College of Education and Human Development
Division of Special Education and disAbility Research

Fall 2020
EDSE 643 001: Instructional Strategies for Math
CRN: 80860, 3 – Credits

Instructor: Dr. Rajiv Satsangi	**Meeting Dates:** 8/24/20 – 12/16/20
Phone: 703-993-1746	**Meeting Day(s):** Wednesday
E-Mail: rsatsang@gmu.edu	**Meeting Time(s):** 7:20 pm – 10 pm
Office Hours: By email appointment	**Meeting Location:** Fairfax; KH 15
Office Location: Fairfax Campus – Finley 209	**Other Phone:** N/A

- **Note: This syllabus may change according to class needs. Teacher Candidates/Students will be advised of any changes immediately through George Mason e-mail and/or through Blackboard.**

Prerequisite(s):
None

Co-requisite(s):
None

Course Description
Integrates foundational knowledge of numeracy acquisition, mathematical concepts, mathematical thinking, mathematics vocabulary, calculation, and problem-solving to plan well-sequenced and explicit math instruction for students with disabilities in the general education curriculum. Examine objectives that align with the general education curriculum Virginia Standards of Learning in mathematics at the elementary, middle, and secondary levels while still providing individualization. Field experience required.

Course Overview
EDSE 643 examines the foundational knowledge of the complex nature of numeracy acquisition and nature of mathematics including mathematical concepts, mathematical thinking, mathematics vocabulary, calculation, and problem-solving, as well as alternative ways to teach content material including curriculum adaptation and curriculum modifications for students with disabilities in the general education curriculum.

Advising Contact Information
Please make sure that you are being advised on a regular basis as to your status and progress in your program. Students in Special Education and Assistive Technology programs can contact the Special Education Advising Office at 703-993-3670 or speced@gmu.edu for assistance. All other students should refer to their assigned program advisor or the Mason Care Network (703-993-2470).

Advising Tip
Are you familiar with Mason career resources? Email speced@gmu.edu to be added to the Special Education employment listserv, and check out Career Services: https://careers.gmu.edu/.

Course Delivery Method
Learning activities include the following:

1. Class lecture and discussion
2. Application activities
3. Small group activities and assignments
4. Video and other media supports
5. Research and presentation activities
6. Electronic supplements and activities via Blackboard

Learner Outcomes
Upon completion of this course, students will be able to:

1. Understand curriculum development that includes a scope and sequence, lesson plans, instructional methods, and assessment based on the general education curriculum Virginia Standards of Learning in math at the elementary, middle, and secondary level.
2. Understand the relationship among procedural, conceptual, and declarative knowledge in order to provide explicit instruction of math for students with disabilities who are accessing the general educational curriculum.
3. Understand foundational knowledge of math including numeracy acquisition, mathematical concepts, mathematical thinking, mathematics vocabulary, calculation, and problem-solving.
4. Demonstrate understanding of developing data-based modifications and accommodations to general or specialized instruction as needed for students with disabilities who access the general education curriculum.
5. Use technologies to support instructional assessment, planning, and delivery of instruction for students with disabilities who access the general education curriculum.
6. Demonstrate the ability to implement individual educational planning and systematic, explicit instruction for students with disabilities who access the general education curriculum including:
    a. Essential mathematical concepts, vocabulary, and content across general and specialized curriculum
    b. Numeracy acquisition
    c. Problem solving
    d. Calculation
7. Examine individual abilities, interests, learning environments, and cultural and linguistic

factors in the selection, development, and adaptation of learning experiences for students with disabilities who access the general education curriculum.

Professional Standards
Council for Exceptional Children (CEC), Interstate Teacher Assessment and Support Consortium (InTASC). Upon completion of this course, students will have met the following professional standards: CEC Standard 3: Curricular Content Knowledge; CEC Standard 5: Instructional Planning and Strategies (InTASC 7, 8).

Required Texts
Fennell, F., Kobett, B. M., & Wray, J. A. (2017). *The formative 5: Everyday assessment techniques for every math classroom*. Thousand Oaks, CA: Corwin.

Recommended Texts
American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). https://doi.org/10.1037/0000165-000

Course Performance Evaluation
Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, VIA, hard copy).

VIA Performance-Based Assessment Submission Requirement
It is critical for the special education program to collect data on how our students are meeting accreditation standards. Every teacher candidate/student registered for an EDSE course with a required Performance-based Assessment (PBA) is required to upload the PBA to VIA (regardless of whether a course is an elective, a one-time course or part of an undergraduate minor). A PBA is a specific assignment, presentation, or project that best demonstrates one or more CEC, InTASC or other standard connected to the course. A PBA is evaluated in two ways. The first is for a grade, based on the instructor's grading rubric. The second is for program accreditation purposes. Your instructor will provide directions as to how to upload the PBA to VIA.

For EDSE 643, the required PBA is Math Intervention Project. Please check to verify your ability to upload items to VIA before the PBA due date.

Assignments and/or Examinations

Performance-based Assessment
(VIA submission required)

Assignment 1: Math Intervention Project (40 Points)

For this assignment, you will select an evidence-based math strategy intervention (selected from readings discussed in class) and develop a plan for teaching. Then, each student will create a **20-minute video** demonstrating the use of the strategy with a "student." For the purposes of this assignment, your "student" can be a friend, spouse, coworker, etc. The teaching lesson plan,

modified and adapted for a student, will highlight stages of effective strategy instruction. Performance data will be collected throughout your lesson. Your video will be posted on Blackboard for all students to access and may be shown in class (time permitting). Please refer to Blackboard for further assignment information and to the rubric posted.

Your video must include:

1. The name of the math strategy
2. The purpose of the strategy
3. Descriptions and demonstration of any special materials required of the strategy (you should show these materials)
4. A demonstration of the strategy with a student (make sure you have permission)
5. An explanation of when this strategy would be most effectively used (skills, grade level)
6. Explanation of how the strategy would be modified over time (e.g., Is it used in the same way each day or does it evolve based on student response?)
7. Provide an estimate of the intensity of instruction required to make the strategy effective
8. Demonstrate formal and informal assessments that can be used with your strategy (complete each assessment with your student in the video).
9. Self-reflection on screen after your lesson has concluded. Discuss how you felt the demonstration went. What did you do well? What could have improved? What obstacles did your student face? What changes/modifications may this individual need moving forward?

NOTE: Support in posting your video to Blackboard can be found at: http://coursessupport.gmu.edu/Students/index.cfm?audiencename=Students&categorynam e=Kaltura&datname=Submitting%20Video%20to%20a%20Course

College Wide Common Assessment
(VIA submission required)

N/A

Performance-based Common Assignments
(No VIA submission required)

N/A

Field Experience Requirement

A field experience is a part of this course. A field experience includes a variety of early and ongoing field-based opportunities in which candidates may observe, assist, and/or tutor. Field experiences may occur in off-campus settings, such as schools (CAEP, 2016).

Students must be able to perform the essential functions of the practicum site assigned with or with without an accommodation. Contact Disability Services (ods@gmu.edu) for questions related to accommodations.

*Please note that due to barriers with accessing field experience placements in Fall 2020 as a result of COVID-19, there will be changes to the field experience process in this course. Students will be notified well in advance with changes and provided with alternative options. Check your Mason email regularly for important information regarding your field experience.

Other Assignments

Assignment 2: Consumer Apps Evaluation Paper (25 Points)

Students will select one digital app or program available online for download to teach mathematics standards in K-12 education. Students will select one child/adult to use this app with and document their experience solving age-appropriate mathematics problems for 15-20 minutes. Afterwards, students will **write a two-page single-spaced paper** reviewing this app and child/adults' performance. Reflections should focus on the following topics: (a) feasibility for whole group instruction and/or remediation in inclusionary classrooms, (b) benefits and foreseeable challenges for teachers, (c) benefits and foreseeable challenges for students with high incidence disabilities, (d) the child/adults' opinion and experiences using the app, and (e) four explicit references to concepts covered within readings discussed in class on low-and high-tech assistive technology & Universal Design for Learning.

Assignment 3: Scaffolding and Tiering Assignment (25 Points)

Students will select **two** mathematics lesson plans posted on Blackboard and identify specific ways to scaffold the content for learners of differing abilities inside an inclusionary K-12 classroom on each. Students will then **create two assessments**–one formative and one summative–that is tiered to address these varying subgroups of students **for each lesson plan** (4 assessments total). Students will **write a two-page single-spaced paper** explaining how to scaffold the instruction in addition to the assessments created. Please submit lesson plans, assessments, and reflections as one document.

Assignment 4: Professionalism (10 Points)

Attendance, punctuality, and active participation during each class session and assigned activity are expected. For each session, students will earn up to two Professionalism checks for the following expectations:

- Attendance: Students are expected to attend all classes, arrive on time, and remain in class for the duration of each session. Refer to the Attendance Policy below for detailed expectations.
- Participation & Professional Behavior: Throughout all classes, students are expected to demonstrate professional and ethical behavior in the classroom and complete all assignments (including those completed in class, out of class, or on Blackboard) with professional quality, integrity, and in a timely manner. Students are expected to read all

assigned readings prior to class and to actively participate in discussions and activities during class sessions.

At the end of the course, the total Professionalism checks earned will be summed and divided by all possible checks (i.e., two checks for each class session held). This proportion will be multiplied by 20 (the total possible Professionalism points) and used to calculate the student's course grade.

Assignment Summary

Course grades are calculated by summing the points earned on assignments and dividing by the total possible points. Grades are designed to indicate your success in completing assignments, not the level of effort you put into them.

Math Intervention Project (TK20)	40 points
Consumer Apps Evaluation Paper	25 points
Scaffolding and Tiering Assignment	25 points
Professionalism	10 points
Total Points	**100**

Course Policies and Expectations

Attendance/Participation

Attendance

Students are expected to (a) attend all classes during the course, (b) arrive on time, (c) stay for the duration of the class time, and (d) complete all assignments. Attendance, timeliness, and professionally relevant- active participation are expected. Attendance and professional participation at all sessions is very important because many of the activities in class are planned in such a way that they cannot necessarily be recreated outside of the class session. Be aware that any points earned for participation in class activities during a time of absence will not be earned and cannot be made up. **One absence will result in 0 points deducted from your overall grade. Two absences will result in a loss of 11 points. Three or more absences will result in a loss of 21 points. Repeated tardiness and/or leaving early will result in a loss of 3 points per incidence. If you have perfect attendance throughout the semester, you will receive 1 extra credit point.** Please notify me *in advance* by email if you will not be able to attend class.

NOTE: It is impossible to participate fully in this class while texting, tweeting, working on documents, etc. Please be *fully* present in class.

Participation.

You are expected to be present, prepared, and exhibit professional dispositions for each class session. Activities resulting in points toward your final grade will be completed during class sessions. Quality of product and completion of the activity within class will impact points

earned. Points missed due to absences during class activities can not be made up.

Quality participation includes:

(a) Arriving on time, including back from break(s),
(b) Staying in the classroom/activity area for the duration of the class time,
(c) Participating in all class activities (face-to-face and outside of class, including by electronic means)
(d) Having on hand all materials required for the class session as per course assignments and the syllabus

Late Work

All assignments are due on the dates indicated (at the beginning of class). Consult with me *in advance* if there is a problem. In fairness to students who make the effort to submit papers on time, 5 points per day will be deducted from your assignment grade for late papers unless I have agreed to an extension (may be granted one time only for one assignment only). A maximum extension of 1 calendar week may be granted. Please retain a copy of your assignments in addition to the ones you submit.

Other Requirements

This is a 3-credit graduate level course. Traditionally, 3-credit courses across a 15-week semester require an average of 45 hours of in-class time and approximately 90 hours of independent reading and assignment completion. Be prepared to put in that amount of time into this class and plan your schedule accordingly.

Some assignments require you to synthesize material from the course and outside sources into coherent statements of your ideas. In such cases, your writing should be databased– meaning that you must support statements and ideas with evidence from these sources, giving these sources credit. The standard format for writing in the field of education is outlined in the *Publication Manual of the American Psychological Association, 6th edition* (www.apastyle.org). Specifically, the final version of your Instructional Program should be written in APA style, including a cover page, running head, pagination, headings (as needed), citations (as needed), and reference pages. The citation for this manual is included in the section entitled "Recommended Texts". For an online resource, see www.apastyle.org.

It is expected that you know how to paraphrase and cite information appropriately to meet both APA guidelines and to avoid plagiarism. This website provides some useful information on how to avoid plagiarism in your writing: http://www.plagiarism.org/

Communication.
The most efficient way to contact me is through email. I check email daily Monday-Friday from 9:00am-9:00pm. If your email reaches me during this period of time, I will respond immediately. Otherwise, I will respond within 24 hours during the week. Keep in mind that I teach from 6:00-

10:30pm. On weekends, I check my Mason account on Sunday evenings and will respond to all emails received then. Do not email me an hour before an assignment is due and expect a response. If you would prefer to meet with me either before or after class (or at another time during the day), please do not hesitate to contact me.

***Written Language*:** Students at the graduate level are expected to compose with accuracy (grammar, spelling, other mechanics, form, structure, etc.) and at a conceptual level commensurate with advanced degree study. APA Style is the standard format for any written work in the College of Education and Human Development. If you are unfamiliar with APA format, it would benefit you to purchase the current edition of the Publication Manual of the American Psychological Association. You are required to use APA guidelines for all course assignments as noted in the assignment descriptions. This website links to APA format guidelines: http://apastyle.apa.org .

***Oral Language**:* Use "person-first language" in class discussions and written assignments (and, ideally, in professional practice). In accordance with terminology choices in the disability community, strive to replace the term "Mental Retardation" with "Intellectual Disabilities" in oral and written communication and to avoid language labels by stating, for example, a "student with disabilities" (SWD) rather than a "disabled student". Please refer to guidelines for non handicapping language in APA Journals, including information available at: http://www.apa.org/pi/disability/resources/policy/resolution-ada.pdf and http://supp.apa.org/style/pubman-ch03.15.pdf .

Inclement Weather

If classes are cancelled at George Mason University, a message will be posted on the class Blackboard site and all class members will receive an email. Because such cancellations are often at the last minute, it may be difficult to get this message prior to leaving for class. If in doubt, dial the University phone number (703-993-1000) or visit the university website (www.gmu.edu). I will email you regarding weather as soon as it is announced. *Please note, the cancellation of classes due to inclement weather is determined by the decision of the instructing university only. If the instructing university is open and operational, then you are expected to attend class.*

Grading Scale

95-100% = **A**
90-94% = **A-**
80-89% = **B**
70-79% = **C**
< 70% = **F**

***Note:** The George Mason University Honor Code will be strictly enforced. See Academic Integrity Site (https://oai.gmu.edu/) and Honor Code and System (https://catalog.gmu.edu/policies/honor-code-system/). Students are responsible for reading and

understanding the Code. “To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code: Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.” Work submitted must be your own new, original work for this course or with proper citations.

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times. See Policies and Procedures (https://cehd.gmu.edu/students/polices-procedures/). Students are expected to exhibit professional behaviors and dispositions at all times. In the College of Education and Human Development, dispositions are formally and separately evaluated in at least two points in each student’s program – a self-evaluation at the start of their program, and a university supervisor’s evaluation during internship. In special education licensure programs, the self-evaluation is an online survey distributed via email upon program entry for graduate students and within initial courses (EDSE 241, EDSE 361, and EDSE 311) for undergraduate students. When dispositions are assessed, it is important that for areas where a positive disposition is ‘occasionally evident’ or ‘rarely evident,’ the student takes steps to grow as an educator. See https://cehd.gmu.edu/epo/candidate-dispositions.

Class Schedule

*Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

Week	Topics	Readings Due	Assignments Due
8/26	• Course Overview • Syllabus Review • Historical Perspective • Constructs & Definitions	• Course Syllabus	
9/2	• Developing whole number sense: mathematics in primary grades • Assessment Observation	• Hott et al. (2014) • Fennell et al. (2017): Chapter 1	
9/9	• Asynchronous Session: Complete Unit 1 Handout	• See Handout	
9/16	• Teaching the rational number system • Evidence-based practices to teach procedural skills • Assessment Interviews	• Gonsalves & Krawec (2014) • Fennell et al. (2017): Chapter 2	

Week	Topics	Readings Due	Assignments Due
9/23	• Evidence-based practices to teach conceptual skills • Assessment– Show Me	• Agrawal & Morin (2016) • Fennell et al. (2017): Chapter 3	Consumer Apps Evaluation Paper
9/30	• Asynchronous Session: Complete Unit 2 Handout	• See Handout	
10/7	• Problem representation • Evidence-based practices to teach declarative knowledge	• Krawec (2014)	
10/14	• Teaching mathematics in secondary grades • Assessment Hinge Questions	• Fennell et al. (2017): Chapter 4	
10/21	• Asynchronous Session: Complete Unit 3 Handout	• See Handout	
10/28	• Teaching functional mathematics skills to students with moderate-severe disabilities • Assessment Exit Tasks	• Acar & Diken (2012) • Fennell et al. (2017): Chapter 5	Scaffolding and Tiering Assignment
11/4	• Low-and high-tech assistive technology & UDL	• Satsangi & Miller (2017) • Ives (2007) • Zabala, Bowser, & Korsten (2004)	
11/11	• Asynchronous Session: Complete Unit 4 Handout	• See Handout	
11/18	• Low-and high-tech assistive technology & UDL • Formative Assessments Review	• Fennell et al. (2017): Chapter 6	
12/2	• Mathematics Intervention Project Group Analysis • Course reflections & wrap-up • Course evaluations	• TBD	Mathematics Intervention Project

Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: See Core Values (http://cehd.gmu.edu/values/).

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code. See Honor Code and System (https://catalog.gmu.edu/policies/honor-code-system/).

- Students must follow the university policy for Responsible Use of Computing. See Responsible Use of Computing (http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/).

- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.

- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor. See Disability Services (https://ds.gmu.edu/).

- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to VIA should be directed to VIA Help support@watermarkinsights.com. Questions or concerns regarding use of Blackboard should be directed to Blackboard Instructional Technology Support for Students (https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/).

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:

- As a faculty member, I am designated as a "Responsible Employee," and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason's Title IX Coordinator by calling 703-993-8730, or emailing the Title IX Coordinator (titleix@gmu.edu).

- **For information on student support resources on campus, see Student Support**

Resources on Campus (https://ctfe.gmu.edu/teaching/student-support-resources-on-campus).

- For additional information on the College of Education and Human Development, please visit our website College of Education and Human Development (http://cehd.gmu.edu/).

Appendix

Assessment Rubric(s)

Assignment 1: Math Intervention Project Rubric (TK20)

Criteria	Meets Req. (5)	Approaches Req. (4 / 3 / 2)	Needs Improvement (1)	Incomplete (0)	Weight
Has the student provided information about the child being taught?	Includes the child's grade level, age, gender, race, academic ability level; and the child's level of understanding about the mathematics concept as well as performance in other academic, social, or behavioral areas.	Includes partial information regarding the child's grade level, age, gender, race, academic ability level; and the child's level of understanding about the mathematics concept as well as performance in other academic, social, or behavioral areas.	More than two of the required descriptive items about the child are missing.	Criteria not present.	
Has the student selected one age appropriate K-12 mathematics standard to teach?	One age-appropriate mathematical concept is selected and aligned to a Virginia SOL for grades K-12. The standard is clearly described in terms of the concepts that will be taught.	One age-appropriate mathematical concept is selected and aligned to a Virginia SOL for grades K-12. The standard is not fully described in terms of the concepts that will be taught.	One or more mathematics concepts are selected. They may not be age-appropriate or aligned to a Virginia SOL for grades K-12.	Criteria not present.	
Has the student selected one specific mathematics evidence-based practice?	One evidence-based practice is selected and clearly described in terms of how it will be used to teach the chosen standard/concept.	One evidence-based practice is selected. A thorough explanation of how it will be used to teach the chosen standard/concept is not fully provided.	One strategy is selected. It may not be an evidence-based practice or may be inappropriate for teaching the chosen standard/concept.	Criteria not present.	

Has the student selected one form of assistive technology?	One form of assistive technology is selected and clearly described in terms of how it will be used to teach the chosen standard/concept.	One form of assistive technology is selected. A thorough explanation of how it will be used to teach the chosen standard/concept is not fully provided.	One form of assistive technology is selected. It may be inappropriate for teaching the chosen standard/concept.	Criteria not present.	
Does the lesson demonstrate all of the stages of the strategy in use?	The student demonstrates all of the stages of the strategy during instruction. The child is progressed through each stage only after they have demonstrated mastery or understanding of the previous stage.	The teacher demonstrates all of the stages of the strategy during instruction. It is unclear whether the child demonstrated mastery or understanding of each stage.	The teacher does not demonstrate all of the stages of the strategy during instruction or does so incorrectly.	Criteria not present.	
Does the lesson incorporate tiered informal and formal assessments?	The student used a variety of informal and formal assessments throughout the lesson. Higher-level questions were used to encourage deeper thinking and responses from the child to probe for understanding.	The student used a variety of informal and formal assessments throughout the lesson. Questions were used to encourage some analysis and responses from the child to probe for understanding.	The lesson used only informal or only formal assessments. No questions were used to encourage analysis and responses from the child.	Criteria not present.	
Is there an appropriate reflection and evaluation of the assessment process?	A detailed analysis/ reflection from the student is provided after the lesson has concluded. The reflection includes a thorough discussion on strategies for teachers to scaffold this	An analysis/ reflection from the student is provided after the lesson has concluded. The reflection includes some discussion on strategies for teachers to scaffold this lesson	Limited analysis/ reflection from the student is provided after the lesson. No discussion on strategies	Criteria not present.	

	lesson for learners of varying abilities moving forward.	for learners of varying abilities moving forward.	for teachers to scaffold this lesson is provided.		
Total =					
Scale: **A = 5 – 4.5** **A– = 4.49 – 3.5** **B = 3.49 – 2.5** **C = 2.49 – 2.0** **F = 1.99 – 0**					