



# LOYOLA UNIVERSITY CHICAGO

*Preparing people to lead extraordinary lives*

## **TLSC 421-001: Teaching Science in Elementary Grade Classrooms**

*Teaching, Learning, and Leading with Schools and Communities*

School of Education, Loyola University Chicago

Fall 2021

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### **Instructor Information**

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Office hours: by appointment

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### **Module Information**

- Dates: Wednesdays from October 6<sup>th</sup> – November 3<sup>rd</sup>, 2021
- Time: 9:00am-11:30am
- Location: Cuneo Hall- Room 218

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**\*School of Education Commitment - COVID-19:** Loyola's School of Education (SOE) recognizes that this is an unprecedented time. We understand that moving into the 2021-2022 academic year while living in the context of the COVID-19 pandemic may stir feelings of uncertainty, fear, or anxiousness. We want you to know that your safety, health, and well-being, as well as that of our faculty and staff, remain our primary concern. We want to be able to support you in any way that we can. We ask you to embody the Jesuit value of [Cura Personalis](#), or care for the whole person, as we prepare to learn together. We ask that you consider your way of being in this community, to act with care, and treat all with dignity to keep yourself and others safe. If you are not feeling well, please use Loyola's SYMPTOM Checker. It can be found on the webpage or APP [Loyola Health](#) under the **COVID -19 Related Information Tab** at the top of the page.

The University understands that you may encounter obstacles that make reaching academic goals more difficult. We strongly encourage you to access the Student Resources on [Loyola's COVID-19 Response webpage](#) for information, supports, and resources on basic needs such as housing, food, financial aid, and medical and mental health. This web page also offers information on official University communications, access to technology, and student services. All Loyola University Chicago administrators, faculty, and advisors are also here for you.

The SOE is committed to working with all students to address any challenges that may arise during the semester. Please reach out to your professor as early as possible to discuss any accommodations you think may be necessary in order for you to successfully complete your coursework. Active and engaged communication with all of your professor is encouraged. We know the FALL 2021 Return to Campus will be like no other, but through collaboration, communication, and shared responsibility, we will not only get through this difficult time; we will thrive.

**\*COVID-19 Required Personal Safety Practices:** We all have a part to play in preventing the spread of COVID-19. Following a simple set of required personal safety practices can lower your own risk of being infected and can help protect others. All members of the Loyola community are expected to follow these practices while on any of the University's campuses. **Face masks or face coverings must be worn by all students, faculty, and staff while on any of Loyola's campuses, when in the presence of others, in classrooms, and in public settings where other social distancing measures are difficult to maintain.**

Appropriate use of face masks or coverings is critical in minimizing the risks to others around you, as you can spread COVID-19 to others even if you do not feel sick. Please be sure to review all [LUC REQUIRED Safety Protocols](#).

**\*COVID-19 Reporting Protocol:** In preparation for our upcoming semester, Loyola University Chicago's Emergency Response Management team has been working to develop [protocols](#) in accordance with Centers for Disease Control and Prevention (CDC) guidelines that help ensure the health and safety of our community. Given the rising number of COVID-19 cases across our country, it is very likely that incidence within our community will occur in the fall.

Students, faculty, and staff who have tested positive for COVID-19 must report their case to the University as soon as possible. **If you have tested positive for the virus, please contact us at [covid-19report@LUC.edu](mailto:covid-19report@LUC.edu) or by calling 773-508-7707. All COVID-19-related questions or feedback should continue to be sent to [covid-19support@LUC.edu](mailto:covid-19support@LUC.edu), not the new case reporting email address.**

## Module Description

This module introduces candidates to the discipline of science, providing them experiences engaging in the teaching and learning of elementary science, and specifically works to help candidates integrate literacy into their science instruction. Candidates develop knowledge and skills needed to teach science through an inquiry approach and integrate literacy into their science teaching.

The module begins with developing an understanding of science as a culture. People who are scientifically literate think, act, talk and identify within the community of science. They understand how scientific knowledge is constructed, how scientific explanations are developed and communicated, and how science is used – including in engineering design.

The content of this module focuses on the *Framework for K-12 Science Education* and the related Next Generation Science Standards (NGSS). Students will engage with important science ideas, identify high quality resources, and undergo the process of planning cohesive storylines that could be implemented in elementary grade classrooms.

A strong emphasis will be placed on disciplinary literacy within science, including reading comprehension strategies, facilitating scientific discussions, and integrating writing instruction that supports student learning. We will also reflect upon the implications for teaching science and engineering, and for creating opportunities for all students to participate in these fields.

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## Course Goals

### Essential Questions:

- How are science, technology and engineering related; how are they distinct?
- How have the *Framework for K-12 Science Education* and the Next Generation Science Standards (NGSS) impacted science and engineering education? What was the rationale for these changes, and what are the implications?
- How and why can teachers meet the needs diverse learners through acknowledging and building upon their prior experiences, beliefs and values?
- How do teachers integrate, support and assess practical and purposeful writing within the context of science?
- How might out-of-school and informal learning resources support and enhance science and engineering curricula, as well as provide relevancy to student's learning?
- How does race and racism influence education within science and other content areas?

As a part of this module, candidates will understand that effective educators:

- Maintain and utilize global perspectives and international-mindedness when engaging in teaching, learning and leading, including the awareness and application of the social, cultural, inter-cultural and linguistic facets of student achievement.
- Use research and evidence-based practices to design instruction that includes the alignment of goals, objectives, assessments and instructional strategies to meet the individual needs of students.
- Apply deep understanding of both content and pedagogy to provide developmentally appropriate instruction to all students.
- Explicitly integrate the teaching of reading, writing, communication and technology across content areas.
- Develop safe and healthy learning environments for all students.

As a part of this module, candidates will:

- EU3 K1 Identify what constitutes research and evidence-based practices related to designing and implementing instruction. (c1G) (IB)
- EU3 K2 Explain the scope and sequence in relevant standards (NGSS, CCSS). (c1A)
- EU3 K3 Explain how to adjust scope and sequence in standards-based curriculum maps to meet the needs of diverse learners. (c1A) (IB)
- EU3 S1 Consult academic texts or journals to read current research on designing instruction (i1A) (IB)
- EU 3 S2 Incorporate research and evidence-based practices into the design of instruction. (e2K, i1A) (IB)
- EU3 S3 Use standards-based curriculum maps to design units and lessons to meet the needs of diverse learners. (c2J, c2B) (IB)
- EU 3 S8 Select relevant instructional content, materials, resources and strategies for differentiated, universally designed instruction and sheltered instruction. (c2J, e2G) (IB)
- EU6 K1 Describe the important facts and central concepts, principles, and theories associated with their certified content areas. (b1B, b1G)
- EU6 K2 Identify the content standards and the scope and sequence of the subject area of their certified content areas. (b1B)

- EU6 K3 Describe how their subject is related to other disciplines. (b1D) (IB)
- EU6 K7 Describe content-specific instructional strategies.
- EU6 K9 Describe how to conduct and interpret appropriate content specific assessments. (g1A, g1G)
- EU6 S1 Integrate connections between their content area and the other content areas. (b2F, c2E) (IB)
- EU6 S2 Use students' prior knowledge and experience to introduce new subject-area related content. (a2B, b1G, c2D) (IB)
- EU6 S5 Create and select activities that are designed to help students develop as independent learners and complex problem-solvers. (a1B, e2A, e2D) (IB)
- EU6 S6 Evaluate, select, and integrate a variety of research-based strategies such as inquiry, cooperative learning, discussion, discovery, problem-based learning, and direct instruction into a coherent lesson design. (c2J, e2A, i1A) (IB)
- EU6 S7 Make developmentally appropriate choices in selecting teaching strategies to assist diverse learners in meeting instructional strategies. (a2C, b1E) (IB)
- EU6 S9 Demonstrate the ability to recognize and value student diversity and the differences in how students learn and provide instruction to accommodate such diversity. (a1A, a2A, b2E, b1E, c2J, e2E) (IB)
- EU6 S10 Use questions and questioning to assist all students in developing skills and strategies in critical and high-order thinking, inquiry, and problem solving. (b2C) (IB)
- EU6 S11 Use resources and multiple representations of content effectively, including technology, to enhance student learning. (b2A, b2B, b2D, b2E, b2G) (IB)
- EU6 S12 Reflect and analyze past lessons to improve in the future. (i2C) (IB)
- EU 8 S6 Prepare students to critically and creatively respond to text dependent issues and questions orally and in writing. (f2G, f2J)
- EU8 S10 Design curriculum and instruction that guides students to write informative/explanatory texts that analyze complex ideas; to write narratives that present real or imagined events that utilize effective technique, well-chosen details, well-structured event sequences, and standard conventions. (f2G)
- EU8 S11 Engage students in inquiry-based research supported by specific evidence to develop research, writing and argumentation skills (b2H, f2G)
- EU8 S12 Utilize a variety of technological tools and skills to support literacy instruction and personal communication skills, including but not limited to computers, cameras, interactive web sites, blogs, online research. (b1F, b2D, b2G, e2F, e2G, i2K, i2L)
- EU11 S7 Engage in different ways of knowing within or across various disciplines. (b2B) (IB)

### **Conceptual Framework and Conceptual Framework Standards**

The Loyola School of Education Conceptual Framework states that: Our mission is social justice, but our responsibility is social action through education.

As teachers, we recognize our connection to students as individuals and as members of a larger community. We serve others (students as well as families and communities) by creating experiences that encourage creative, moral and intellectual development. Leaders in our classrooms and larger

school communities, we must consider how education can be transformational and how we might be agents of change. In this course sequence, we will explore what it means to hold high expectations for all learners that include academically challenging, personally and socially relevant knowledge and complex learning skills. In order to successfully provide opportunities for youth to meet these expectations, we must also be committed to reflecting on our own practice and to continually developing our own knowledge, skills and professional dispositions.

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## **School of Education Mission**

The School of Education at Loyola University Chicago, a Jesuit Catholic urban university, supports the Jesuit ideal of knowledge in the service of humanity. We endeavor to advance professional education in service of social justice, engaged with Chicago, the nation, and the world. To achieve this vision, the School of Education participates in the discovery, development, demonstration, and dissemination of professional knowledge and practice within a context of ethics, service to others, and social justice. We fulfill this mission by preparing professionals to serve as teachers, administrators, psychologists, and researchers who work across the developmental continuum, and by conducting research on issues of professional practice and social justice.

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## **Dispositions Assessment**

*Candidates commit to the following dispositions:*

**Inquiry:** Candidates use discipline-recognized processes for generating new knowledge in order to expand their theoretical understandings, ability to solve problems and analyze programs. They will deepen their personal understandings, improve their practice, and apply their learning about communities, families and students. Candidates will draw upon or collect various forms of data and information including literature, quantitative and qualitative data, formal and informal assessments, information about students, families and communities, and personal reflection when generating new knowledge. Candidates use their inquiry-based generated knowledge using multiple sources to inform their instruction and promote learning for all.

**Social Justice:** Candidates adopt a stance of affirming and welcoming diversity in both local and global communities. They demonstrate respect for and understanding of differences across and within groups through their spoken and written course contributions as well as in the actions they take. Candidates promote social justice by taking ethically guided actions to challenge practices and policies that promote or perpetuate injustices and inequities. Candidates demonstrate their commitment to continuing to develop their understanding around issues of diversity. They further demonstrate their commitment to contribute to the work of preventing and/or undoing injustices by advocating for individuals, populations, or groups who currently are, or have historically been, oppressed and marginalized through covert and overt practices on the part of institutions or individuals.

**Professionalism:** Candidates demonstrate personal responsibility and agency by engaging in proactive problem resolution and conflict management. Candidates promote their own development and the development of others and engage in collaborative relationships that promote mutually beneficial outcomes.

Candidates adhere to ethical practices, guidelines, and professional standards of their profession.

Each sequence and module in the *Teaching and Learning with Schools and Communities Program (TLLSC)* focuses on specific professional dispositions and candidates are offered opportunities to receive feedback on their dispositional growth. The teacher candidate commits to appropriate professional and interpersonal behaviors in this module by:

- demonstrating professionalism and reflective practice in collaborating with teachers, students, administrators, families, and communities to improve achievement for all students. (9N) (IB) (D4)
  - participating in ongoing professional development, reading, and research in order to deepen their knowledge and expand their repertoire of skills. (9O) (IB) (D5)
  - valuing and utilizing the unique identities and backgrounds of all students, families and communities as essential assets in learning environments. (9L, 9N) (IB) (D7)
  - demonstrating that authentic literacy instruction is the responsibility of all teachers, across all disciplines and grade levels. (2H, 6A) (IB) (D9)
  - valuing and promoting curiosity, creativity, and life-long learning in students. (IB) (D15)
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## Attendance & Participation

- Candidates are expected to demonstrate a professional attitude and demeanor, arrive promptly to learning sites and/or online sessions, come prepared for class with assignments and required class materials, contribute constructively to the class, integrate readings into class assignments and activities, listen respectfully and incorporate and build from others' ideas.
- Inform your professor ahead of time by e-mail if you must be absent. If there is an emergency, contact your professor as soon as reasonably possible afterward.

Participation is assessed using the following rubric.

	<b>Target (5 points)</b>	<b>Acceptable (4 points)</b>	<b>Unacceptable (0-2 points)</b>
<b>Professional Attitude and Demeanor</b>	Attends all synchronous sessions. Prompt and ready to begin at the scheduled time. Does not disrupt ongoing discussion when signing on.	Attends all synchronous sessions. Arrives within 10 minutes of scheduled time, does not disrupt ongoing discussion.	Does not attend all synchronous sessions or arrives late to multiple sessions and/or does not stay for the scheduled time and/or disrupts session upon arrival.
<b>Asynchronous Contributions</b>	Completes all asynchronous assignments on time. Responses go beyond simply answering prompts to demonstrate depth of knowledge and reasoning.	Completes all asynchronous assignments on time	Does not complete all asynchronous assignments or does not do so in a timely fashion.
<b>Synchronous Discussion Contributions</b>	Always a willing participant. Contributes regularly and significantly to synchronous discussions by initiating and responding to instructor and peers, offering ideas and asking questions. Stays focused and on task throughout the session. Stays on topic and demonstrates appropriate turn-taking.	Sometimes a willing participant. Contributes to synchronous discussion when directly addressed. Stays focused and on task most of the session. Stays on topic and demonstrates appropriate turn-taking.	Rarely a willing participant. Makes limited contributions in discussions or is often off-task or contributes inappropriately to synchronous discussions by going off topic, monopolizing discussions.
<b>Preparation</b>	Prepares for session by completing pre-session tasks and readings in order to fully participate in synchronous discussions, such as with questions or contributions to make to discussions.	Participates in discussion, demonstrates partial preparation for session.	Lack of preparation results in inability to add to the discussion.
<b>Integration of Readings into Classroom Participation</b>	Often cites from readings, uses readings and class notes to support points.	Occasionally cites from readings, uses readings and class notes to support points	Rarely cites from readings, uses readings and class notes to support points

## **LiveText**

All students, except those who are non-degree, must have access to LiveText to complete the benchmark assessments aligned to the Conceptual Framework Standards and all other accreditation, school-wide and/or program-wide related assessments. You can access more information on LiveText here: [LiveText](#)

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## **Course Evaluation:**

Unless otherwise specified, all assignments will be graded using the rubrics posted on Sakai and/or LiveText throughout the semester.

## **TLSC 421 Major Assignments**

*Detail instructions and rubrics are provided for all assignments on Sakai and/or LiveText.*

**Course Participation – 30%**

**Cross Cutting Concepts Book – 20%**

**Lesson Screening Project - 20%**

**[Summative Assessment] Planning a Science Learning Experience – 30%**

## **REQUIREMENTS FOR ALL WRITTEN ASSIGNMENTS**

- Unless otherwise instructed, all written assignments completed outside of class must be double spaced, with one inch margins, word-processed in Times New Roman, 12 point font, and saved electronically.
- Unless otherwise noted, all assignments should be submitted via Sakai.
- Uploaded files must be named using the following format: **LastName\_AssignmentName**
- When quoting or paraphrasing course readings, please use in-text citations, also known as parenthetical citations (Author, Date, Page #). You will not need a full reference list, since these are course readings.
- Other references should be cited where applicable and accompanied with a full reference list, following American Psychological Association style guidelines (APA). Please access the APA style manual through Loyola libraries or online at <http://www.apastyle.org>
- Written assignments will be graded for accurate mechanics and English grammar usage as well as thoughtful, pertinent, and clear content. Please take advantage of the Loyola Writing Center for assistance. <http://www.luc.edu/writing/>

***Assignments must be submitted on time. You will be penalized for any late work. If an emergency situation arises you must e-mail your professor before the assignment is due. Technology issues, however, are not an excuse for late work.***



## Grading Policy and Scale

The final grade is based upon the completion of course requirements, as weighted below and following this scale:

93% - 100%	A	87% - 89%	B+	77% - 79%	C+	67% - 69%	D+
90% - 92%	A-	83% - 86%	B	73% - 76%	C	63% - 66%	D
		80% - 82%	B-	70% - 72%	C-	62% and Below	F

**Late work/Make-up Policy:** Students are expected to turn in all assignments early, or on time. In the event that an assignment is late, partial credit may be awarded at the discretion of the instructor.

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## **Required Texts**

All required readings and resources will be posted on the Sakai site for the course or be made available through the Loyola library digital collection.

# Loyola University Chicago

## School of Education

### Syllabus Addendum

#### **Smart Evaluation**

Towards the end of the course, students will receive an email from the Office of Institutional Effectiveness reminding them to provide feedback on the course. They will receive consistent reminders throughout the period when the evaluation is open, and the reminders will stop once they have completed the evaluation.

- The evaluation is completely anonymous. When the results are released, instructors and departments will not be able to tell which student provided the individual feedback.
- Because it is anonymous and the results are not released to faculty or departments until after grades have been submitted, the feedback will not impact a student's grade.

#### **Dispositions**

All students are assessed on one or more dispositional areas of growth across our programs:

***Professionalism, Inquiry, and Social Justice***. The instructor in your course will identify the dispositions assessed in this course and you can find the rubrics related to these dispositions in LiveText. *For those students in non-degree programs, the rubric for dispositions may be available through Sakai, TaskStream or another platform.* Disposition data is reviewed by program faculty on a regular basis. This allows faculty to work with students to develop throughout their program and address any issues as they arise.

#### **LiveText and Digication**

All students, *except those who are non-degree*, may have access to LiveText to complete the benchmark assessments aligned to the Conceptual Framework Standards and all other accreditation, school-wide and/or program-wide related assessments. You can access more information on LiveText here: [LiveText](#).

[Digication](#) is Loyola's ONLINE portfolio platform. Many of the School of Education programs utilize Digication for Assessment and data collection to manage accreditation and licensure requirements. Your professor and Program chair will work with you to better understand submission requirements that are specific to courses and programs.

#### **Syllabus Addendum Link**

<https://www.luc.edu/education/academics/syllabi/>

This link directs students to statements on essential policies regarding *academic honesty, accessibility, ethics line reporting* and *electronic communication policies and guidelines*. We ask that you read each policy carefully.

This link will also bring you to the full text of our conceptual framework that guides the work of the School of Education – ***Social Action through Education***.

#### **Center for Student Access and Assistance (CSAA)**

*Should you encounter an unexpected crisis during the semester (e.g., securing food or housing, addressing mental health concerns, managing a financial crisis, and/or dealing with a family emergency, etc.), I strongly encourage you to contact the Office of the Dean of Students by submitting a CARE Referral for yourself or a peer in need of support: [www.LUC.edu/csaa](http://www.LUC.edu/csaa). If you are uncomfortable doing so on your own, please know that I can submit a referral on your behalf.*

