



**NEW YORK INSTITUTE OF TECHNOLOGY  
SCHOOL of EDUCATION  
Institute in Education**

Institutes in Education are designed as intensive courses. The topics are developed around current issues consistent with specific needs in the educational community. The requisite hours for a 3-credit graduate course are met and candidates are required to complete all assignments within one week of the final day the course meets. Candidates may take only one Institute as part of their master's degree.

**Art Integration to Deepen Interdisciplinary Learning <sup>[ISEP]</sup>(Transforming STEM to STEAM)**

**Instructor's information**

**Name:** Stephen Uzzo

**Office location:** 47-01 111<sup>th</sup> Street, Flushing Meadows Corona Park, NY 11368

**Telephone:** 1.718 595.9177

**E-mail:** [suzzo@nyit.edu](mailto:suzzo@nyit.edu)

**Website:** [www.nysci.org](http://www.nysci.org)

**Office hours:** **\*\*I am available anytime via email\*\***. Phone: M, W & F 7:00-9:30 am and 5:00-7:00 pm or by appointment (email with time I can call you back or to schedule a time to call or meet in person).

**Course information**

**Term and date:** Summer II 2017

**Course number and section:** EDPC 664 FTT1

**Credits:** 3

**Meeting times:** Online

**Building and room number:** Online

**Prerequisites and co-requisites:** None

**Conceptual Framework**

**Diversity**

Our commitment to diversity is evident in all we do. Our candidates learn to recognize the individual needs of diverse P-12 student populations and to create and customize educational experiences necessary for success in the 21<sup>st</sup> century global environment.

**Technology**

Our commitment to technology integration is woven seamlessly through our beliefs and actions. Technology is an integral part of our curriculum, pedagogy and delivery systems. Our candidates learn to make meaningful connections between technologies and their applications for all learners.

**Field Relations**

Our commitment to collaboration with schools, agencies, community organizations, businesses, and policymakers enriches our programs, our candidates, our partners, and the educational community.

## NYIT Dispositions for Educators

### *Diversity*

Believes all students can learn, promotes social justice, accepts diversity in family and social structures.

### *Effective Practice*

Engages in theory and research-based practices, makes data-driven decisions, collaborates with educators, parents and others, engages in reflective practices, reflects on student learning, applies instructional management strategies, and integrates technology in teaching, learning, and practice.

### *Professionalism*

Exhibits enthusiasm for ideas, change, and growth; engages in ethical practices; takes personal responsibility for work product and learning outcomes; exhibits effective communication skills; demonstrates empathy for others and respect for self; contributes actively to the community of learners; sets high standards for quality and performance; and is committed to lifelong learning

## MATERIALS AND SUPPLIES

1. **Software:** The candidate must have access to an up-to-date Web browser and Adobe Acrobat Reader. Also the ability to read AND AUTHOR Microsoft Office files (.doc/.docx, .xls/.xlsx, and .ppt/pptx fomats). PLEASE MAKE SURE THAT ALL UPDATES HAVE BEEN DONE TO YOUR SOFTWARE BEFORE THE SEMESTER COMMENCES. If you are using other office type environments, you will need to translate any documents you post to Microsoft Word, PowerPoint, or Excel format for others to be able to view them.
2. **Computer:** A Macintosh System X (10.8-11) or Windows 8/10 notebook or desktop computer and reliable access to the Internet (World Wide Web and email).
3. **TaskStream Account ([www.taskstream.com](http://www.taskstream.com)):** Taskstream is the portfolio assessment tool used for this course. All major assignments must be uploaded in Taskstream for assessment. The portfolio grades are then transferred to Blackboard and become part of the cumulative grade. Information for acquiring a Taskstream account is on the home page and also available as a PDF in Blackboard under Course Documents. If you already have an account then you have met the requirement. **NOTE: A final grade will not be given until completed major assignments are uploaded into TaskStream.**

## COURSE DESCRIPTION

There is a movement emerging across the country that is challenging students and educators to explore new ways of integrating art and design into the traditional science, technology, engineering, and math (STEM) fields. Careers in the 21st century will demand the kind of creative problem solving that translates critical observation, critical thinking, and critical making into objects and experiences that provide utility and meaning. With online format, students can learn the theoretical framework, research, and theory and will also work on the hands-on creations to enhance STEM learning.

### **Aligning Standards**

#### ACEI/NCATE 1: DEVELOPMENT, LEARNING AND MOTIVATION

Candidates know, understand, and use the major concepts, principles, theories, and research related to development of children and young adolescents to construct learning opportunities that support individual students' development, acquisition of knowledge, and motivation.

## ACEI/NCATE 2: CURRICULUM

2.2. Science—Candidates know, understand, and use fundamental concepts in the subject matter of science—including physical, life, and earth and space sciences—as well as concepts in science and technology, science in personal and social perspectives, the history and nature of science, the unifying concepts of science, and the inquiry processes scientists use in discovery of new knowledge to build a base for scientific and technological literacy;

2.3. Mathematics—Candidates know, understand, and use the major concepts, procedures, and reasoning processes of mathematics that define number systems and number sense, geometry, measurement, statistics and probability, and algebra in order to foster student understanding and use of patterns, quantities, and spatial relationships that can represent phenomena, solve problems, and manage data;

2.5. The Arts—Candidates know, understand, and use—as appropriate to their own understanding and skills—the content, functions, and achievements of dance, music, theater, and the several visual arts as primary media for communication, inquiry, and insight among elementary students;

2.8. Connections across the curriculum—Candidates know, understand, and use the connections among concepts, procedures, and applications from content areas to motivate elementary students, build understanding, and encourage the application of knowledge, skills, and ideas to real world issues.

## ACEI/NCATE 3: INSTRUCTION

3.1. Integrating and applying knowledge for instruction—Candidates plan and implement instruction based on knowledge of students, learning theory, subject matter, curricular goals, and community;

3.2. Adaptation to diverse students--Candidates understand how elementary students differ in their development and approaches to learning, and create instructional opportunities that are adapted to diverse students;

3.3. Development of critical thinking, problem solving, performance skills--Candidates understand and use a variety of teaching strategies that encourage elementary students' development of critical thinking, problem solving, and performance skills;

3.4. Active engagement in learning--Candidates use their knowledge and understanding of individual and group motivation and behavior among students at the K-6 level to foster active engagement in learning, self-motivation, and positive social interaction and to create supportive learning environments;

3.5. Communication to foster collaboration—Candidates use their knowledge and understanding of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the elementary classroom.

## ACEI/NCATE 4: ASSESSMENT

Assessment for instruction--Candidates know, understand, and use formal and informal assessment strategies to plan, evaluate and strengthen instruction that will promote continuous intellectual, social, emotional, and physical development of each elementary student.

## ACEI/NCATE 5: PROFESSIONALISM

5.1. Practices and behaviors of developing career teachers—Candidates understand and apply practices and behaviors that are characteristic of developing career teachers;

5.2. Reflection and evaluation—Candidates are aware of and reflect on their practice in light of research on teaching and resources available for professional learning; they continually evaluate the effects of their professional decisions and actions on students, parents, and other professionals in the learning community and actively seek out opportunities to grow professionally;

5.3. Collaboration with families—Candidates know the importance of establishing and maintaining a

positive collaborative relationship with families to promote the academic, social and emotional growth of children;

5.4. Collaboration with colleagues and the community—Candidates foster relationships with school colleagues and agencies in the larger community to support students' learning and wellbeing.

## **COURSE GOAL**

From STEM to STEAM strives to inspire joy at the idea of discovery and to create a culture that fosters innovation. Students will learn how to successfully incorporate the arts (visual, music, dance and theater) with STEM, as well as encourage inquiry, integrity, collaboration, creativity, problem-solving, and critical reasoning.

*Learning Outcomes (aligned to standards) and instruments of assessment.* Upon successful completion of this course, students will be able to:

1. Infuse the arts into science, technology, engineering and math (STEM to STEAM)
2. Infuse the arts into the humanities (social studies, ELA, foreign languages, ELL) with a focus on improved literacy.
3. Integrate music, theatre, and visual arts into all their curriculum, instruction and assessment practices.
4. Build culturally responsive classrooms that take advantage of the artistic and cultural resources of their students.
5. Infuse arts to increase social awareness and change including a focus on bullying.
6. Create classroom environments where students meet high academic standards.

## **COURSE REQUIREMENTS**

All components listed below are graded on a point system and weighted as indicated by the number of points for each requirement. The cumulative points for all assignments is 100.

**1. Keystone Assignment:** *STEAM Lesson Plan Development* (18 points).

The candidate will create an interdisciplinary lesson plan integrating art into STEM learning for the classroom in an area of interest that will be inquiry-based and will demonstrate the candidate's ability to integrate the arts into science, technology, engineering and math. The candidate will articulate how arts integration is useful to the exercise of creativity in the instructional approach and how it enhances learning. The candidate will also articulate how the lesson plan addresses diversity, standards, and must include an authentic assessment rubric. **As the Keystone, this assignment demonstrates the candidate's synthesis of cumulative skills and knowledge for the course as a whole.** This assignment can either be authored in Taskstream and linked to the Keystone section of your Taskstream portfolio or take the form of an MS-Word file or PDF and be uploaded as an attachment in the Keystone section in your Taskstream portfolio.

**The final project is due the last week of class.**

**2. Written Assignments** (20 points)

The candidate will complete two short personal essays (approximately 1,000 words, or 3-4 pages double spaced) on the integration of art into STEM learning. The first is due Week 1 on the topic of role of creativity in learning and personal growth using one or more examples from personal life. The second is due Week 3 on the topic of translating a work of art (links provided) into narrative form. The candidate will express the story that the image tells and indicate the STEM concepts that are represented.

**3. Hands-On Assignments** (20 points)

The candidate will prepare two hands-on assignments as parts of units 2 and 4 integrating art and STEM using available materials. Inspiration can be sought from resources provided throughout the course, but the actual activities must be original. An image of each assignment and a brief statement describing the

learning goal for the assignment and how it informs the integration of art into STEM learning will be submitted as a PDF or MS-Word document. Projects will be shared for discussion with all students by the instructor the week following the assignment week (Weeks 3 and 5).

#### **4. Participation in Discussion Forum (27 points)**

Candidates will respond to 7 discussion board postings (6 points each: maximum score) topical to each week's discussion (2 on Week 5). Candidates will be required to provide a specific written response to each posting by the instructor. Responses will be graded according to relevance, demonstration of knowledge about the week's topic and timing (must be complete by the end of the week assignment is given). A grade for each week's assignments is entered into the Grading Center of Blackboard. The rubric below is used to assess each posting.

#### **5. Field Experience and Field Experience Journal (15 points)**

A minimum of 10 hours of field experience is required in this course. This can take a variety of forms of observation and participation in a STEM, science, or art classroom, workshop and/or observation and participation in professional development for STEM or art teachers, it can also be conducted at a cultural institution, such as a science center, museum, zoological or botanical garden, nature center, art or history museum, etc. These times must be documented with appropriate signatures with the time log provided at the beginning of the semester (available on Blackboard and Taskstream. This documentation must be submitted to the instructor prior to the last week of class. No grade will be given to a candidate without this documentation. In addition, journal entries, one for each of the observations will be completed in a field experience journal. This is a reflective journal mainly of your thoughts and feelings about your experiences observing learners and not a simple log or recitation of what was done in a class. **The objective is to expand your understanding of STEM learning in the teaching environment from observing the behaviors and actions of teachers and learners. Please choose your observation sites accordingly.** Candidates MUST scan documentation with appropriate signatures (required) into TaskStream in the Field Experience section along with completed journal entries as MS-Word document attachments in TaskStream. NOTE: PLEASE SEEK SITES FOR FIELD OBSERVATIONS EARLY IN THE SEMESTER, YOUR OBSERVATIONS MUST TAKE PLACE DURING THE PERIOD OF THIS COURSE. THERE ARE NO EXCEPTIONS TO THIS REQUIREMENT. If you have any doubt about the acceptability of a field observation environment, please contact your course instructor. **This assignment must be uploaded the last week of class.**

All posts to the discussion board are graded according to the following rubric:

**4 points** - *High quality, professional, inquiry-based discussion*: The posting provides a framework for discussion through providing a personal reflection, presenting a well-articulated dilemma, or raising a thought-provoking question. Posting suggests a reflective capacity. It may be an independent thought garnered from the week's readings, a thought stemming from the reflections of a peer in the course or providing a relevant and thought-provoking comment and reference to the literature.

**3 points** - *Thoughtful discourse*: The message shares information, and issue or questions in a thoughtful way. A question or issue is raised to explore others' beliefs or practices. It may be an independent thought garnered from the week's readings or a thought stemming from the reflections of a peer in the course.

**2 points** - *Collegial discussion*: Message provides a description of classroom practice, an issue, a dilemma, or challenge that reflects the beliefs or practice of the author but does not contain self-reflection and/or an invitation for other's thoughts. It may be an independent thought garnered from the week's readings or a thought stemming from the reflections of a peer in the course.

**1 point** - *Factual statement*: The message does not seem to stimulate ongoing discussion, reflection, or examination of classroom practice. It may be an independent thought garnered from the week's readings

or a thought stemming from the reflections of a peer in the course.

**0 points** - will be given for missing posts, one-word responses or spurious postings (such as those containing inflammatory or foul language).

Final grades will be determined by the degree to which the course objectives are met by the candidate and according to rubrics provided for each weekly and major assignment. See the course information in BlackBoard for more information about grading for different assignments. Correct spelling and grammar, organization, originality and evidence of critical thinking will be included in the assessment. All assignments submitted for evaluation must reflect commitment to success as a teacher. Rubrics are provided for each assignment that will delineate specific expectations. The following grading metric is used for final grades.

90 to 100 = A    87 to 90 = B+    81 to 86 = B    77 to 80 = C+    70 to 76 = C    Below 70 = F<sup>[L]</sup><sub>[SEP]</sub> The numerical grade is what is provided in Blackboard, the corresponding letter grade is required to be entered by the instructor into PeopleSoft within 48 hours of the end of the course.

## **COURSE POLICIES**

*Make-up Exams and Missed or Late Assignments* Because of the interactive nature of this course, candidates must demonstrate participation and turn in assignments on a timely basis. Under extenuating circumstances, an opportunity will be provided for make up of assignments at reduced credit. This is a demanding course and it is important for candidates to pace themselves and keep up with weekly assignments and major assignments.

*Attendance:* Attendance is calculated by Blackboard and monitored by the instructor and school administration throughout the semester and considered in final grade. This is an online class and students are expected to login and participate at least three times per week. Providing and responding to Discussion Board posts in a considerate, thoughtful and timely manner is required. **A student that has not logged into the course in Blackboard within the first 2 weeks of class is considered “not attending” and will be dropped from the course.**

*Incomplete.* If a candidate needs additional time to complete a single project, report or final examination it must be officially requested. The grade of incomplete is to be assigned only to students who are otherwise passing the course at the end of the semester. The instructor has the right to refuse the request and may assign a final grade based solely on the work already completed. The grade of incomplete will change to the failing grade if the outstanding course work is not completed in accordance with the schedule in effect at the time it was assigned, regardless of the average the student otherwise maintained in the class. A single short extension of the time period shall be granted only in exceptional circumstances by the vice president for academic affairs. **The grade of incomplete will not be assigned to students with excessive absences, especially when those absences include the final sessions of the course, unless extenuating circumstances have been established.** (See the catalog for additional information.)

*Withdrawal.* A student may file for withdraw from a course without penalty through the end of the 8th week of class during a 14-or 15-week semester and through the 8th meeting during an 8-week course cycle. After this, the student must be doing passing work in order to receive a W grade. **Students who are not passing after the 8th week or equivalent will be assigned the grade of WF (Withdrawal with a grade of “F”).** It is the student’s responsibility to inform the instructor of his/her intention to withdraw from a course and complete the appropriate form. If a student has stopped attending class without completing all assignments and/or examinations, failing grades for the missing work may be factored into the final grade calculation and the instructor for the course may assign the grade of WF. **The grade of F is also assigned for students who have completed the course but whose quality of work is below the standard for passing.** Withdrawal forms are available in departmental offices and once completed and approved by the instructor and the school must be filed with the registrar. **Students are reminded that a W notation could negatively impact their eligibility for financial aid and/or V.A. benefits, as it may change the student’s enrollment status (full-time, part-time, less than part-time). International students may also jeopardize their visa status if they fail to maintain full-time status.**

*Academic Integrity and Plagiarism.* All assignments must be the original work of the student and must be done originally for this course. Failure to comply with these rules will at least result in a zero for the assignment but may also result in failing the course or more severe actions. *Plagiarism* is the appropriation of all or part of someone else’s work (such as writing, coding, programs, images, etc.) and offering it as one’s own. Plagiarism is a serious offence, and all students must follow accepted guidelines for citing the work of others. This includes materials from the World Wide Web. If unfamiliar with the proper use of quotations and indirect quotes, consult an online resource, the APA style manual, or ask the instructor for advice. Missing citations and references is tantamount to plagiarism and will be treated as such. *Cheating* is using false pretenses, tricks, devices, artifices, or deception to obtain credit on an examination or in a college course. NYIT expects all students, faculty, and staff to manifest academic honesty and integrity at all times and acts of plagiarism or cheating will not be overlooked or tolerated. According to NYIT policy, if a faculty member determines that a student has committed academic dishonesty by plagiarism, cheating, or in any other manner, the faculty member has the right to:

- Fail the student for that paper, assignment, project, or exam; and /or
- Fail the student for the course; and/or
- Bring the student up on disciplinary charges, pursuant to the student Code of Conduct.

*Data and Data Integrity.* Data integrity and reliability are the responsibility of the candidate. Students are strongly advised to use virus protection and maintain a backup copy of all materials and information created for the course. It is further strongly suggested that each candidate’s computer also be backed up regularly to some form of external data storage at least once a day to prevent loss of assignments and academic work due to computer failure. Computer failure or lack of access is not an excuse for late or missing assignments. Candidates must have a contingency plan in the case of such failure. Written assignments are to be completed either as direct posts to the discussion board or using MS Word (.doc/docx) readable format when posted, and must be submitted electronically to Blackboard; **no assignments will be accepted in hardcopy or via email.** All assignments must follow APA style requirements according to The Publication Manual of the American Psychological Association (6<sup>th</sup> Edition). Please do not use attachments for regular posts unless requested.

*Library Resources.* All students can access the NYIT virtual library from both on and off campus at [www.nyit.edu/library](http://www.nyit.edu/library). The same login you use to access NYIT e-mail and NYITConnect will also give you access to the library’s resources from off campus. On the left side of the library’s home page, you

will find the “Library Catalog” and the “Find Journals” sections. In the middle of the home page you will find “Research Guides;” select “Video Tutorials” to find information on using the library’s resources and doing research. There are additional Resources related to this course in the “EXTERNAL LINKS” tab on Blackboard.

*Support for Students with Disabilities.* NYIT adheres to the requirements of the Americans with Disabilities Act of 1990 and the rehabilitation Act of 1973, Section 504. The Office of Disability Services actively supports students in the pursuit of their academic and career goals. Identification of oneself as an individual with disability is voluntary and confidential. Students wishing to receive accommodations, referrals and other services are encouraged to contact the Office of Disability Services as early in the semester as possible although requests can be made throughout the academic year.



## **WEEKLY CLASS OUTLINE (subject to change)**

NOTE: Each week starts on a Monday with weekly assignments due Midnight Sunday. Candidates are advised to submit postings to discussion board by midweek (Thursday) to maximize participation.

### *Week (Unit) One (7-10):*

- Course introduction
- What is STEAM? / The role of creativity in STEM
- Evidence for the integration of arts in STEM
- Constructionism, Constructivism, divergent thinking and play
- Written assignment & response in discussion forum

### *Week (Unit) Two (7-17):*

- The Maker Movement and opportunities for STEAM learning
- Design-based learning
- STEAM in educational practice
- Hands-on activity development & response in discussion forum

### *Week (Unit) Three (7-24):*

- Information design and visual literacy
- Graphics, visualization and meaning
- Creative computation and data
- Design and technology
- Written assignment & response in discussion forum

### *Week (Unit) Four (7-31):*

- Design Make Play and learning
- STEAM in formal and informal learning spaces
- Hands-on assignment & responses in discussion forum

### *Week (Unit) Five (8-7):*

- STEAM and Standards
- Bloom's Taxonomy
- Theories of multiple intelligences
- Assessment of integrated and thematic learning
- Responses in discussion forum (2)

### *Week (Unit) Six (8-14):*

- Integrated learning design
- The structure of creativity and arts integration into STEM learning
- Responses in discussion forum
- Keystone Assignment
- Final upload of all assignments to Taskstream for assessment by Aug. 18<sup>th</sup>.

**The last day of class is August 18. \*\*Assignments not submitted for grading by this date will not be included in final grade\*\***