

# Heinz College

# Information Systems Management

# Course to Career

## Course Suggestions According to Job Role

*This guide was compiled by Heinz College Career Services to assist students in taking courses, which may be helpful for the career paths they are pursuing. This is meant to be utilized as a guideline **only**, which will vary according to several factors: the professional and academic background of the student, the combination of courses which are taken, the specific company that the student is interested in working for, etc.*

*In addition to reviewing the suggestions in this guide, it is also recommended that you meet with your academic advisor, career advisor, and conduct informational interviews with professionals in your desired field to determine which skills you need to build upon in your coursework.*

### **Course suggestions based on general job titles**

*Please see your academic advisor as there may be other relevant courses you should consider pursuing.*

#### Data Analyst

- Advanced Business Analytics
- Business Intelligence and Data Mining SAS
- Data Mining
- Marketing Digital Media
- Exploring and Visualizing Data
- Measuring Social
- R for Data Science
- Unstructured Data Analytics

#### Business Analyst

- IT Business Leadership
- Advanced Business Analytics
- Decision Analysis and Multi-Criteria Decision Making
- IT Project Management
- Exploring and Visualizing Data
- Introduction to the ITIL Framework

## Quantitative Analyst

- Advanced Business Analytics
- Data Mining
- R for Data Science
- Decision Analysis and Multi-Criteria Decision Making
- A/B Testing, Design, & Analysis

## Technology Analyst

- Linux and Open Source
- Introduction to Information Security Management
- Introduction to the ITIL Framework
- Strategy Development
- Advances in Robotic Process Automation

## Systems Analyst

- Advanced Relational Database Management
- Data Warehousing
- Linux and Open Source
- NoSQL Database Management
- Blockchain Fundamentals

## Media Analyst

- Advanced Business Analytics
- Data Mining
- Exploring and Visualizing Data
- Measuring Social
- R for Data Science
- Unstructured Data Analytics
- Multi Media

## Business Intelligence Analyst / Engineer

- Business Intelligence and Data Mining SAS
- Advanced Business Analytics
- Data Warehousing
- Unstructured Data Analytics

## Solutions / Systems Architect

- Data Warehousing
- Data Structures and Algorithms
- E-commerce Tech, Machine Learning, Analytics, and Bots
- Internet of Things
- Linux and Open Source
- Blockchain Fundamentals
- Enterprise Web Development

## IT Consultant

- Acting for Management
- Linux and Open Source
- Consulting Lab
- Introduction to the ITIL Framework

- IT Business Leadership
- Negotiation
- IT Project Management
- Strategy Development
- Blockchain Fundamentals
- Measuring Social

## Management Consultant

- Acting for Management
- Measuring Social
- Consulting Lab
- Marketing Digital Media
- Management Consulting
- Negotiation
- IT Project Management
- Strategy Development
- Measuring Social

## Risk Analyst

- Advanced Business Analytics
- Introduction to Information Security Management
- Network and Internet Security
- Management Consulting
- Information Security Risk Management I

## Analytics/BI Consultant

- Acting for Management
- Business Intelligence and Data Mining SAS
- Consulting Lab
- Data Mining
- Data Warehousing
- Advanced Business Analytics

## Database Engineer

- Advanced Relational Database Management
- Business Intelligence and Data Mining SAS
- Data Warehousing
- NoSQL Database Management

## Software Engineer

- Data Structures and Algorithms
- Software Design for Data Science
- Mobile Application Design & Development
- Internet of Things
- Software & Security
- Data Focused Python
- Engineering Privacy in Software
- Linux and Open Source

## Front End Developer

- E-commerce Tech, Machine Learning, Analytics, and Bots
- Internet of Things
- Measuring Social
- Exploring and Visualizing Data

- Web Application Development

## Data Engineer

- Advanced Relational Database Management
- Data Warehousing
- Business Intelligence and Data Mining SAS
- NoSQL Database Management
- Data Focused Python

## Product Analyst / Manager

- Marketing Digital Media
- IT Business Leadership
- Tech Startup: Market Discovery
- IT Project Management
- Lean Entrepreneurship
- Management Consulting
- Product Management in IT
- Strategy Development
- Making Products Count: Data Science for Product Managers

## Project Manager

- Project Management
- Negotiation
- Lean Entrepreneurship
- Introduction to the ITIL Framework
- IT Business Leadership
- IT Project Management
- Strategy Development
- Managing Analytic Projects

## Data Scientist

- Business Intelligence and Data Mining SAS
- Data Mining
- Exploring and Visualizing Data
- R for Data Science
- Unstructured Data Analytics
- Data Focused Python

## According to Industry/Domain

### Artificial Intelligence / Robotics

- Intro to Artificial Intelligence
- Advances in Robotic Process Automation
- AI, Society, and Humanity
- E-commerce Tech, Machine Learning, Analytics, and Bots

### Business Intelligence

- Data Structures and Algorithms
- Data Mining
- Digital Marketing Analytics
- Geographic Information Systems

### Digital Marketing & Commerce

- Marketing Digital Media
- Measuring Social
- E-commerce Tech, Machine Learning, Analytics, and Bots
- Lean Entrepreneurship
- Tech Startup: Market Discovery

### Healthcare

- Healthcare Geographic Information Systems
- Healthcare Information Systems
- Advanced Relational Database Management
- Health Economics

### IT Strategy & Management

- IT Project Management
- Strategy Development
- IT Business Leadership
- Intro to Supply Chain Management

### Supply chain/Transport/Policy

- Smart Cities: Growth with Intelligent Transportation Systems
- Intro to Geographic Information Systems
- Intro to Supply Chain Management

### Skills to be gained through Heinz courses

\*Please refer to course syllabus for more detailed information about each course. Consult with your academic advisor regarding course selections.

Course	Qualitative/Soft Skills	Technology Skills
<b>Acting for Management</b>	Presentation Skills, Confidence Building, Client Interaction	
<b>Advanced Business Analytics</b>	Customer/Product Analytics, Forecasting, Modeling	Excel
<b>Advanced Relational Database Management</b>	Program Development, Database Design and Development, Database Management and Administration	Oracle Developer Suite, PL/SQL, GUI database administration tools, database with web applications
<b>Algorithms and Data Structures for Information Processing</b>	Program Development, Algorithm Development, Algorithm Optimization	
<b>Business Intelligence and Data Mining SAS</b>	Business Intelligence, Analytics, Data Representation and Visualization, Social Media initiatives, CRM, Web Mining, Healthcare management, Predictive Modeling	SAS
<b>Consulting Lab</b>	Confidence Building, Consulting, Client Interaction	
<b>Data Mining</b>	Data mining Techniques & Methodologies	R
<b>Data Structures for Application Programmers</b>	Data structures, Algorithm Analysis - Efficiency and Complexity	Java
<b>Data Warehousing</b>	Data Warehousing baseline concepts, Requirements gathering, Database Design, ETL Logic	SQL Server, Visio

<b>Decision Analysis and Multi-Criteria Decision Making</b>	Decision Analysis, Multi-Criteria Decision Making, Linear/Non Linear Programming concepts	Excel
<b>Ethical Penetration Testing</b>	Security Domain	
<b>Marketing Digital Media</b>	Online advertising and social media analysis, data driven marketing	Email marketing, SEO and social media analytics
<b>E-Business Technology and Management</b>	World Wide Web Technology Overview, Electronic Payment Systems - Security, Authentication, Privacy. Policy issues of Electronic Commerce - IP, Privacy, etc.	
<b>E-commerce Tech, Machine Learning, Analytics, and Bots</b>	E-Commerce Solutions - Web Controls, Session State Management, Database Connectivity, Web Services.	third-party integration, user experience (UX), servers and APIs, data querying and analytics, conversational bots, and user engagement
<b>Exploring and Visualizing Data</b>	Data manipulation and aggregation (organization), Trend Analysis, Visualizing Graphs, Problems in data analysis	R
<b>Smart Cities: Growth with Intelligent Transportation Systems</b>	Transport Domain	
<b>Healthcare Geographical Information Systems</b>	Overview of GIS Standards, Health related data Analysis, Correlation of health and geography of populations	
<b>Healthcare Information Systems</b>	Methodologies and concepts of modern healthcare systems- Imaging applications, electronic data interchange, integrated delivery systems, computerized patient records, artificial intelligence and expert medical	

	systems, decision support systems	
<b>Information Security Risk Management I</b>	ROI calculation, Insurance and risk management	
<b>Information Security Risk Management II</b>		
<b>Marketing Digital Media</b>	E-Commerce, Marketing theory and strategy, Marketing strategy evaluation	
<b>Internet of Things</b>	Web applications and design patterns	XHTML, RSS, RDF, JSON and JSON-LD. IoT specific technologies that will be discussed include MQTT, XMPP, UPnP and CoAP
<b>Introduction to Geographic Information Systems</b>	Relational database modeling and package skills, Data analysis in GIS	SQL or other query language, Windows PC experience.
<b>Introduction to Information Security Management</b>	Data security and administration, cryptography and risk management (Data security administrator)	
<b>Introduction to Supply Chain Management and Systems</b>	Inventory, Capacity and Quality analysis, ERP, Open Source manufacturing, 3d Printers	
<b>Introduction to the ITIL Framework</b>	IT Process Frameworks, IT operation analysis	ITIL Foundations Certification exam
<b>IT Business Leadership</b>	Organizational Leadership, Power and influence analysis	
<b>IT Project Management</b>	Agile Methodologies, Leadership in complex IT Projects	
<b>Lean Entrepreneurship</b>	Entrepreneurship, Market Analysis, managing software development projects, fundraising and allocation, human resource administration	



<b>Linux and Open Source</b>	Administration and configuration of Linux software, Linux in enterprises and IT environments	Linux
<b>Management Consulting</b>	Intro to Consulting, Strategy, Presentation skills	
<b>Measurement and Analysis of Social Media Initiatives</b>	brand awareness, customer loyalty, revenue generation, community activation	Brandwatch
<b>Multi Media</b>		Adobe InDesign CS5, Adobe Illustrator CS5, Adobe Photoshop CS5, Adobe Flash CS5, Apple iMovie and Apple Garageband
<b>Negotiation</b>	Complexity and dynamics of negotiation, tradeoff analysis, opportunity generation, Confidence building	
<b>Privacy in the Digital Age</b>	Security Domain	
<b>Product Management in Information Technology</b>	Product management for Software/Hardware products, Strategy/Development/Marketing of Products	
<b>R for Data Science</b>		R
<b>Strategy Development</b>	Situational and Environment analysis, Process improvement, internal capabilities assessment	
<b>Tech Startup: Market Discovery</b>  <b>Tech Startup: Building Your Company</b>	Entrepreneurship, Market Analysis and Research, Team building and management, Fund raising and allocation	
<b>Unstructured Data Analytics</b>	Organization and Summarization of Text, Algorithmic Focus	