Information Management courses provide students with the knowledge and skills to develop and implement a plan for an information system that meets the needs of business. Students develop an understanding of information system theory, skills in administering and managing information systems, and the ability to analyze and design information systems.
Information Systems Analysis and Design

Instructor Information
Instructor:
Instructor Email:
Instructor Website:
Room:
Period:
Grade Level: 11th – 12th
Course Prerequisites: (3 Computer Science Credits Total) Introduction to Information Technology, Computer Applications, Programming

Course Description
Information Systems Analysis and Design presents a practical approach to information technology and system development. Throughout the course, students will learn how to translate business requirements into information systems that support a company’s short-and long-term objectives. Through case studies and assignments, students will learn analytical, problem-solving, and decision-making techniques. Students will learn how to blend traditional structured analysis skills, object-orientated methods, and project management techniques.

Information Systems Analysis and Design will prepare students that are planning to attend a two or four year school for information systems, computer science, and e-commerce.

Information Systems Analysis and Design is a one-trimester course for a ½ credit and will meet the computer technology requirement for graduation.

This course is designed as an upper level course for seniors that are preparing for a computer science related degree. Before taking Introduction to Systems Analysis and Design students should have successfully completed three credits of computers including Computer Applications and a minimum of one programming class.

Instructional Philosophy
Throughout the course, students will be completing case studies that deal with the different phases of system analysis and design. Students are expected to complete all assignments. Student assignments should be thorough and meet industry standards. Student work that does not show an exemplary level of competency will be redone by the student to receive credit. Classroom activities include reading, research projects, and problem solving. On some projects, students will work in teams but will be expected to complete individual assignments in relation to the team’s project. Assessment methods will include written exams, tests, quizzes, projects, oral and written research reports.

Another major learning component of the course will be covered through industry related films, guest speakers, and business tours.

South Dakota 9-12 Educational Technology Content Standards
Information Systems Analysis and Design is a highly advanced course for seniors and juniors by permission. In order to take the course a student must have completed three computer credits (six courses), including Introduction to Information Technology, Computer Applications, and at least one semester of programming. It is important that the course not only address the Course Standards, but also the South Dakota Educational
*Technology Standards.* This course is should meet the proficient level of the *South Dakota Educational Technology Standards.*

**South Dakota 9-12 Educational Technology Content Standards**

**Students understand the history and progression of technology in relation to the development and design of future technology.**

- 9-12.NC.1.1 Compare and contrast how societal changes mirror innovations and emerging technologies.
- 9-12.NC.1.2 Predict how the evolution of technology will influence the design and development of future technology.

**Students analyze the parts of a technological system in terms of input, process, output, feedback.**

- 9-12.NC.2.1 Analyze technology systems to make informed choices.

**Students analyze the relationships and the connections between technologies in different fields of study and how they apply to communities.**

- 9-12.NC.3.1 Analyze intended and unintended impacts of a system
- 9-12.NC.3.2 Integrate technology into school, home and community
- 9-12.NC.3.3 Evaluate technologies that increase educational and workplace opportunities.

**Students understand the purpose and demonstrate the use of the design process in problem solving.**

- 9-12.NC.4.1 Compare and contrast other problem-solving and decision-making methods
- 9-12.NC.4.2 Formulate a technological solution using data-driven decision-making.

**Students understand the safe, ethical, legal, and societal issues related to technology.**

- 9-12.SI.1.1 Evaluate the need for acceptable use policies
- 9-12.SI.1.2 Compile a list of immediate and long-range effects of ethical and unethical uses of technology on individuals and society.

**Students investigate the advantages and disadvantages of technology.**

- 9-12.SI.2.1 Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole.
- 9-12.SI.2.2 Compare and contrast society’s influence on technology and technology’s influence on society.

**Students recognize and demonstrate skills in operating technological systems.**

- 9-12.CT1.1 Incorporate knowledge and enhanced usage skills to create a product.
- 9-12.CT.1.2 Apply strategies for identifying and solving routine hardware and software issues.

**Students use technology to enhance learning, extend capability, and promote creativity.**

- 9-12.CT.2.1 Utilize a virtual learning environment as a strategy to build 21st century learning skills
- 9-12.CT.2.2 Investigate to apply expert systems, intelligent agents, and simulations in real-world situations
- 9-12.CT.2.3 Utilize online information resources routinely and efficiently to meet needs for collaboration, research, publication, communication, and productivity.

**Students evaluate and select information tools based on the appropriateness to specific tasks.**

- 9-12.CT.3.1 Select and apply technology tools for research, information analysis, problem solving, and decision making in content learning.
- 9-12.CT.3.2 Organize and manage personal/professional information using technology tools. (e.g., finances, schedules, addresses, purchases, correspondences).

**Students understand the purpose of information technologies to communicate with a variety of collaborators.**

- 9-12.CP.1.1 Collaborate with external peers, experts, and others by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works.

**Students exchange information and ideas for an identified purpose through Information technologies.**

- 9-12.CP.2.1 Adapt delivery of communication based on available information technologies.
Students use technology to locate and acquire information.
9-12.IL.1.1  Design a research project using a variety of technologies to find information to solve real world problems.

Students determine the reliability and relevancy of information.
9-12.IL.2.1  Independently evaluates the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information services.

**Course Standards**

**Students will demonstrate knowledge of Information System Analysis and Design**
1.1 Students will initiate a system project to customer needs.
1.2 Students will evaluate potential applications to meet project requirement.

**Students will demonstrate knowledge of System Installation and Maintenance**
2.1 Students will troubleshoot system problems.
2.2 Students will evaluate problem-solving processes and outcomes.

**Students will demonstrate knowledge of System Administration and Control**
3.1 Students will perform general system administration tasks to facilitate the delivery of technical services.

**Students will demonstrate and apply knowledge of Project Management.**
4.1 Students will define scope of work to achieve individual and group goals.
4.2 Students will manage information system project methodologies insure system delivery.

**Students will demonstrate knowledge of technical writing and documentation**
5.1 Students will conduct technical research to better understand project goals.
5.2 Students will design technical documentation to enable the creation of the technical document.
5.3 Students will write technical reports to support the development project.

**Major Projects and Assignments**

(These projects may change at the discretion of the instruction during the course of the semester)

*Introduction to Systems Analysis and Design*
As students are introduced to the world of systems analysis and design, they will have a better understanding of the impact of information technology on business strategy and success. Students will be introduced to modeling, prototyping, and CASE tools; distinguish between structured analysis and object-orientated analysis, and have a better understanding of the systems development life cycle.

Students will complete a variety of case studies that has them look at current technologies and the needs of individuals and corporations. Students will also complete assignments that look at the job requirements of systems analyst as well as conduct industry related interviews.

*Systems Planning*
Systems planning is the first phase of the systems development life cycle. In this phase, students will learn how IT projects get started and how a systems analyst evaluates a proposed project and determines its feasibility. We will look at company strategic plans and study its mission, objectives, and IT needs. Through an investigation, we will prepare a report and make recommendations to the management.

Students will complete a variety of case studies dealing with the planning phase. As students work through case studies, they will answer some important questions. Why are we doing this project? What is this project about? How does the solution address key business issues? How much will it cost and how long will it take? Will we suffer a productivity loss during the transition? What is the return on investment and payback period? What
are the risks of doing the project? What are the risks of not doing the project? How will we measure success? What alternatives do we have? Within the case studies, students will present a strategic plan to the company’s owner as well as help them draft a mission statement.

**Systems Analysis**

Systems analysis is the second phase of the systems development life cycle. In this phase, students will learn requirements, data and process, and object modeling as well as a variety of development strategies.

Students will complete a case study in which they must show their understanding of the second phase of the systems development life cycle. In this case, study students will prepare, conduct, document, and evaluate an interview. Students will also develop other ways of fact finding to find information to assist in the project. With the information, gathered students will design a data model that will show the flow of data within the project. Students will enhance the report and their project with the use of unified modeling language tools and object modeling. Within the project, students will look at the various options for software modeling and requests.

**Systems Design**

Tests and Quizzes: Quizzes are given weekly over the course content. Unit tests are given approximately three to five times per grading period and will include essay and open-response questions.

**Assessment Plan**

All assignments are designed to show whether students have met the standards for the course. Any unit test, project, lab report, or presentation assessed as “poor quality” will be expected to be REDONE for higher credit.

**Distribution of Grading Components**

Grades are determined by dividing the points earned by the total number of points available in the grading period. Each major project and assignment commands an approximate percentage of the total points for the grading period as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading Assignment/Daily Grades</td>
<td>40%</td>
</tr>
<tr>
<td>Major Projects</td>
<td>40%</td>
</tr>
<tr>
<td>Tests, Quizzes, and Exams</td>
<td>20%</td>
</tr>
</tbody>
</table>

*Distribution of component percentages is subject to change.

**Description of Grading and Quality Work**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Scale</th>
<th>Description of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>94-100%</td>
<td>Consistently demonstrates an exceptional level of quality and effort. Having all work in on time and completed to exceed expectations. Mastery in evaluating, synthesizing, and applying the knowledge and skills of information technology.</td>
</tr>
<tr>
<td>B</td>
<td>87-93.9%</td>
<td>Consistently demonstrates proficient knowledge with a good effort and quality of work. All assignments are complete and on time. Demonstrates the ability to evaluate, analyze, synthesize and apply the principles of information technology.</td>
</tr>
<tr>
<td>C</td>
<td>78-86.9%</td>
<td>Demonstrates proficient knowledge and the ability to apply information technology. Work shows average effort. A few assignments may be missed</td>
</tr>
<tr>
<td>Grade</td>
<td>Percentage</td>
<td>Description</td>
</tr>
<tr>
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</tr>
<tr>
<td>D</td>
<td>68-77.9%</td>
<td>Work shows minimal effort and some assignments are late. Demonstrates a basic understanding of recalling or comprehending information technology.</td>
</tr>
<tr>
<td>F</td>
<td>Below 67.9%</td>
<td>Understanding is below basic in relation to information technology. Work is of poor quality and does not meet standards or expectations.</td>
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**Extra Help**

Extra help is available from 8-8:15 am and after school until 4 pm. Students may also sign out to come in for help during SRP.

**Course Resources**
Information System Analysis & Design

**Rationale Statement:**
One of the growing areas of Information Technology is that of system planning and project management. With the current course offerings throughout the state, most courses do not tough on the concepts and theories that are presented through the practical approach to information technology and system development. The design of this course helps upper level students who are interested in information technology fields to explore problem solving and project management through information and case studies.

To expose students to the concepts and knowledge of systems analysis and design at the secondary level is so important for their transition to post-secondary. A student interested in web design, English for information systems, mathematics for information systems, computer science, application programming, computer education, computer information systems, computer and network security, E-commerce, networking, or any other computer related degree at the state universities will be required to take a systems analysis and design course.

**Course Description:**
**Grade Level:** 11 – 12

**Topics Covered**
- Introduction to Systems Analysis and Design
- Systems Planning
- Systems Analysis, Requirements, and Modeling
- Output, User Interface, Data, and Systems Design
- Systems Implementation
- Systems Operation, Support, and Security
<table>
<thead>
<tr>
<th>Indicator #1: Students will demonstrate knowledge of Information System Analysis and Design</th>
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</thead>
<tbody>
<tr>
<td><strong>Bloom’s Taxonomy Level</strong></td>
</tr>
<tr>
<td>Creating</td>
</tr>
</tbody>
</table>
| 1.1 **Students will initiate a system project to customer needs.**  
For example, to meet this standard students may:  
  - Identify the phases in a system project.  
  - Select basic fact-gathering techniques to be used.  
  - Define the scope of the systems project.  
  - Conduct a preliminary investigation of customer requirements. |
| Applying                                                      |
| 1.2 **Students will evaluate potential applications to meet project requirement.**  
For example, to meet this standard students may:  
  - Design a framework for evaluating information system functions.  
  - Design a framework for evaluating individual applications.  
  - Recommend new features or enhancements to existing tools. |

<table>
<thead>
<tr>
<th>Indicator #2: Students will demonstrate knowledge of System Installation and Maintenance</th>
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</tr>
<tr>
<td>Applying</td>
</tr>
</tbody>
</table>
| 2.1 **Students will troubleshoot system problems.**  
For example, to meet this standard students may:  
  - Demonstrate knowledge of basic troubleshooting steps.  
  - Minimize impact on user and system productivity. |
| Creating                                                      |
| 2.2 **Students will evaluate problem-solving processes and outcomes.**  
For example, to meet this standard students may:  
  - Evaluate problem-solving outcomes to determine whether the problem was solved as intended.  
  - Evaluate whether the process was applied in an efficient and responsible manner.  
  - Assess the validity and usefulness of the outcomes for the end user  
  - Assess the validity and usefulness for the software.  
  - Determine needed follow-up actions. |
### Indicator #3: Students will demonstrate knowledge of System Administration and Control

<table>
<thead>
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<th>Bloom’s Taxonomy Level</th>
<th>Standard and Examples</th>
</tr>
</thead>
</table>
| Applying               | 3.1 **Students will perform general system administration tasks to facilitate the delivery of technical services.**  
For example, to meet this standard students may:  
- Set up/maintain user accounts on multiple systems.  
- Participate in the evaluation, analysis, and recommendation of technical computing products.  
- Document performance problems.  
- Prepare required reports.  
- Maintain technical industry knowledge. |

### Indicator #4: Students will demonstrate and apply knowledge of Project Management.

<table>
<thead>
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<th>Standard and Examples</th>
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</table>
| Evaluating             | 4.1 **Students will define scope of work to achieve individual and group goals.**  
For example, to meet this standard students may:  
- Assess the task's contribution to overall business needs.  
- Identify size and specifics of the task.  
- Formulate task sequence.  
- Identify potential problems.  
- Develop contingency plans. |
| Evaluating             | 4.2 **Students will manage information system project methodologies insure system delivery.**  
For example, to meet this standard students may:  
- Identify escalation procedures.  
- Develop work breakdown structures  
- Identify required resources and budget.  
- Develop initial project management flowchart.  
- Identify interdependencies and milestones  
- Manage the change control process.  
- Participate in project phase review.  
- Report project status.  
- Utilize project management software. |
**Indicator #5: Students will demonstrate knowledge of technical writing and documentation**

<table>
<thead>
<tr>
<th>Bloom’s Taxonomy Level</th>
<th>Standard and Examples</th>
</tr>
</thead>
</table>
| **Analyzing**          | **5.1 Students will conduct technical research to better understand project goals.**<br>For example, to meet this standard students may:  
  - Identify target audience.  
  - Define research questions.  
  - Determine priorities for the information that should be gathered.  
  - Identify potential sources of information.  
  - Target audience/user group as a key information source.  
  - Identify subject-matter experts.  
  - Evaluate potential sources of information based on established criteria  
  - Conduct interviews with selected human information sources.  
  - Gather information from selected print and electronic sources.  
  - Determine the accuracy and completeness of the information gathered. |
| **Applying**           | **5.2 Students will design technical documentation to enable the creation of the technical document.**<br>For example, to meet this standard students may:  
  - Specify standards for documentation, including critical success criteria.  
  - Identify delivery options.  
  - Evaluate cost-effectiveness of each delivery option.  
  - Select tools appropriate for task purpose.  
  - Plan information flow.  
  - Select writing style and tone appropriate for given documentation.  
  - Determine level of detail needed.  
  - Identify visuals appropriate for given documentation. |
| **Evaluating**         | **5.3 Students will write technical reports to support the development project.**<br>For example, to meet this standard students may:  
  - Determine audience to identify type of report needed.  
  - Compile and organize relevant data.  
  - Analyze data  
  - Draw conclusions from data analysis.  
  - Revise report as needed based on peer feedback. |