

Big Data
IS 101Y/CMSC 104Y
First Year IT

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Important Problems

- **Health**
 - Cure disease, increase health coverage,
- **Prosperity**
 - End poverty, restore world economy, end world hunger, improve safety and cybersecurity, spread education, create job opportunities, decrease gas prices
- **Environment**
 - Manage natural resources, reduce pollution, stop global warming
- **Scientific/technical discovery**
 - Develop hovercars, explore space
- **Freedom/Justice**
 - Increase equality, stand against oppression, reduce partisanship, establish world peace, fix foreign policy,
- **Personal fulfillment**
 - Be happy, build good relationships, learn from mistakes, express self, be financially independent, take risks/chances, spread love, improve time management,

Data Topics in Courses

- **Business Technology Administration (BTA)**
- **Information Systems (IS)**
- **Computer Science (CMSC)**
- **Computer Engineering (CMPE)**

Courses in Data Topics

- **Business Technology Administration (BTA)**
 - **Required**
 - » **300: Management information systems**
 - » **ECON 121: Principles of Accounting I**
 - » **ECON 122: Principles of Accounting II**
 - **Electives**
 - » **317: Accounting Information Systems**
 - » **387: Information Architecture for the Web**
 - » **410: Introduction to Database Design**
 - » **420: Database Application Development**
 - » **460: Health care informatics**
 - **Certificates**
 - » **Auditing for Information Management (IAS)**

Courses in Data Topics

- **Information Systems (IS)**
 - **Required**
 - » **300: Management information systems**
 - » **410: Introduction to Database Design**
 - » **420: Database Application Development**
 - » **ECON 121: Principles of Accounting I**
 - » **ECON 122: Principles of Accounting II**
 - **Electives**
 - » **460: Health care informatics**
 - **Certificates**
 - » **Auditing for Information Management (IAS)**

Courses in Data Topics

- **Computer Science (CMSC)**
 - **Required**
 - » **STAT 355: Probability and Statistics**
 - **Electives**
 - » **436: Data visualization**
 - » **442: Information and Coding Theory**
 - » **461: Databases**
 - » **476: Information Retrieval**
 - » **491: Clinical informatics**
 - **Track**

Courses in Data Topics

- **Computer Engineering (CMPE)**

- **Required**

- » **ENES101: Introduction to Engineering Science**
 - » **CMPE 306: Circuits**
 - » **CMPE 314: Microelectronics**
 - » **CMPE 320: Probability and Random Processes**
 - » **450/451: Capstone**

- **Electives**

- » **CMPE 323: Signals and Systems**

Careers in Data

Database Administrator/Architect

- **Description:**
 - Administer, test, and implement computer databases. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases.
- **Skills:**
 - Database usage, Computational thinking, system analyst skills
- **Majors: Information Systems (Administrator), Computer Science (Architect)**
- **Other names:**
 - DBA, SQL Architect, Server Database Administrator
- **Companies:**
 - AT&T, Matrix Resources, L3 Communications, etc.

Intelligence Analyst

- **Description:**
 - Intelligence refers to discrete information with currency and relevance, and the abstraction, evaluation, and understanding of such information for its accuracy and value.
 - An intelligence analyst reviews data and presents significant patterns to an audience in an understandable way
- **Skills:**
 - Data Visualization, Inductive/Deductive reasoning,
- **Majors:**
 - Information Systems, Computer Science
- **Other names:**
 - Malware Analyst
- **Companies:**
 - NSA, DoD, etc

Business Intelligence Analyst

- **Description**
 - A Business intelligence analyst reviews data and presents significant patterns to an audience in an understandable way, looking for financial patterns/good investments
- **Skills:**
 - Data Visualization, Inductive/Deductive reasoning
- **Majors:**
 - Information Systems, BTA
- **Other names:**
 - Business Data Analyst
- **Companies:**
 - Bloomberg Financial

Administrative Services Manager

- **Description:**
 - Plan, direct, or coordinate one or more administrative services of an organization, such as records and information management, mail distribution, and other office support services.
- **Skills:**
 - Clerical, Organization, Human Resources
- **Majors:**
 - Information Systems, BTA
- **Other names:**
 - Student Information Management,
- **Companies:**
 - NSA, DoD, etc

Archivist

- **Description:**
 - Appraise, edit, and direct safekeeping of permanent records and historically valuable documents. Participate in research activities based on archival materials.
- **Skills:**
 - Clerical, Organization, History, Antique knowledge
- **Majors:**
 - Information Systems, BTA
- **Other names:**
 - Archivist, Registrar, Archives Director, Manuscripts Curator, Collections Manager, Museum Archivist, Records Manager, University Archivist, Archival Records Clerk, Collections Director
- **Companies:**
 - Walters Art Gallery, Smithsonian

Health Informatics

- **Description:**
 - Apply knowledge of nursing and informatics to assist in the design, development, and ongoing modification of computerized health care systems. May educate staff and assist in problem solving to promote the implementation of the health care system.
- **Skills:**
 - Clerical, Organization, Biological/Medical Knowledge
- **Majors:**
 - Information Systems, BTA, BioInformatics
- **Other names:**
 - Clinical Informatics Director, Clinical Information Systems Director, Clinical Applications Specialist, Nursing Information Systems Coordinator
- **Companies:**
 - BlueCross BlueShield, American Red Cross

Scientific Data Management

- **Description:**
 - provide researchers with sophisticated query tools for fast data analysis.
- **Skills:**
 - Geology, Science
- **Majors:**
 - Information Systems, BioInformatics
- **Other names:**
 - Environmental Scientist/Specialist, Information Research Scientist, Geospatial Information Scientist, other science disciplines
- **Companies:**
 - NASA, Lincoln Labs, MIT
- **Example:**
 - <http://vwo.nasa.gov/>

Software Developer

- **Description:**
 - Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. May analyze and design databases within an application area, working individually or coordinating database development as part of a team
- **Skills:**
 - Application Design, Database design, Data Parsing
- **Majors:**
 - Computer Science
- **Other names:**
 - Software Engineer, Software Architect
- **Companies:**
 - Everywhere! (specifically Lockheed Martin, Northrup Grumman, Microsoft, Bloomberg Financial, Google, etc)

Network Architect/Analyst

- **Description:**
 - Design and implement computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. Perform network modeling, analysis, and planning.
- **Skills:**
 - Network comprehension, Electronics knowledge
- **Majors:**
 - Computer Science, Computer Engineering
- **Other names:**
 - System Architect/Analyst, Network Manager
- **Companies:**
 - SourceFire, BlueCross, etc.

Cartographer

- **Description:**
 - Collect, analyze, and interpret geographic information provided by geodetic surveys, aerial photographs, and satellite data. Research, study, and prepare maps and other spatial data in digital or graphic form for legal, social, political, educational, and design purposes. May design and evaluate algorithms, data structures, and user interfaces for GIS and mapping systems.
- **Skills:**
 - Graphics, Coordination/Synchronization
- **Majors:**
 - Computer Science, Geography and Environmental Systems
- **Other names:**
 - Photogrammetrists, GIS Specialist, Stereo Compiler
- **Companies:**
 - DoE, BAE Systems, SAIC, CIA, etc

Remote Sensing Scientists and Technologists

- **Description:**
 - Apply remote sensing principles and methods to analyze data and solve problems in areas such as natural resource management, urban planning, or homeland security. May develop new sensor systems, analytical techniques, or new applications for existing systems.
- **Skills:**
 - Embedded Software, Autonomous (Unmanned) vehicle design, RADAR
- **Majors:**
 - Computer Engineering, Computer Science
- **Other names:**
 - Remote Sensing Analyst, Remote Sensing Program Manager, Remote Sensing Scientist, Research Scientist, Sensor Specialist
- **Companies:**
 - DoE, APL, Exxon, etc.

