

## Curriculum and Instruction STEM 704, Fall 2012

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| <b>Lead learner</b>       | Jennifer Momsen   |
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| <b>Website</b>            | <a href="https://sites.google.com/site/jmomsen/">https://sites.google.com/site/jmomsen/</a> |
| <b>Course meetings</b>    | 4 – 5:15<br>Mondays, Dunbar 152<br>Wednesdays, Living Learning Center 126                   |

### Catalog description

“This course focuses on research on assessment and curricula designed to identify and address conceptual and reasoning difficulties of students in math and science. A variety of assessments and research-based curricula will be used and critically analyzed. Issues related to challenges of implementing reform-based curricula will also be discussed.”

### Driving questions

1. How does learning in science occur?
2. How can curriculum and instruction impact learning pathways and in what ways?
3. What is the role of assessment in learning?
4. How do we know whether and to what extent a curriculum has impacted learning?
5. Why do conceptual and reasoning difficulties persist in science?

### Learning outcomes

Successful learners will be able to:

1. Evaluate and synthesize multiple models of student learning.
2. Identify and evaluate existing evidenced-based curriculum, instruction, and assessments, as appropriate to their discipline.
3. Identify and evaluate existing standards, as appropriate to your discipline
4. Align curricular innovation to appropriate assessments.
5. Design, implement, and assess curriculum and instruction.

### Course schedule

This course is divided into roughly two portions. The first half of the semester we will explore literature, observe practicing faculty, and develop a deep understanding of the coupled process of learning and teaching. In the second half of the semester, our focus will shift to developing, revising, and reflecting on curriculum, instruction, and assessment. During our first class meeting, we will negotiate project deadlines, given the general timeframe described above.

### Learner assessment

This course is meant to improve both your scholarship of teaching and your research practices; as such, it is not about points, grades, or GPA. The projects identified below will not be graded

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on a point system; rather, assessment of your learning will be guided by the choice of a contract, thus giving you more control of your own learning: you, the learner, decide how much work you wish to do this semester. If you meet the expectations for a contract's performance tasks, you will *earn* the grade for which you contracted. Each project will be assessed as "expectations met" (task mastery), "expectations not met", or "not submitted". Work assessed as "expectations not met" can be revised and resubmitted within a reasonable time frame, typically one week after you receive feedback. Please note that this course is a work in progress; as such, I am willing to negotiate these contracts following a full-class discussion.

### **C contract**

*To earn a C, you must meet expectations for the performance tasks listed below.*

1. Commit to and fulfill an individual learning contract for this course.
2. Contribute to in class conversations by reading assigned articles prior to class, asking thoughtful questions, and responding to the ideas of others.
3. Participate in a collaborative group to develop, implement, and reflect on a classroom observation protocol.
4. Create, maintain, and curate a delicious account of a collection of resources useful to curriculum development, instruction, and assessment in your discipline.
5. Identify learning goals used in the classroom, articulated on course syllabi, and articulated nationally (i.e., standards) for your discipline.
6. Develop a model of learning, based on a synthesis of literature.
7. Develop and micro-teach a complete unit of instruction.

### **B contract**

*To earn a B, you must meet expectations for the performance tasks listed below **and** for all of the performance tasks listed in the C contract.*

8. Lead one in class discussion, including identifying and posting to Blackboard a suitable article or articles.
9. Participate in a collaborative group to analyze and present data collected through classroom observations.
10. Within your delicious account, curate a collection of resources specific to online education in your discipline.
11. Develop and micro-teach a complete unit of instruction suitable for an online environment.

### **A contract**

*To earn an A, you must meet expectations for the performance tasks listed below **and** for all of performance tasks listed in the B and C contracts.*

12. Actively reflect on the course, especially the classroom observation project and micro-teaching events.
13. Within your delicious account, curate a collection of resources specific to games in education and your discipline.
14. Develop and micro-teach a complete unit of instruction based on principles of gaming.

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Each of the performance tasks identified above is more clearly described in our Blackboard course. Peer assessments will be used when appropriate. Commitment to a contract does not automatically guarantee the grade sought. For example, if you meet expectations for ALL of the performance tasks on the A and B contracts but DO NOT meet expectations for one of the performance tasks on the C contract, you may earn a D for the course UNLESS you revise and resubmit the work for the performance task that did not meet expectations.

### **Required resources**

No text is required, although various texts are on reserve in Stevens 233A. Readings will be posted on Blackboard. A computing device (laptop, tablet) is recommended for class meetings and is essential to completing the projects identified above.

### **Attendance**

Attendance in class is expected, per NDSU policy 333. Attending and actively participating in each class meeting are critical to your growth as scholarly teachers and researchers. Be proactive by communicating absences to me with as much advance notice as possible. If you have concerns about attendance, please see me.

### **Professionalism** (from Jeff Boyer)

As an aspiring professional, you should demonstrate professionalism in all learning contexts. The four Ps of professionalism include:

1. Be polite
  - a. Treat everyone with respect. Our class is a community of adult learners.
  - b. Demonstrate and expect the basics of common courtesy.
2. Be positive
  - a. Maintain a positive attitude even during adverse situations.
  - b. Accept and offer feedback in a constructive and helpful manner.
3. Be prepared
  - a. Bring all necessary materials to each class session.
  - b. Demonstrate effective time management: arrive on time and complete course tasks on time.
4. Be productive
  - a. Attend all class sessions and remain attentive throughout each session.
  - b. Contribute equitably to class discussions and group projects.
  - c. Accomplish something significant every class session.

### **Communication**

All correspondence, including email, is considered a formal means of communication. Please be cognizant of your tone, spelling, and grammar. I typically respond to emails within 24 hours during the workweek. Email received on weekends or during holidays may not be answered within this time frame.

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**Accommodations**

Any students with disabilities or other special needs, who need special accommodations in this course, are invited to share these concerns or requests with the instructor and contact the Disability Services Office as soon as possible.

**Academic integrity**

“The academic community is operated on the basis of honesty, integrity, and fair play. This trust is violated when students engage in academic misconduct, either inadvertently or deliberately. This policy serves as the guideline for cases in which cheating, plagiarism, or other academic misconduct have occurred in an instructional context (e.g., coursework, exams for degree requirements, practical experience, or fieldwork experience). Depending on the nature of the alleged offense, academic misconduct involving graduate or undergraduate research (e.g., thesis, dissertation, honors thesis), may be handled by either this policy or policy 326, ACADEMIC MISCONDUCT. This policy also serves as the guideline for cases in which there is evidence of student academic misconduct in more than one instance.” Source: NDSU Faculty Senate Policy