**Rule 24 Matrix**
**Revised: March 2007**
**Table of Alignment of Standards and Assessments**

**Endorsement: Information Technology** | **Grade Levels: K-12** | **Endorsement Type: Supplemental**
**Total Hours Required by Rule 24: 15** | **Program Hours Required by Institution: 20** | **Name of Institution: Concordia University, Nebraska**

Endorsement Program Requirements: Nebraska teacher education institutions offering this endorsement program must have on file, within the institution, a plan which identifies the courses and the course completion requirements which the institution utilizes to grant credit toward completion of this endorsement.

**(For additional lines in each section, please go to the last column and press the tab key.)**

**Standard/Description**

006.33D Certification Endorsement Requirements: This endorsement requires a minimum of 15 semester hours in information technology courses and a minimum of 40 hours of related clinical experiences at elementary and secondary levels.

| Course #, Title, and Credits | Course Assessment(s) | Key Program Assessment(s) | Candidate Proficiencies: Content Knowledge | Pedagogical Knowledge | Skills | Dispositions | P-12 Student Learning |
|---|---|---|---|---|---|---|---|
| CS 131, Computer Programming I, 3 | Quizzes, programming assignments, project, tests | | X | | X | | |
| CS 141, Computer Programming II, 3 | Programming assignments, tests | | X | | X | | |
| CS 231, Introduction to Computer Systems, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 251, Introduction to File Processing, 3 | Homework, programming assignments, research project, presentation, tests | | X | | X | | |
| CS 261, Operating Systems and Computer Architecture I, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 334, Organization of Programming Lamguages, 3 | Programming assignments, project and presentation, tests | | X | | X | | |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X | X | | |

**Standard/Description**

A. Demonstrate knowledge of ethical, human, legal and social issues, which may include privacy, accessibility, copyright, intellectual property, plagiarism, and information validity.

| Course #, Title, and Credits | Course Assessment(s) | Key Program Assessment(s) | Candidate Proficiencies: Content Knowledge | Pedagogical Knowledge | Skills | Dispositions | P-12 Student Learning |
|---|---|---|---|---|---|---|---|
| CS 131, Computer Programming I, 3 | Quizzes, assignments, projects and tests assessing "The computer as a tool" | | X | | X | | |
| CS 251, Introduction to File Processing, 3 | Homework, programming assignments, research project, presentation, tests | | X | | X | | |
| CS 261, Operating Systems and Computer Architecture I, 3 | Homework, programming assignments, tests | | X | | X | | |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X | X | | |

**Standard/Description**

| B. Demonstrate knowledge of classroom and instructional management methodologies using appropriate materials, methods, resources, and curricula for teaching information technology, which may include:<br>1. Instructional strategies that create authentic and meaningful learning experiences;<br>2. Instructional strategies for dealing with learning styles and diverse populations; and<br>3. Effective methods of assessment and evaluation with appropriate feedback techniques. | | | **Candidate Proficiencies** | | | | |
|---|---|---|---|---|---|---|---|
| **Course #, Title, and Credits** | **Course Assessment(s)** | **Key Program Assessment(s)** | **Content Knowledge** | **Pedagogical Knowledge** | **Skills** | **Dispositions** | **P-12 Student Learning** |
| CS 131, Computer Programming I, 3 | Quizzes, programming assignments, projects and tests that assess programming, problem solving and algorithm development that also exemplify the use of rubrics for evaluation. | | X | X | X | | |
| CS 141, Computer Programming II, 3 | Programming assignments, tests | | X | | X | | |
| CS 231, Introduction to Computer Systems, 3 | Programming assignments using grading rubrics | | X | | X | | |
| CS 251, Introduction to File Processing, 3 | Homework, programming assignments,research project, presentation, tests | | X | | X | | |
| CS 261, Operating Systems and Computer Architecture I, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 334, Organization of Programming Languages, 3 | Programming assignments, project and presentation, tests | | X | | X | | |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X | X | | |

| **Standard/Description** | | | | | | | |
|---|---|---|---|---|---|---|---|
| C. Demonstrate knowledge of methods and skills appropriate to planning and designing learning environments, which may include;<br>1. Classroom design that includes access to technical resources and tools; and<br>2. Management skills and techniques. | | | **Candidate Proficiencies** | | | | |
| **Course #, Title, and Credits** | **Course Assessment(s)** | **Key Program Assessment(s)** | **Content Knowledge** | **Pedagogical Knowledge** | **Skills** | **Dispositions** | **P-12 Student Learning** |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X | X | | |

| **Standard/Description** | | | | | | | |
|---|---|---|---|---|---|---|---|
| D. Demonstrate knowledge and application of basic programming concepts, that may include:<br>1. Design principles and common programming structures;<br>2. Procedural and object-oriented programs;<br>3. Application development tools;<br>4. Program solutions coded in a common high-level language; and<br>5. Strategies for testing and debugging code. | | | **Candidate Proficiencies** | | | | |
| **Course #, Title, and Credits** | **Course Assessment(s)** | **Key Program Assessment(s)** | **Content Knowledge** | **Pedagogical Knowledge** | **Skills** | **Dispositions** | **P-12 Student Learning** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CS 131, Computer Programming I, 3 | Quizzez, programming assignments, projects and tests that assess programming, problem solving and algorithm development | | X | | X | | |
| CS 141, Computer Programming II, 3 | Programming assignments, tests | | X | | X | | |
| CS 231, Introduction to Computer Systems, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 251, Introduction to File Processing, 3 | Homework, programming assignments,research project, presentation, tests | | X | | X | | |
| CS 261, Operating Systems and Computer Architecture I, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 334, Organization of Programming Lamguages, 3 | Programming assignments, project and presentation, tests | | X | | X | | |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X | X | | |

| **Standard/Description** | | | | | | | |
|---|---|---|---|---|---|---|---|
| E. Demonstrate knowledge in the areas of selection, installation, management, and maintenance of infrastructure for information support and services, which may include:<br>1. Operating systems;<br>2. Organization and architecture of computer systems and software;<br>3. Database design, development, and management;<br>4. Technical research and documentation;<br>5. Troubleshooting strategies;<br>6. Communication skills;<br>7. Emerging hardware and software technologies;<br>8. Security of hardware, software, and data; and<br>9. Ergonomic principles that foster a healthy and productive environment. | | | **Candidate Proficiencies** | | | | |
| **Course #, Title, and Credits** | **Course Assessment(s)** | **Key Program Assessment(s)** | **Content Knowledge** | **Pedagogical Knowledge** | **Skills** | **Dispositions** | **P-12 Student Learning** |
| CS 131, Computer Programming I, 3 | Quizzes, projects and tests assessing computer organization concepts and the computer as a tool. | | X | | X | | |
| CS 141, Computer Programming II, 3 | Programming assignments, tests | | X | | X | | |
| CS 231, Introduction to Computer Systems, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 251, Introduction to File Processing, 3 | Homework, programming assignments,research project, presentation, tests | | X | | X | | |
| CS 261, Operating Systems and Computer Architecture I, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 334, Organization of Programming Languages, 3 | Programming assignments, project and presentation, tests | | X | | X | | |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X | X | | |

| **Standard/Description** | | | | | | | |
|---|---|---|---|---|---|---|---|
| F. Demonstrate a basic knowledge of interactive media, which may include:<br>1. Web-based media and applications;<br>2. Multimedia tools; and<br>3. Digital media. | | | **Candidate Proficiencies** | | | | |
| **Course #, Title, and Credits** | **Course Assessment(s)** | **Key Program Assessment(s)** | **Content Knowledge** | **Pedagogical Knowledge** | **Skills** | **Dispositions** | **P-12 Student Learning** |
| CS 131, Computer Programming I, 3 | Quizzes, projects, and tests assessing the computer as a tool. | | X | | X | | |
| CS 141, Computer Programming II, 3 | Programming assignments, tests | | X | | X | | |
| CS 231, Introduction to Computer Systems, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 251, Introduction to File Processing, 3 | Homework, programming assignments,research project, presentation, tests | | X | | X | | |
| CS 261, Operating Systems and Computer Architecture I, 3 | Homework, programming assignments, tests | | X | | X | | |
| CS 334, Organization of Programming Languages, 3 | Programming assignments, project and presentation, tests | | X | | X | | |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X | X | | |

| **Standard/Description** | | | | | | | |
|---|---|---|---|---|---|---|---|
| G. Demonstrate a basic knowledge of network systems, which may include:<br>1. Network concepts and operating systems;<br>2. Management and security for networked environments; and<br>3. Emerging technologies. | | | **Candidate Proficiencies** | | | | |
| **Course #, Title, and Credits** | **Course Assessment(s)** | **Key Program Assessment(s)** | **Content Knowledge** | **Pedagogical Knowledge** | **Skills** | **Dispositions** | **P-12 Student Learning** |
| CS 131, Computer Programming I, 3 | Quizzes, projects, and tests assessing the computer's role in a network envireonment. | | X | | X | | |
| CS 251, Introduction to File Processing, 3 | Homework, programming assignments,research project, presentation, tests | | X | | X | | |
| CS 261, Operating Systems and Computer Architecture I, 3 | Homework, programming assignments, tests | | X | | X | | |
| Educ 368, Methods in Computer Science, 2 | Homework, projects, discussion | | X | X, | X | | |