

Department of

# Computer Information Technology



## *Art Ericson, Department Chair*

*Bradley Armstrong, Lee Barney, Rex Barzee, Art Ericson, Kory Godfrey, Kent Jackson, Michael McLaughlin, Mark Olaveson, Steven Rigby, Blaine Robertson, Randy Somsen  
Denise Rydalch, Secretary (208) 496-3760  
<http://www.byui.edu/CIT/>*

## Introduction to Computer Information Technology

Take a look at Computer Information Technology (CIT). A world of opportunity awaits you.

A career in CIT allows you to create solutions for real problems that trouble real people. As you create this solution with your team, you may be creating something new that has never been seen before. You will be making significant contributions in the organizations you work for and the every day lives of people.

There is high demand for BYU-Idaho Computer Information Technology (CIT) graduates all over the country in all segments of the economy in both small and large companies. Careers in IT pay higher than average salaries. From major financial, accounting, aviation, agriculture, medicine, retailing and software companies to federal research facilities, you and your BYU-Idaho CIT degree are wanted.

Your career in CIT can be very dynamic. Working in a team, you will interact cooperatively with the management of your organization and your potential clients to determine what the solution needs to do, what it needs to look like and how it should work. One day you may be designing software and the next designing a database. The day after that you may be involved in designing a complex network to allow your organization to communicate more effectively using video, phones or computers and then the next day you may be setting up a clustered set of web servers. CIT is a very interactive career to work in.

In short, Information Technology is the use and study of computers, networks, computer languages and databases within an organization to solve real problems.

A minimum GPA of 1.7 (C-) is required in major courses to graduate.

## BS in Computer Information Technology (681)

Take required Foundations courses

### Major Requirements

*No Double Counting of Major Courses - No Grade Less Than C- in Major Courses*

<b>CIT Core</b> <i>Take these courses:</i> CIT 203           3 CIT 210           3 CIT 230           3 CIT 240           3 CIT 310           3 CIT 320           3 CIT 330           3 CIT 340           3 CIT 370           3 CIT 380           3 CIT 410           3 CIT 420           3 CIT 430           3 <hr style="width: 50%; margin-left: 0;"/> 39	<b>CIT Electives</b> <i>Take 2 courses:</i> CIT 336           3 CIT 345           3 CIT 355           3 CIT 356           3 CIT 425           3 CIT 436           3 CIT 440           3 CIT 460           3 CIT 470           3 CIT 485           3 <hr style="width: 50%; margin-left: 0;"/> 6	<b>CIT Capstone</b> <i>Take 1 course:</i> CIT 490           3 OR CIT 498           3 <hr style="width: 50%; margin-left: 0;"/> 3 and <i>Take this course:</i> CIT 495           1 <hr style="width: 50%; margin-left: 0;"/> 1	<b>Program Notes:</b> This degree requires a minor or two clusters.
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**Total Major Credits=49**

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES

## BS in Informatics (683)

Take required Foundations courses

### Major Requirements

*No Double Counting of Major Courses - No Grade Less Than C- in Major Courses*

<b>Informatic Core Courses</b> <i>Take these courses:</i> CIT 203           3 CIT 210           3 CIT 230           3 CIT 240           3 CIT 320           3 CIT 330           3 CIT 336           3 CIT 355           3 CIT 370           3 CIT 380           3 CIT 410           3 CIT 425           3 <hr style="width: 50%; margin-left: 0;"/> 36	<b>Informatic Options</b> Choose a secondary emphasis from the following. all listed have been pre-approved.				
<b>Informatic Capstone</b> <i>Take 1 course:</i> CIT 490           3 CIT 498           3 <hr style="width: 50%; margin-left: 0;"/> 3	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; vertical-align: top;"> <b>Accounting Information Systems</b>  <i>Take these courses:</i>                              ACCTG 201       3                              ACCTG 202       3                              ACCTG 333       3                              ACCTG 356       3  <hr style="width: 50%; margin-left: 0;"/>                             12                         </td> <td style="width: 25%; vertical-align: top;"> <b>Health Professions</b>  <i>Take 12 credits:</i>                              BIO 180           4                              BIO 181           4                              BIO 221           3                              BIO 222           1                              BIO 321           4                              CHEM 105         4                              CHEM 106         4                              CHEM 351         4                              CHEM 352         4                              PH 105            4                              PH 106            4  <hr style="width: 50%; margin-left: 0;"/>                             12                         </td> <td style="width: 25%; vertical-align: top;"> <b>Geographic Information Systems</b>  <i>Take these courses:</i>                              AGTEC 286        3                              GEOG 230          3                              GEOG 240          3                              GEOG 340          3                              GEOL 440          3  <hr style="width: 50%; margin-left: 0;"/>                             15                         </td> <td style="width: 25%; vertical-align: top;"> <b>Chemistry</b>  <i>Take 12 credits:</i>                              CHEM 105         4                              CHEM 106         4                              CHEM 150*        5                              CHEM 220         5                              CHEM 351*        4                              CHEM 352*        4  <hr style="width: 50%; margin-left: 0;"/>                             12                         </td> </tr> </table>	<b>Accounting Information Systems</b> <i>Take these courses:</i> ACCTG 201       3 ACCTG 202       3 ACCTG 333       3 ACCTG 356       3 <hr style="width: 50%; margin-left: 0;"/> 12	<b>Health Professions</b> <i>Take 12 credits:</i> BIO 180           4 BIO 181           4 BIO 221           3 BIO 222           1 BIO 321           4 CHEM 105         4 CHEM 106         4 CHEM 351         4 CHEM 352         4 PH 105            4 PH 106            4 <hr style="width: 50%; margin-left: 0;"/> 12	<b>Geographic Information Systems</b> <i>Take these courses:</i> AGTEC 286        3 GEOG 230          3 GEOG 240          3 GEOG 340          3 GEOL 440          3 <hr style="width: 50%; margin-left: 0;"/> 15	<b>Chemistry</b> <i>Take 12 credits:</i> CHEM 105         4 CHEM 106         4 CHEM 150*        5 CHEM 220         5 CHEM 351*        4 CHEM 352*        4 <hr style="width: 50%; margin-left: 0;"/> 12
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<b>Research</b> CIT 495           1 <hr style="width: 50%; margin-left: 0;"/> 1	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; vertical-align: top;"> <b>Biotechnology/Forensics</b>  <i>Take these courses:</i>                              BIO 180           4                              BIO 375           3                              BIO 377           3  <hr style="width: 50%; margin-left: 0;"/>                             10                         </td> <td style="width: 25%; vertical-align: top;"> <b>GIS in Agriculture and Natural Resources</b>  <i>Take these courses:</i>                              AGTEC 286        3                              AGTEC 474        3                              AGTEC 486        3  <hr style="width: 50%; margin-left: 0;"/>                             9                         </td> <td style="width: 50%; vertical-align: top;"> <p style="font-size: small;">*Chem 150 can't count with Chem 351 and/or 352.</p> <b>Program Notes:</b>                              This degree requires a minor or two clusters.                         </td> </tr> </table>	<b>Biotechnology/Forensics</b> <i>Take these courses:</i> BIO 180           4 BIO 375           3 BIO 377           3 <hr style="width: 50%; margin-left: 0;"/> 10	<b>GIS in Agriculture and Natural Resources</b> <i>Take these courses:</i> AGTEC 286        3 AGTEC 474        3 AGTEC 486        3 <hr style="width: 50%; margin-left: 0;"/> 9	<p style="font-size: small;">*Chem 150 can't count with Chem 351 and/or 352.</p> <b>Program Notes:</b> This degree requires a minor or two clusters.	
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**Total Major Credits=52**

This major is available on the following tracks:

Fall-Winter---- YES

Winter-Spring---- YES

Spring-Fall---- YES



**Computer Information Technology**  
Brigham Young University-Idaho 2010-2011

**Computer Information Technology Pre-approved Clusters**

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**Course Descriptions**

**Credits\***

**CIT 138 Micro Applications A (1.0:1.0)**  
Introduction to the use of microcomputer applications in business including the use of basic operating system functions and spreadsheets.

**CIT 139 Micro-applications B (2.0:2.0)**  
Introduction to the use of microcomputers in business. Emphasis is on learning how to use spreadsheet, and database applications to solve business problems.

**CIT 140 Micro-Applications for Business (3.0:3.0)**  
Prerequisite: Basic computer literacy including the use of a word processor and file management.  
Introduction to the use of microcomputers in business. Emphasis is on learning how to use Microsoft Excel to solve business problems.  
(Fall, Winter, Spring)

**CIT 203 CIT Fundamentals (3.0:3.0)**  
An introduction to the basic concepts of computers and information technology. Students will learn the basics of computer hardware and the binary and hexadecimal number systems. Students will design algorithms to solve simple computing problems and will write computer programs using Boolean logic, control structures, and functions. Students will read and draw UML use case and class diagrams and will learn basic set and join theory.  
(Fall, Winter, Spring)

**CIT 210 Object Oriented Programming I (3.0:2:3)**  
Prerequisite: CIT 203  
An introduction to object oriented programming using the Java programming language. Students will write computer programs using primitive data types, control structures, classes, and objects. Students will read and draw UML class diagrams and will use Java Swing to write programs with a graphical user interface.  
(Fall, Winter, Spring)

**CIT 230 Web Design (3.0:3:0)**  
Prerequisite: CIT 203 recommended  
This 3 semester credit hour course prepares students through a study of basic web page design, layout and development following usability principles, Extensible Hypertext Markup Language (XHTML) and Cascading Style Sheet (CSS) language. In addition, creation, manipulation and optimization of web-compliant graphics are studied.  
(Fall, Winter, Spring)

**CIT 240 Networking (3.0:3:0)**  
This course teaches general networking principles to provide an understanding of data communication protocols, transmission systems, media, and software.  
(Fall, Winter, Spring)

**CIT 310 Object Oriented Programming II (3.0:2:3)**  
Prerequisite: CIT 210  
This course follows the CIT 210 (Object Oriented Programming I) course but focuses on how to solve larger, ill-structured business problems by designing and creating applications using an object oriented programming language. You will learn additional programming principles, concepts, and tools. You will also expand your software engineering skills to an introductory level.  
(Fall, Winter, Spring)

**CIT 320 Database Design and Development (3.0:2:3)**  
This course covers the physical and logical design elements of relational and object-relational databases, including the definition of an organization of structures into a database catalog. It explores symbolic drawing methodologies, like Information Engineering and UML. It teaches SQL language semantics, including DDL, DML and DQL structures. It exposes students to database configuration and tuning. It demonstrates and explores using external programming languages as access points to the database server, using the Java and PHP programming languages.  
(Fall, Winter, Spring)

**CIT 330 Operating Systems 1 (3.0:3:0)**  
Prerequisite: IS 240  
The purpose of this course is to provide a fundamental understanding of computer operating systems.  
(Fall, Winter, Spring)

**CIT 336 Web Page Development (3.0:3:0)**  
Prerequisite: CIT 230  
This course expands the skill base introduced in the CIT 230 course, including use of XHTML, CSS and usability guidelines. New concepts are introduced including database driven dynamic web page using PHP, MySQL, JavaScript and implementation of accessibility features within the MVC development model. In addition, students will further research and implement legal policies including privacy and terms of use.  
(Fall, Winter, Spring)

**CIT 340 Network Design (3.0:3:0)**  
Prerequisite: IS 240  
Principles of network design standards and architectures. Configuration and use of networking devices including repeaters, hubs, bridges, switches and routers to create enterprise networks.  
(Fall, Winter, Spring)

**CIT 345 Wireless Networking (3.0:3:0)**  
Prerequisite: CIT 240  
This is an introductory course in Wireless Networking. The course encompasses the design, planning implementation, operation and troubleshooting of wireless communication. The material covers a comprehensive overview of technologies, security, and design practices.  
(Fall, Winter, Spring)

**CIT 355 Decision Support Systems (3.0:3:0)**  
Prerequisite: CIT 203, Junior standing.  
This course introduces business decision making software and applications. It introduces students to the architecture, design, development, and deployment of frameworks for decision making. It discusses Decision Support Systems (DSS), Executive Information Systems (EIS), Expert Systems (ES), and Management Information Systems (MIS). This course teaches the student how to build analytical models using non-procedural development environments, like Microsoft Excel. Topics include learning how to build what-if, sensitivity, single and multiple goal seeking analysis models, like min-max inventory models, et cetera.  
(Fall, Winter, Spring)

**CIT 356 Mobile Application Development (3.0:3:0)**  
Prerequisite: CIT 203, 210  
This course covers the concepts, architecture and implementation of Mobile Applications. The Microsoft.Net architecture will be used to develop and deploy applications on a variety of mobile devices.  
(Fall, Winter, Spring)

**CIT 370 Systems Security 1 (3.0:3:0)**  
Prerequisite: IS 240  
The purpose of this course is to provide fundamental understanding of computer security principles. You will learn about confidentiality, integrity, availability, authentication, and the types of attacks and malicious code that may be used against your network. Remote access, email, and protocols will also be discussed. A variety of security topologies are discussed including secure communications channels, secure internetworking devices, and network medium. You will also learn about intrusion detection system, firewalls, and physical security concepts. In addition, security policies, disaster recovery, and computer forensics are covered. Aside from learning the technologies involved in security, you will get to understand the daily tasks involved with managing and troubleshooting those technologies. You will have a variety of hands-on labs to reinforce the concepts discussed in the class.  
(Fall, Winter, Spring)

**CIT 380 Project Management (3.0:3:0)**  
This course introduces concepts, issues, approaches, tools, and techniques applicable to the management of projects. Projects can be defined as any temporary endeavor undertaken to create unique product, service, or result. The course explores how a manager can plan, organize, implement and control non-routine activities to achieve cost, schedule and performance objectives.  
(Fall, Winter, Spring)

# Computer Information Technology

Brigham Young University–Idaho 2010-2011

## **CIT 410 Systems Analysis and Design**

**(3.0:3:0)**

Prerequisite: CIT 210

This course teaches the concepts of systems analysis and design for those desiring to work in the field of information technology. Initially, an overview of an information system and the software development life cycle (SDLC) processes are covered. Each phase of the SDLC process is then examined in depth and real experience gained through an actual project. Computer aided Software (CASE) tools will be used to design, and document an information system/project.  
(Fall, Winter, Spring)

## **CIT 420 Database Administration**

**(3.0:3:0)**

Prerequisite: CIT 210

This course is a continuation of CIT 320 and focuses on the development of stored functions, libraries, objects, procedures and packages. Students will design and write stored database program units in PL/SQL. Students will use an Integrated Development Environment (IDE) to write and test programs against database.  
(Spring 2009, Winter 2010)

## **CIT 425 Data Warehousing**

**(3.0:3:0)**

Prerequisite: CIT 320

This course defines the theory and practice of data analysis. The course will compare and contrast the operational and analytical database models. Students will learn how to define, implement and query a database warehouse by leveraging sample data warehouses built from Enterprise Resource Planning (ERP) and Customer Resource Management (CRM) solutions.  
(Winter 2009, Fall 2009, Spring 2010)

## **CIT 430 Operating Systems II**

**(3.0:3:0)**

Prerequisite: CIT 240, CIT 330

The purpose of this course is to provide an advanced understanding of computer operating systems.  
(Fall, Winter, Spring)

## **CIT 436 Web Server Development**

**(3.0:2:3)**

Prerequisite: CIT 230 and 320

This course introduces web application architecture, design, development, deployment and security. It introduces the students to the dynamics of stateless and stateful web computing. This course also introduces AJAX computing principles and approaches. Additional topics include how to build web applications with one or more scripting languages and interacting with a relational database.  
(Fall, Winter, Spring)

## **CIT 440 Network Design II**

**(3.0:3:0)**

Prerequisite: CIT 240

This course teaches general networking principles to provide an understanding of the basic switching, WAN technologies, and intermediate routing skills. Students will learn how to install and configure switches and routers in multiprotocol internetworks using LAN and WAN interfaces, improve network performance and security, perform entry-level tasks in the planning, design, installation, operation, and troubleshooting of Ethernet and TCP/IP networks.  
(Fall, Winter, Spring)

## **CIT 460 Enterprise Development**

**(3.0:2:3)**

An overview of the architecture for N-tier applications is covered with a focus on the use of effective design patterns. Different technologies to implement the MVC control pattern will be explored. The J2EE architecture will be covered in depth including Servlets, Java Server Pages, and Enterprise Java Beans. Applications that implement all parts of the MVC pattern will be designed, implemented and deployed.  
(Fall, Winter, Spring)

## **CIT 470 System Security II**

**(3.0:3:0)**

Prerequisite: CIT 240, 330, 370

The purpose of this lab based course is to teach students techniques for securing the entire network architecture both internal and external. Students will learn how to configure and use firewalls and intrusion detection/prevention systems. In addition students will learn how to harden operating systems and secure remote access.  
(Fall, Winter, Spring)

## **CIT 485 Enterprise Applications**

**(3.0:3:0)**

Prerequisite: CIT 320, CIT 330

This course is a capstone class that integrates design, analysis, database concepts and programming. The course will present product integration, configuration management and implementation concepts. Students will learn how to install, maintain and integrate a suite of products to deliver complex Enterprise Resource Planning (ERP) and Customer Resource Management (CRM) solution.  
(Fall, Winter)

## **CIT 490 Senior Project**

**(3.0:0:0)**

Prerequisite: Senior standing and permission of the instructor.

This is a capstone class designed to apply all of the skills gained by the student in the development of an information system. Students will work together in a team to design and implement an information system.  
(Fall, Winter, Spring)

## **CIT 495 Senior Research Paper**

**(1.0:1:0)**

Prerequisite: Senior Standing, content of Instructor

This is a capstone experience for the Computer Information Technology, Business, and Accounting major. A research paper will be written and presented on a relevant Information Technology topic. Its purpose is to expand on knowledge outside of the required curriculum, and to develop professional writing and presentation skills.  
(Fall, Winter, Spring)

## **CIT 498 Internship**

**(3.0:0:0)**

Prerequisite: Senior standing and permission of the instructor.

This is designed to be a capstone experience where a student applies the skills they have learned in information system in a real world environment.  
(Fall, Winter, Spring)

## **CIT 499 Special Topics**

**(3.0:3:0)**

Prerequisite: Permission of the instructor.

This is a special topics course to address the latest advancements in information technology