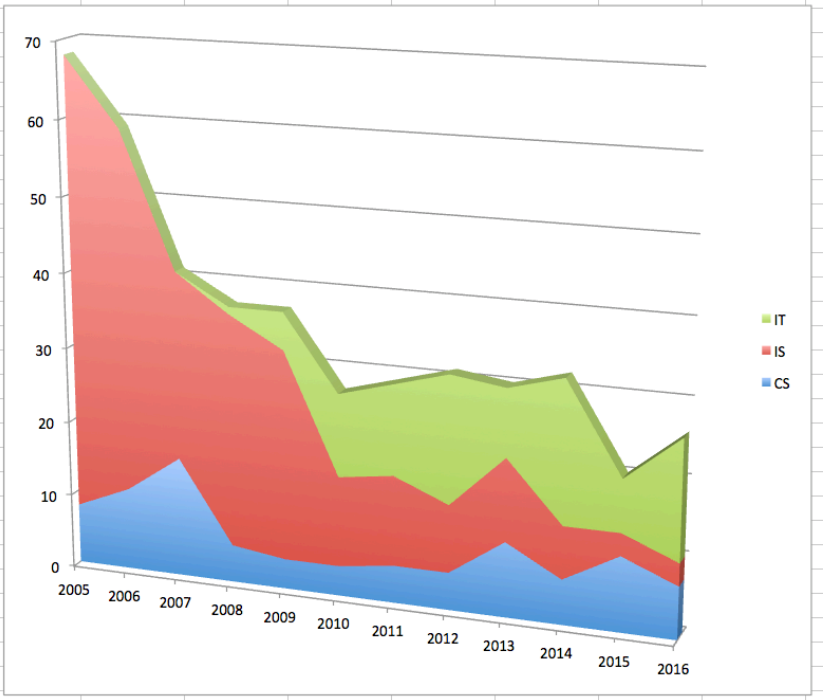


Figure 2: CIS Enrollment by Major from 2005 to 2017

The dip in 2014 is due, in part, to the missionary age change in Fall of 2012. Many of our potential students chose to serve missions and our numbers are increasing as they complete their missions and continue to return to BYUH.

Student feedback has very clearly told us the business core classes in the current IS MRS were a deterrent to the IS experience, hence this proposal to increase the choices for the fundamental skills "minor" - we know students crave choice and the addition of more BUSM and the addition of ENTR classes should satisfy this desire and will meet the intent and guidelines of the IS program as outlined in our Information Systems governing document from the Association for Computing Machinery: "IS 2010 Curriculum Guidelines for Undergraduate Degree Programs in Information Systems". It is vital to note the following monumental changes in technology as outlined in the ACM document:

"There has been a great deal of change in technology and industry practices. This major contextual change has several factors driving it, including:

1. Complex globally distributed information systems development – The skills needed by IS graduates have to work globally changed significantly. Increasingly, many IS jobs require skills in working with colleagues and development team members around the world. Further, for business school graduates capabilities in the management of globally distributed development resources are increasingly in demand.

2. Web technologies and development – Mature modeling, management and development platforms for the Web environment have become a core part of IS development.

3. Emergence of a new architectural paradigm – Service-oriented architecture, Web services, software-as-a-service, and cloud computing are all important elements in the new way of organizing the fundamental architecture for computer-based systems and solutions that is gradually becoming the dominant paradigm of organizational computing.

4. ERP/packaged software – Information systems and business processes have become closely integrated, and increasingly often, core infrastructure applications are based on large-scale enterprise systems so that the focus has shifted from development to configuration and implementation.

5. Ubiquitous mobile computing – Global organizational life using a variety of devices has become dependent on mobile and ubiquitous platforms.

6. IT control and infrastructure frameworks – Frameworks and standards such as COBIT, ITIL, and ISO 17799 have become very important sources of guidance for IT/IS practices in organizations through governance models.

Another significant development in recent years is the "Internet of Things" or as CISCO calls it, the "Internet of Everything" in which network intelligence is added to provide "convergence, orchestration and visibility across previously disparate systems." (CISCO, Internet of Everything FAQ sheet, http://ioeassessment.cisco.com/learn/ioe-faq). The elements of the Internet of Things include: people, process, things, data. All these elements are inherently germane to the Information Systems major.

Another long-standing definition for an information system is: hardware, software, data, process, and people. For the purpose of context, some say the CS focus is software and data, while the IT emphasis is hardware -- IS merges all five.

Changes in Graduation Requirements:

The total number of graduation credits remains the same for the Information Systems major.

In the Core Requirements: CIS 401 is being deleted and substituted with IS 450 Advanced Database Topics.

For the 'Fundamental Skills "Minor" in an Environment where IS can be applied', the number of courses students can select from is being increased. ACCT 201 will be required, and 16 other ACCT, BUSM, ECON, and ENTR courses will offer the students more choices.

The following map shows a typical IS student's path following the prerequisite relationships and course offerings in the CIS department and the Spanish and Chemistry minors. New BUSM and ENTR choices are used with an aggressive schedule each semester. This could easily be relaxed into more semesters.

Full Time Status:	12			12			8		
An Information Systems Major minoring in Spanish / Chemistry / Religion									
Fall 2017	CH	Freq	**Winter 2018**			**Spring 2018**			
CIS 101 Beg Prog	3	FWS	CIS 202 ObjOriented Prog	3	FWS	ACCT 201 Intro Financial Acct'ing	3	FWS	
IT 224 Comp HW & Sys SW	3	FWS	IT 240 Fund of Web Des & Tech	3	FWS	CIS 200 Fund IS&Tech	3	FWS	
BUSM 180 Intro to Commerce/Enter	3	FWS	IT 280 Data Comm Sys & Ntwrks	3	FWS	SPAN 201 Int Span Conv/Gram I	4	WS	
REL 121 Intro Book of Mormon I	2	FWS	CIS 205 Discrete Math I	3	FWS	REL 275 Teachings & Doc of BoM	2	FWS	
GE ENG 101 College WritingReading	3	FWS	REL 122 Intro Book of Mormon II	2	FWS	--	0	0	
--	0	0	--	0	0	--	0	0	
--	0	0	--	0	0	--	0	0	
--	0	0	--	0	0	--	0	0	
	14			14			12		40
Fall 2018			**Winter 2019**			**Spring 2019**			
CIS 305 Sys Eng I	3	FW	CIS 405 Sys Eng II	3	WS	IS 485 Proj Mgt and Practice	3	FS	
IS 350 DB Systems	3	FW	MATH 119 Applied Calculus	4	W	IS 450 Advanced DB Topics	3	S	
MATH 221 Principles of Statistics I	3	FWS	BUSM 320 Business Communication	3	FWS	BUSM 310 Leadership & Mgt	3	FWS	
SPAN 202 Int Spanish II	3	F	CHEM 105/L Gen College Chem I	4	WS	CHEM 106/L Gen College Chem II	4	FS	
REL 211 The New Testament I	2	FWS	REL 212 The New Testament II	2	FWS	CHEM 201 Chemical & Lab Safety	1	FWS	
CHEM 201 Chemical & Lab Safety	1	FWS	--	0	0	--	0	0	
--	0	0	--	0	0	--	0	0	
--	0	0	--	0	0	--	0	0	
	15			16			14		45
Fall 2019			**Winter 2020**			**Spring 2020**			
IS 430 ITS - ERP	3	FW	IS 435 Adv Cncpts ERP Sys	3	W	IS 440 Adv Topics SAP/ERP Sys	3	S	
BUSM 342 Business Law & Ethics	3	FWS	SPAN 441 Survey of Spanish Lit	3	W	CIS 470 Ethics in Comp/IS	2	FS	
CHEM 326/L Analytical Instr Lab	4	F	CHEM 351/L Org Chem I	4	W	CHEM 352/L Org Chem II	4	S	
SPAN 321 Adv Gram/Composition	3	F	REL 261 Famly History	2	FW	SPAN 393 Business Spanish	3	S	
REL 250 Jesus Christ & Ev'ristg Gospe	2	FWS	GE ENG 315 Topic Adv Wrtg/Analysis	3	FWS	IS 400 IS Proficiency	0	FWS	
--	0	0	--	0	0	--	0	0	
--	0	0	--	0	0	--	0	0	
--	0	0	--	0	0	--	0	0	
	15			15			12		42
						Total:			127

Figure 3: Sample MAP for an IS Major, minoring in Spanish, Chemistry, and Religion

Note regarding "Advanced Content Area Electives, Group 1:" (6 hours)

Information Systems majors may choose electives that uniquely prepare them for very marketable career paths.

Students interested in cyber security could complete:

IT 481 Information Assurance and Security (3)

IT 482 Advanced Topics in Information Assurance and Security (3)

A second path is Enterprise Resources Systems (the art and science of integrating the business value chain [inbound logistics/manufacturing/outbound logistics/marketing & sales/customer service] with complex information systems):

IS 435 Advanced Concepts in Enterprise Resource Planning (ERP) Systems (3)

IS 440 Advanced Topics in SAP ERP Systems (3)

Students who accomplish this path may also choose to attend TERP10, an intense 2-week summer class at BYUH. Graduates with TERP10 Certification leave BYUH with a golden arrow in their quiver.

Computer science courses are also available to our Information Systems majors as electives but are not typically chosen by our IS majors since CS 200-level prerequisites would also need completion first.

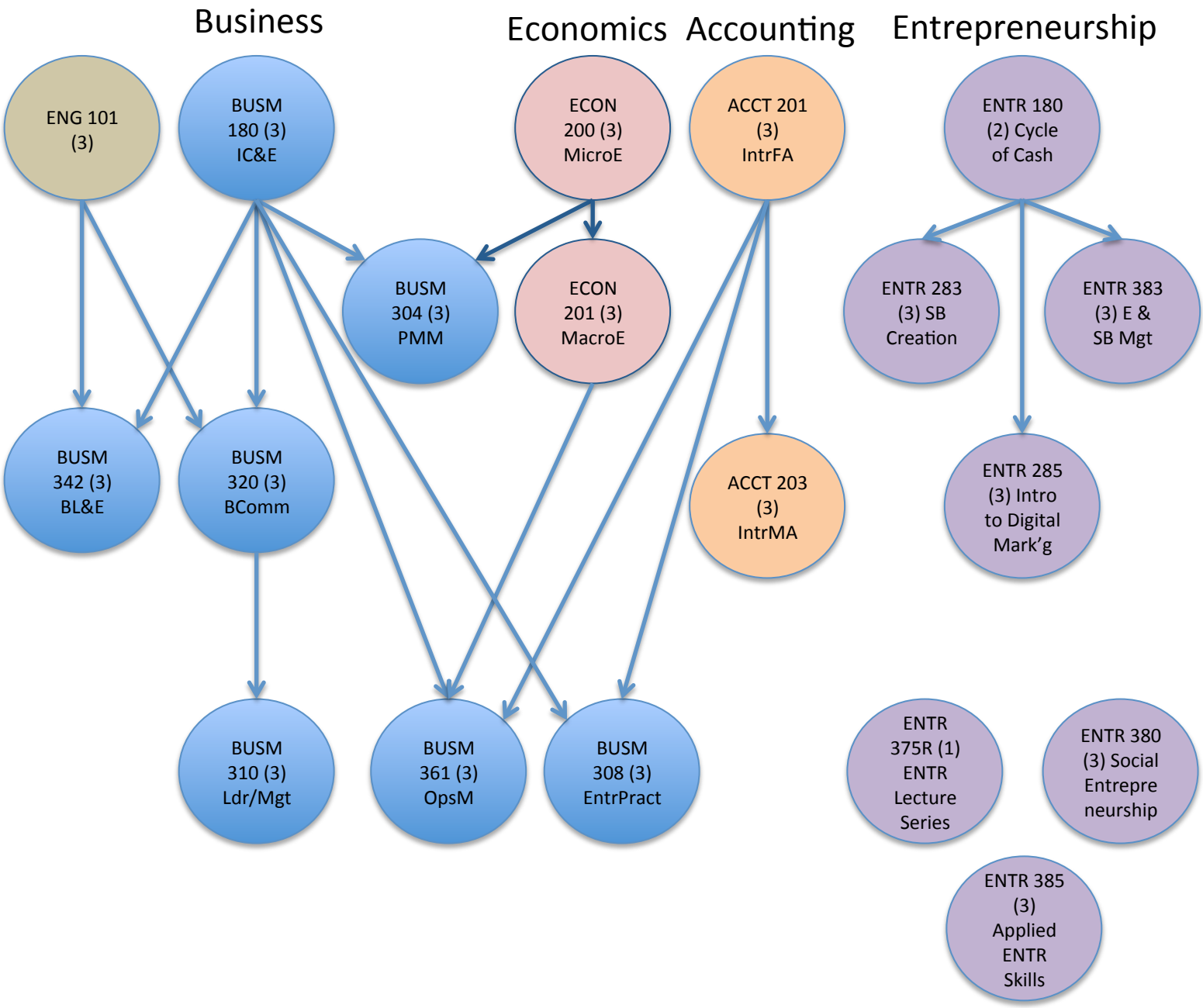
Other combinations of electives are available (IS majors complete the required electives for each of these choices as part of their required coursework):

IT 320 Linux Essentials (3) followed by IT 420 Linux Systems Administration (3)

IT 426 Computer Network Services (3) followed by IT 427 Window Desktop Configuration (3)

IT 440 Foundations of Human-Computer Interaction (3)

IT 480 Computer Network Design (3)



Prerequisite Flow for IS Fundamental Area Classes

Note: Students taking ENTR classes would be expected to take ENTR 180 and ENTR 375R, then select four other 3 credit classes from the enitre list above following correct prerequisite rules.

Section 3 - Program Revision Proposal

Upon approval, the information presented on this course proposal sheet will become binding on the department and the university. Any material changes require a new program proposal.

Effective Date: 1 June 2017

College: the College of Business, Computing & Government

Abbreviation: IS (Information Systems)

Previous MRS: ISBS.2009 (MRS 826)

B.S. in Information Systems

ISBS.~~2009~~ (mrs 826) 2017

~~64-67~~ credits, incl. ~~6-8~~ GE credits 3

65-67

Effective Date: ~~12/2009~~

Name of Student:			
Student ID #:		Graduation Date	
Home Country:		☐ WORK	
Advisor:	Name	Date	

Required courses for admission to the major — **18 Credits**

Course #	Title	Hr.	Prerequisites	Offered	Sem.	Grade
CIS 101	Beginning Programming	3		F,W,S		
CIS 200	Fundamentals of Info. Systems & Tech.	3		F,W,S		
CIS 202	Object-Oriented Programming I	3	CIS 101	F,W,S		
IT 224/L	Computer Hardware & Systems	3		F,W,S		
IT 240	Fundamentals of Web Design & Technology	3		F,W,S		
IT 280	Data Comm. Systems and Networks	3		F,W,S		

To be accepted in to this major, you must pass CIS 100/200 with a B- or better and all other courses listed above with a C or better. You must also have a cumulative GPA of 2.0 or higher. I understand that **One retake is allowed per class, for up to three classes. Additional retakes require special permission**. I understand that if I exhaust my repeats, I risk the chance of not being able to continue in the major or any other major in the CIS department. Please acknowledge that you understand this policy by signing below.

Academic Advisor ____ Date ____ Student ____ Date ____ Accepted into the major: CS Program Chair ____ Date ____

Core Requirements — **26 Credits**

Classes marked "MO" are for admitted majors only.

ADD in IS 450 Adv DB Topics (3)

CIS 205	Discrete Mathematics I (GenEd)	3	CIS 101		F,W,S		
CIS 305	Systems Engineering I	3	CIS 205, Co/Prereq: IS 350	MO	F,W		
~~CIS 401~~	~~Web Application Programming~~	~~3~~	~~CIS 101, IT 240, or CS 307, and IS 350~~	~~MO~~	~~F,W,S~~		
CIS 405	Systems Engineering II	3	CIS 305	MO	W,S		
CIS 470	Ethics in Computer & Information Sciences	2	CIS 405 or Senior Standing	MO	F,S		
IS 350	Database Management Systems	3	CIS 101	MO	F,W		
IS 400	Information Systems Proficiency	0			F,W,S		
IS 430	ITS- Enterprise Resource Planning	3	Jr. or Sr. standing in CIS, BUSM or ACCT	MO	F,W		
IS 485	Project Management & Practice	3	CIS 401, CIS 405, IS 400	MO	F,S		
MATH 221	Principles of Statistics I (GenEd) (MATH 321 or PSYCH 205 may substitute for MATH 221)	3			F,W,S		

Advanced Content Area Electives — **9-11 Credits**

GROUP 1: Any additional 400-level courses in CS, IS or IT or by permission. (6 Hours)

GROUP 2: Choose one. (3-5 hours). *Note: Many Master's Programs require incoming students to have completed calculus.*

MATH 112	Calculus I (GenEd)	5	MATH 111 or equivalent		F,W,S		
MATH 119	Applied Calculus (GenEd)	4	MATH 110 experience		W		
CIS 206	Discrete Math II	3	CIS 205, CIS 202		W		

Fundamental Skills "Minor" in an Environment where IS can be applied — **15 Credits**

IS professionals must understand their chosen employment environment and prepare to function effectively in it. Each student must complete at least 15 credits in a cohesive body of course work for such an environment. ADD MORE CHOICES

ACCT 201	Introduction to Financial Accounting	3			F,W,S		
~~ACCT 203~~	~~Introduction to Managerial Accounting~~	~~3~~	~~MATH 106/110 or higher (not MATH 221) or pass BMQT** or ACT math 22+ or SAT math 500+ AND ACCT 201 w/C- or better AND ACCT 231~~		~~F,W,S~~		
~~ECON 200~~	~~Principles of Microeconomics~~ (GenEd)	~~3~~	~~MATH 110 or Pass BMQT** or MATH 221 or ACT Math Score of 24 or SAT Math Score of 590~~		~~F,W,S~~		
~~ECON 201~~	~~Principles of Macroeconomics~~	~~3~~	~~ECON 200~~		~~F,W,S~~		
~~BUSM 242~~	~~Ethics and the Legal Environment of Business~~	~~3~~	~~BUSM 130, ENGL 101~~		~~F,W,S~~		

Total Credits Mapped for Graduation: MATH 3 or 5

68 70

- 3 MATH GE -3 -3

65 67

1. One D+, D, D- is allowed above. All other credits must be C- or better.
2. One retake is allowed per class, for up to three classes. Additional retakes require special permission.
3. A department-approved assessment test must be taken during your last full semester at BYUH, and is recommended annually.

The terms of this MRS will be honored by the Department and University within the next 8 years. If courses cease to be offered, options for substitution will be provided.

B.S. in Information Systems

ISBS.2017 (mrs)

~~64~~ 65-67 credits~~, incl. 6-8 GE credits~~

Effective Date: 09/2017

Name of Student:		
Student ID #:		Graduation Date
Home Country:		☐IWORK
Advisor:	Name	Date

Required courses for admission to the major — 18 Credits

Course #	*Title*	*Hr.*	*Prerequisites*	*Offered*	*Sem.*	*Grade*
CIS 101	Beginning Programming	3		F,W,S		
CIS 200	Fundamentals of Info. Systems & Tech.	3		F,W,S		
CIS 202	Object-Oriented Programming I	3	CIS 101	F,W,S		
IT 224/L	Computer Hardware & Systems	3		F,W,S		
IT 240	Fundamentals of Web Design & Technology	3		F,W,S		
IT 280	Data Comm. Systems and Networks	3		F,W,S		

To be accepted in to this major, you must pass CIS 100/200 with a B- or better and all other courses listed above with a C or better. You must also have a cumulative GPA of 2.0 or higher. I understand that **One retake is allowed per class, for up to three classes. Additional retakes require special permission**. I understand that if I exhaust my repeats, I risk the chance of not being able to continue in the major or any other major in the CIS department. Please acknowledge that you understand this policy by signing below.

Academic Advisor _____ Date _____ Student _____ Date _____ Accepted into the major: CIS Program Chair _____ Date _____

Core Requirements — 26 Credits

Classes marked "MO" are for admitted majors only.

CIS 205	Discrete Mathematics I ~~(GenEd)~~	3	CIS 101		F,W,S		
CIS 305	Systems Engineering I	3	~~CIS 205, Co/Prereq: IS 350~~ CIS 202	MO	F,W		
~~CIS 401~~	~~Web Application Programming~~	~~3~~	~~CIS 101, IT 240, or CS 301, and IS 350~~	~~MO~~	~~F,W,S~~		
CIS 405	Systems Engineering II	3	CIS 305, IS 350	MO	W,S		
CIS 470	Ethics in Computer & Information Sciences	2	~~CIS 405 or Senior Standing~~ ENGL 315 or ENGL 316 or equivalent	MO	F,S		
IS 350	Database Management Systems	3	CIS 101	MO	F,W		
IS 400	Information Systems Proficiency	0			F,W,S		
IS 430	ITS- Enterprise Resource Planning	3	Jr. or Sr. standing in CIS, BUSM or ACCT	MO	F,W		
IS 450	Advanced Database Topics	3	IS 350	MO	S		
IS 485	Project Management & Practice	3	~~CIS 401,~~ CIS 405~~, IS 400~~	MO	F,S		
MATH 221	Principles of Statistics I ~~(GenEd)~~ (MATH 321 or PSYCH 205 may substitute for MATH 221)	3			F,W,S		

Advanced Content Area Electives — 9-11 Credits

GROUP 1: Any additional 400-level courses in CS, IS or IT or by permission. (6 Hours)

GROUP 2: Choose one. (3-5 hours). *Note: Many Master's Programs require incoming students to have completed calculus.*

MATH 112	Calculus I ~~(GenEd)~~	5	MATH 111 or equivalent	F,W,S		
MATH 119	Applied Calculus ~~(GenEd)~~	4	MATH 110 experience	W		
CIS 206	Discrete Math II	3	CIS 205, CIS 202	W		

Fundamental Skills "Minor" in an Environment where IS can be applied — 15 Credits

IS professionals must understand their chosen employment environment and prepare to function effectively in it. Each student must complete at least 15 credits in a cohesive body of course work for such an environment. ACCT 201 is required, select 12 more credit hours from: ACCT 203, ECON 200, ECON 201, ENTR 180, ENTR 283, ENTR 285, ENTR 375R, ENTR 380, ENTR 383, ENTR 385, BUSM 180, BUSM 304, BUSM 308, BUSM 310, BUSM 320, BUSM 342, BUSM 361.

ACCT 201	Introduction to Financial Accounting	3		F,W,S		
~~ACCT 203~~	~~Introduction to Managerial Accounting~~	~~3~~	~~MATH 106/110 or higher (not MATH 221) or pass BMQT** or ACT math 22+ or SAT math 500+ AND ACCT 201 w/C- or better AND ACCT 231~~	~~F,W,S~~		
~~ECON 200~~	~~Principles of Microeconomics~~ ~~(GenEd)~~	~~3~~	~~MATH 110 or Pass BMQT** or MATH 221 or ACT Math Score of 24 or /SAT Math Score of 590~~	~~F,W,S~~		
~~ECON 201~~	~~Principles of Macroeconomics~~	~~3~~	~~ECON 200~~	~~F,W,S~~		
~~BUSM 242~~	~~Ethics and the Legal Environment of Business~~	~~3~~	~~BUSM 180, ENGL 201~~	~~F,W,S~~		

Total Credits Mapped for Graduation:

1. One D+, D, D- is allowed above. All other credits must be C- or better. _____
2. One retake is allowed per class, for up to three classes. Additional retakes require special permission. _____
3. A department-approved assessment test must be taken during your last full semester at BYUH, and is recommended annually. _____

The terms of this MRS will be honored by the Department and University within the next 8 years. If courses cease to be offered, options for substitution will be provided.

Section 5 - Course Proposal (core)

Upon approval, the information presented on this course proposal sheet will become binding on the department and the university. Any material changes require a new course proposal.

Effective Date: June 2017

College: Business, Computing & Government

Course Prefix: CIS / IS

Course Number: 305, 405, 470 / 485

[X] Prerequisites: CIS 305
Current: CIS 205, Co/Prereq: IS 350
Revised: CIS 202

[X] Prerequisites: CIS 405
Current: CIS 305
Revised: CIS 305, IS 350

[X] Prerequisites: CIS 470
Current: CIS 405 or Senior Standing
Revised: ENGL 315 or ENGL 316 or equivalent

[X] Prerequisites: IS 485
Current: IS 400, CIS 401, CIS 405
Revised: CIS 405

Computer & Information Sciences (CIS)

305. Systems Engineering I (3) (F, W) Systems planning and analysis from concept to requirements culminating at high-level design. Includes use of tools, modeling and generation of appropriate documentation. Uses team projects. Students are expected to take CIS 405 the following semester. (Prerequisite: CIS 202~~; Prerequisite or concurrent enrollment: IS 350.)~~

405. Systems Engineering II (3) (W, S) A continuation of CIS 305, usually taken the previous semester. Systems design, implementation, validation and maintenance. Uses team projects. (Prerequisite: CIS 305, IS 350.)

470. Ethics in Computer & Information Sciences (2) (F, S) Explores foundations of ethical behavior in the world of Internet and computer technology including property protection, crime, viruses, privacy, reliability, and work environments. (Prerequisite ~~or concurrent enrollment~~: ~~CIS 405 or Senior Standing~~. ENGL 315 or ENGL 316 or Equivalent)

Information Systems (IS)

485. Project Management and Practice (3) (F, S) Advanced students design and implement a significant information system. Project management, management of the IS function, and systems integration are components of the experience. (Prerequisites: ~~IS 400, CIS 401,~~ CIS 405.)

Computer & Information Sciences (Dept. Catalog Page)

B.S. Information Systems (65-67 ~~68~~ hours)

Admission Requirements (18 hours)

- CIS 101 Beginning Programming (3)
- CIS 200 Fundamentals of Information Systems & Technology (3)
- CIS 202 Object Oriented Programming (3)
- IT 224/L Computer Hardware and Systems Software (3)
- IT 240 Fundamentals of Web Design & Technology (3)
- IT 280/L Data Communications Systems and Networks (3)

Core Requirements (26 hours)

- CIS 205 Discrete Mathematics I (3)
- CIS 305 Systems Engineering I (3)
- ~~CIS 401 Web Application Development (3)~~
- CIS 405 Systems Engineering II (3)
- CIS 470 Ethics in Computer & Information Sciences (2)
- IS 350 Database Management Systems (3)
- IS 400 IS Proficiency (0)
- IS 430 Foundations in IT Services, Enterprise Systems, and ERP Skills (3)
- IS 450 Advanced Database Topics (3)
- IS 485 Project Management and Practice (3)
- MATH 221 Principles of Statistics I (3)

Advanced Content Area Electives (9-11 hours)

Advanced IS Group (6 hours)

Any additional 400 level courses in CS, IS or IT, or by permission.

Quantitative Group (3-5 hours)

Note: Many Master's Programs require incoming students to have completed calculus.

- Math 112 Calculus I (5) OR CIS 206 Discrete Math II (3) OR MATH 119 Applied Calculus (4)

Fundamental Skills in an Employment Environment (15 hours)

IS professionals must understand their chosen employment environment and prepare to function effectively in it. Each student must complete at least 15 credits in a cohesive body of course work for such an environment. ACCT 201 is required, select 12 more credit hours from: ACCT 203, ECON 200, ECON 201, ENTR 180, ENTR 283, ENTR 285, ENTR 375R, ENTR 380, ENTR 383, ENTR 385, BUSM 180, BUSM 304, BUSM 308, BUSM 310, BUSM 320, BUSM 342, BUSM 361.

- ACCT 201 Introduction to Financial Accounting (3)
- ~~ACCT 203 Introduction to Managerial Accounting (3)~~
- ~~ECON 200 Principles of Microeconomics (3)~~
- ~~ECON 201 Principles of Macroeconomics (3)~~
- ~~BUSM 242 Ethics and Legal Environment of Business (3)~~