MS in Information Systems & Assurance (MS-ISA)

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What is Information Systems?

- Information systems is a knowledge area and skill set at the intersection of:
  - Computer, software, and network technology
  - Management (including most functional specialty areas)
- IS graduates apply knowledge/skills in both areas to enable organizations fulfill their missions
- Tasks performed by IS graduates include:
  - Design and administer organizational information, transaction processing, and decision support systems
  - Acquire hardware, software, and web services from third-parties and manage the associated contracts
  - Design and administer databases and data warehouses
  - Use internal and external data to improve marketing, operations, and strategic planning – i.e., data analytics
  - Implement and manage corporate-wide intranets, public-facing Web sites, and social media channels
What is Information Assurance?

- Committee on National Security Systems (CNSS) defines information assurance (IA):  
  "Measures that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and nonrepudiation"

- Obvious topic areas:  
  - Encryption  
  - Network security  
  - Intrusion detection  
  - Secure coding practices  
  - Digital forensics

- Not-so-obvious topic areas:  
  - Fraud & forensic accounting  
  - Security policy & implementation  
  - Legal and privacy issues  
  - Education & training

- UNM is designated by the Department of Homeland Security and National Security Agency as a:  
  Center of Academic Excellence in Information Assurance Education and Research
Goals of the MS-ISA Program

- Attract students with undergraduate degrees in:
  - Management (accounting and IS preferred)
  - Computer science
  - Computer engineering

- Prepare them for advanced technology-related management careers by:
  - Providing sufficient technical depth in one or more focus areas to ensure that program graduates are competitive for a wide variety of local and national jobs
  - Enable faculty and students to tailor programs of study to individual student backgrounds and career goals
MS-ISA Technical Focus Areas

- System & network administration
- Database management and data warehousing
- Data analytics (big data)
- Fraud, white collar crime, and financial & digital forensics
- Cybersecurity and information assurance
- Systems development, acquisition, and management
## Career Pathways for Program Graduates

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Job Titles</th>
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<tbody>
<tr>
<td>Information Systems</td>
<td>Systems Analyst,</td>
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<td>Database administrator,</td>
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<td>Data Analyst,</td>
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<td>Application Developer,</td>
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<td>Chief Information Officer</td>
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<td>Network Administrator</td>
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<td>Digital Forensic Analyst</td>
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<td>Internal Auditor,</td>
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<td>Public Auditor</td>
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### Quick Facts: Computer and Information Systems Managers

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<tr>
<td><strong>2012 Median Pay</strong></td>
<td>$120,950 per year</td>
<td>Bachelor’s degree</td>
<td>5 years or more</td>
<td>None</td>
<td>332,700</td>
<td>15% (Faster than average)</td>
<td>50,900</td>
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### Quick Facts: Information Security Analysts

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<td><strong>2012 Median Pay</strong></td>
<td>$86,170 per year</td>
<td>Bachelor’s degree</td>
<td>Less than 5 years</td>
<td>None</td>
<td>75,100</td>
<td>37% (Much faster than average)</td>
<td>27,400</td>
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### Quick Facts: Database Administrators

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<td><strong>2012 Median Pay</strong></td>
<td>$77,080 per year</td>
<td>Bachelor’s degree</td>
<td>Less than 5 years</td>
<td>None</td>
<td>118,700</td>
<td>15% (Faster than average)</td>
<td>17,900</td>
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### Quick Facts: Network and Computer Systems Administrators

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<td><strong>2012 Median Pay</strong></td>
<td>$72,560 per year</td>
<td>Bachelor’s degree</td>
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<td>None</td>
<td>366,400</td>
<td>12% (As fast as average)</td>
<td>42,900</td>
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MS-ISA Key Challenges

Ensure that graduates have sufficient knowledge and skills in the following key areas:

- Communication and presentation skills
- Project management
- Management breadth (especially accounting, operations, and organizational behavior)
- One or more technology focus areas

Provide sufficient program flexibility to:

- Accept students from diverse backgrounds (accounting, information systems, computer science, and engineering)
- Ensure minimum knowledge and skills in key areas
- Provide advanced knowledge in at least one technology focus area
MS-ISA Program Requirements

- Students must complete a minimum of 32 credit hours of courses within the following groups:
  - Required Group — 11 credit hours
    - MGMT 533 (Professional communications)
    - MGMT 631 (Project management)
    - MGMT 636 (IS security)
    - MGMT 637 (Database management)
    - Courses may be waived based on similar undergraduate/graduate courses or experience.
  - Management Group — 12 credit hours minimum selected from:
    - MGMT 502 (Financial accounting)
    - MGMT 503 (Managerial accounting)
    - MGMT 506 (Organizational behavior)
    - MGMT 508 (Law/ethics)
    - MGMT 520 (Operations management)
    - MGMT 522 (Marketing)
    - MGMT 526 (Finance)
    - MGMT 633 (Vendor & contract management)
    - Up to 12 credit hours may be waived based on similar undergraduate/graduate courses or experience
  - Technology Group – 9-32 credit hours – see next page

- Waivers of required/management group courses provide flexibility to tailor the program to individual student backgrounds.
Technology Group – 9 credit hour minimum

- MGMT 594 (Internal auditing)
- MGMT 630 (Management of information systems)
- MGMT 632 (Web application development)
- MGMT 634 (Systems analysis and design)
- MGMT 635 (Business intelligence and decision support)
- MGMT 638 (Advanced database management)
- MGMT 639 (Advanced IS/IA topics) – Data warehousing, Data analytics II, …
- MGMT 641 (Forensic accounting)
- MGMT 642 (Fraud examination)
- MGMT 646 (Digital forensics)
- MGMT 647 (System and network administration)
- MGMT 648 (Advanced IS security)
- MGMT 649 (IA projects)
- MGMT 599 (Thesis)
- CS 544 (Cyber-security)
- CS 565 (Topics in database management)
- CS 581 (Software testing)
- ECE 595 (Cloud security)
- Other graduate-level CS and ECE courses with advance approval
- Problems/topics/internship courses (MGMT 551/552, 594, and 697) with advance approval
Admission Requirements

- Completed bachelor’s degree with at least 30 credit hours of courses in management, computer science, or computer-related engineering.
- A grade point average of 3.0 for the last 60 hours of college coursework including any post baccalaureate work.
- A score equal to or greater than 500 on the Graduate Management Admission Test (GMAT) or a Graduate Record Examination (GRE) score that is equal to or greater than 500 on the quantitative section and a score equal to or greater than 500 on the verbal section.

Advisement and Plan of Study

- Advisement prior to first-semester enrollment and a formal plan of study is mandatory.
- Individual students are advised to enroll in specific classes that:
  - Match their intended career path
  - Complement their bachelor’s degree and work experience
- Plan of study approvals are granted by a designated faculty advisor or committee.
Sample Study Plan – BBA/MIS – IS Specialty

- Core Group – 5 credit hours (636/637 waived based on undergraduate courses):
  - MGMT 533 (Professional communications)
  - MGMT 631 (Project management)

- Management Group – 3 credit hours (others waived based on BBA core):
  - MGMT 633 (Vendor & contract management)

- Technology Group – 24 credit hours
  - MGMT 630 (Management of information systems)
  - MGMT 632 (Web application development)
  - MGMT 635 (Business intelligence and decision support)
  - MGMT 639 (Advanced database management)
  - MGMT 639 (Data warehousing)
  - MGMT 639 (Data analytics II)
  - MGMT 647 (System and network administration)
  - MGMT 648 (Advanced IS security)
Sample Study Plan – BBA/MIS – IA Specialty

- **Core Group** – 5 credit hours (636/637 waived based on undergraduate courses):
  - MGMT 533 (Professional communications)
  - MGMT 631 (Project management)

- **Management Group** – 3 credit hours (others waived based on BBA core):
  - MGMT 633 (Vendor & contract management)

- **Technology Group** – 24 credit hours
  - MGMT 635 (Business intelligence and decision support)
  - MGMT 639 (Advanced database management)
  - MGMT 641 (Forensic accounting)
  - MGMT 642 (Fraud examination)
  - MGMT 646 (Digital forensics)
  - MGMT 647 (System and network administration)
  - MGMT 648 (Advanced IS security)
  - MGMT 649 (IA projects)
Sample Study Plan – BS CS/ECE – IS Specialty

- **Core Group** – 5 credit hours (636/637 waived based on undergraduate courses):
  - MGMT 533 (Professional communications)
  - MGMT 631 (Project management)

- **Management Group** – 12 credit hours (others waived based on BBA core):
  - MGMT 502 (Financial accounting)
  - MGMT 503 (Managerial accounting)
  - MGMT 506 (Organizational behavior)
  - MGMT 522 (Marketing)

- **Technology Group** – 15 credit hours
  - MGMT 635 (Business intelligence and decision support)
  - MGMT 639 (Advanced database management)
  - MGMT 639 (Data warehousing)
  - MGMT 639 (Data analytics II)
  - MGMT 648 (Advanced IS security)
Sample Study Plan – BS CS/ECE – IA Specialty

- **Core Group** – 5 credit hours (636/637 waived based on undergraduate courses):
  - MGMT 533 (Professional communications)
  - MGMT 631 (Project management)

- **Management Group** – 12 credit hours (others waived based on BBA core):
  - MGMT 502 (Financial accounting)
  - MGMT 503 (Managerial accounting)
  - MGMT 506 (Organizational behavior)
  - MGMT 522 (Marketing)

- **Technology Group** – 15 credit hours
  - MGMT 642 (Fraud examination)
  - MGMT 646 (Digital forensics) or CS 544 (Cybersecurity)
  - MGMT 647 (System and network administration)
  - MGMT 648 (Advanced IS security)
  - ECE 595 (Cloud security)
Sample Study Plan – BBA/Acctg – IA Specialty

- Core Group – 11 credit hours:
  - MGMT 533 (Professional communications)
  - MGMT 631 (Project management)
  - MGMT 636 (IS security)
  - MGMT 637 (Database management)

- Management Group – 3 credit hours (others waived based on BBA core):
  - MGMT 633 (Vendor & contract management)

- Technology Group – 18 credit hours
  - MGMT 594 (Internal auditing)
  - MGMT 641 (Forensic accounting)
  - MGMT 642 (Fraud examination)
  - MGMT 646 (Digital forensics)
  - MGMT 648 (Advanced IS security)
  - MGMT 649 (IA projects)
Current Status

- The program went “live” in August
- 8 students will graduate with an MS-ISA in December
- Approximately 50-60 current MBA and non-degree graduate students will transfer into the MS-ISA program in the next few weeks
- New student applications are currently being accepted for spring admission (soft deadline is October 1)
- The program will be operating near capacity as of January, 2015
- MBA IA concentration is now closed and the MIS concentration may close in the near future
What’s Next?

- Accept individual dual degree proposals from students per UNM policy?
  - MS-ISA plus MBA
  - MS-ISA plus Master’s of Accounting
  - MS-ISA plus MS in computer science or engineering

- 3/2 program with BS in Computer Science or BS in Electrical and Computer Engineering?

- Increase the proportion of the program that’s offered online?

- Increase program capacity and recruit nationally?