

Rutgers, The State University of New Jersey

05:300:342:01 SUPERVISED UNDERGRADUATE TUTORING IN MATHEMATICS

Spring 2015

TUESDAY, 9:50AM-11:10AM

GSE 25B

Instructor: Juan Pablo Mejía-Ramos	Email: pablo.mejia@gse.rutgers.edu
Phone Number : 848-932-0806	Location: GSE 234
Office Hours: Monday 10:00am-11:30pm	Prerequisites or other limitations: <i>Admission to the Teacher Education Program</i>
Mode of Instruction: <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Seminar <input type="checkbox"/> Hybrid <input type="checkbox"/> Online <input type="checkbox"/> Other	Permission required: <input type="checkbox"/> No <input type="checkbox"/> Yes Directions about where to get permission numbers:

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentations: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Course Description

Learning goals:

Most of your work in this class will consist of you serving as a tutor in a college algebra course and engaging in discussions about your tutoring encounters during in-person/online class sessions. The goal of this class is to provide you with valuable teaching experience and, perhaps more importantly, to give you the opportunity to reflect on this experience. At the end of this course, you will:

- understand specific difficulties that students have with algebraic concepts,
- deepen and strengthen your existing understanding of algebra, and
- develop new ways of teaching students algebra.

New Jersey Professional Standards for Teachers (2014)¹:

Standard Four: Content Knowledge. The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches, particularly as they relate to the Common Core Standards and the New Jersey Core Curriculum Content Standards and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content.

ii. Essential Knowledge

1. The teacher understands major concepts, assumptions, debates, processes of inquiry, and ways of knowing that are central to the discipline(s) he or she teaches;
3. The teacher knows and uses the academic language of the discipline and knows how to make it accessible to learners;
5. The teacher has a deep knowledge of student content standards and learning progressions in the discipline(s) he or she teaches;
7. The teacher understands the concepts inherent in numeracy to enable students to represent physical events, work with data, reason, communicate mathematically, and make connections within their respective content areas in order to solve problems.

iii. Critical Dispositions

1. The teacher realizes that content knowledge is not a fixed body of facts but is complex, culturally situated, and ever evolving. He or she keeps abreast of new ideas and understandings in the field;
5. The teacher shows enthusiasm for the discipline(s) they teach and is committed to making connections to everyday life.

Standard Eight: Instructional Strategies. The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.

i. Performances:

1. The teacher uses appropriate strategies and resources to adapt instruction to the needs of individuals and groups of learners;
3. The teacher collaborates with learners to design and implement relevant learning experiences, identify their strengths, and access family and community resources to develop their areas of interest;
5. The teacher provides multiple models and representations of concepts and skills with opportunities for learners to demonstrate their knowledge through a variety of products and performances;
6. The teacher engages all learners in developing higher order questioning skills and meta-cognitive processes;
7. The teacher engages learners in using a range of learning skills and technology tools to access, interpret, evaluate, and apply information
8. The teacher uses a variety of instructional strategies to support and expand learners' communication through speaking, listening, reading, writing, and other modes; and

¹ <http://www.state.nj.us/education/code/current/title6a/chap9.pdf>

9. The teacher asks questions to stimulate discussion that serves different purposes (for example, probing for learner understanding, helping learners articulate their ideas and thinking processes, stimulating curiosity, and helping learners to question).

ii. Essential Knowledge:

1. The teacher understands the cognitive processes associated with various kinds of learning (for example, critical and creative thinking, problem framing and problem solving, invention, and memorization and recall) and how these processes can be stimulated;
2. The teacher knows how to apply a range of developmentally, culturally, and linguistically appropriate instructional strategies to achieve learning goals;
3. The teacher knows when and how to use appropriate strategies to differentiate instruction and engage all learners in complex thinking and meaningful tasks;
4. The teacher understands how multiple forms of communication (oral, written, nonverbal, digital, and visual) convey ideas, foster self-expression, and build relationships;
5. The teacher knows how to use a wide variety of resources, including human and technological, to engage students in learning; and
6. The teacher understands how content and skill development can be supported by media and technology and knows how to evaluate these resources for quality, accuracy, and effectiveness.

iii. Critical Dispositions:

1. The teacher is committed to deepening awareness and understanding the strengths and needs of diverse learners when planning and adjusting instruction;
2. The teacher values the variety of ways people communicate and encourages learners to develop and use multiple forms of communication;
3. The teacher is committed to exploring how the use of new and emerging technologies can support and promote student learning; and
4. The teacher values flexibility and reciprocity in the teaching process as necessary for adapting instruction to learner responses, ideas, and needs

Council for the Accreditation of Education Professionals (2013)²:

Standard 1: Candidate Knowledge, Skills, and Professional Dispositions

- 1.1 Candidates demonstrate an understanding of the 10 InTASC standards at the appropriate progression level(s) in the following categories: the learner and learning; content; instructional practice; and professional responsibility.

Course catalog description:

Develop teaching strategies, an interactive style, and an approach to high school mathematics content in a one-on-one tutorial or small group setting. Students work with other undergraduates in lower-level, E-credit mathematics courses.

² http://caepnet.files.wordpress.com/2013/09/final_board_approved1.pdf

Grading policy:

Your grade in this course will consist of your grades on each of the two course assignments, your class participation (both online and in seminar meetings), and your experience tutoring. Improper behavior in your college algebra classroom may result in a substantial penalty for your final grade, including failing the class. Please act appropriately in your college algebra classroom: show up for your appointments, arrive at least 10-15 minutes early to all algebra class sessions, treat your college algebra teacher with respect, behave professionally during weekly lectures, etc. The following grading scheme lists all assignments and their respective weights in a student's final grade:

- Engagement in course discussions (both online and in seminar meetings): 20%.
- College algebra instructor feedback: 20%.
- Discussion Meeting Journal Entries: 20%.
- Tutoring Professional Development Plan: 20%.
- Final Reflection Paper: 20%.

Academic Integrity Policy:

Any violation of academic honesty is a serious offense and is therefore subject to an appropriate penalty. Refer to <http://academicintegrity.rutgers.edu/integrity.shtml> for a full explanation of policies.

Web site: Materials for class will be posted on the class website.

Course Requirements

Attendance Policy: Seminars and discussion meetings provide pre-service mathematics teachers with practical and theoretical insights into the development of interactive, effective algebra tutoring interventions. Thus, a strong class attendance record allows students to take full advantage of the course's pedagogical offerings that will enhance their instructional approaches to challenging algebraic concepts and procedures. Students are fully responsible for all seminar/discussion meeting notes, peer discussions, and teaching activities/demonstrations missed during their absences.

If a student intends on being absent from an upcoming seminar or discussion meeting, he/she must present a valid note from an academic dean, health practitioner, or other professional source to excuse the class absence. Such notes must be provided to the course instructor as soon as possible (ideally, one week prior to the missed session). As per the Rutgers University Health Services policy, medical excuse notes will not be provided by Rutgers Health Services for minor or common illnesses. Please refer to Rutgers University Health Services policy on medical excuse notes for absent students, as the course instructor will not accept them.

If a student is absent from a seminar or discussion meeting for unforeseen circumstances (i.e. family death, serious injury), he/she must communicate this personal situation (via e-mail or in person) with the course instructor no later than 24 hours after the missed class. Appropriate arrangements for make-up assignments will be made during this instructor-student communication depending on the nature of the unexcused class absence. Class absences deemed unexcused by both the course instructor and Rutgers GSE Office of Academic Services are not entitled for make-up work and/or receiving missed Class Attendance credit.

During seminars and discussion meetings, student-tutors will engage in hands-on investigations and active reflections on appropriate tutoring strategies for the college algebra student population. Active class participation is defined as a students' full investment in weekly course proceedings in the five following ways:

- critical and respectful attention to instructional materials presented by both the course instructor and fellow students (i.e. taking notes, asking questions),
- engagement in full 80-minute seminars and discussion meetings as a valued classroom community member,
- analytic and reflective contributions to discussions pertaining to tutoring experiences,
- preparation for class responsibilities including journal entry sharing and seminar readings,
- collaborative, supportive involvement in group mathematical tasks and brainstorming activities.

Summary of Requirements

Act as a tutor in a non-credit bearing algebra class (640:025,027).

This will involve:

- Attending the class at least once per week and preferably twice.
- Establishing a time when students can come to see you for individual help. It is very important that this time should be convenient to the students. Before or after class in a nearby room is ideal. Office hours/tutoring sessions typically range between 1 and 2 weekly hours.

Note: You should be proactive about meeting students. Advertise your tutoring services to students using distributable materials equivalent to business cards. Hold extra tutoring sessions before exams. Be creative! If you do not arrange this suitably, your experience in this course will be considerably impoverished.

- Additional activities, to be negotiated with the instructor. These may include:
 - Correcting or writing feedback for quizzes and tests as approved by course instructor.
 - Working with individual students or groups on mathematical tasks during class sessions.
 - Developing and/or implementing problems or activities.
 - Presenting sections of the material on the board.

Note: It is your responsibility to initiate communication with the college algebra course instructors before attending the first class session. When you first meet your instructor, you should take time to talk with him or her about the tasks they would like you to be involved in. As the semester progresses, either you or the instructor might like to suggest that you try different tasks in order to give you a range of experiences as a student-tutor.

Attend our seminars on specified Tuesdays.

In seminars, we will discuss your tutoring experience and assigned readings with a focus on

students' difficulties in understanding algebraic concepts. You will also work together on mathematical tasks to deepen your existing mathematical understanding and improve your knowledge of links between different algebraic concepts.

Write a journal entry for every discussion meeting.

All journal entries must be submitted as Word documents via the Sakai Dropbox. The deadline for electronic journal submissions is every Monday morning (9am) prior to each upcoming discussion meetings. For example, the first journal entry is due on Monday, February 10th by 9am. In each journal entry (up to 1000 words), you should describe at least one tutoring experience that you had since our previous discussion meeting. Your descriptions of the algebra tutoring experience(s) should consist of the following:

- What difficulty did the student have?
- What did you do to try to address the cause of this difficulty?
- To what extent were you successful?
- What, if anything, did you learn from this experience?
- What do you think the root cause of the students' difficulty was (poor arithmetic skills, weak conceptual understanding, lack of motivation, math anxiety, etc.)?
- What can be learned about teaching mathematics from this experience?

Being unsuccessful is okay and often leads to worthwhile learning experiences for pre-service mathematics teachers. Tutoring this population of students is hard. What difficulties did you have? What issues would you like advice on? If you did not tutor any students during your office hours/tutoring sessions, you may consider writing about any individual interactions you may have had in the algebra class such as assisting with group activities or guiding a student through a specific problem. However, one-on-one tutoring interactions are preferable for discussion in your journal entries. How will try to be more successful in recruiting students for your future office hour/tutoring sessions?

Complete two course assignments.

For each assignment, you will have the opportunity to get feedback and make improvements before submitting the final paper. The following are brief descriptions of the two course assignments and their intended learning outcomes for you as mathematics educators:

- *Tutoring PD Plan*: A short professional development plan that outlines appropriate tutoring interventions and strategies for a particular algebraic topic. Choose a challenging concept or procedure introduced in your algebra course thus far. If you were running a training session for future algebra student-tutors, what are some key tutoring recommendations that you would make to help struggling students understand this topic? What are some potential student difficulties that student-tutors can expect with this algebraic concept? How will your plan's designed tutoring intervention address these difficulties? In what ways can future student-tutors introduce or represent the concept in different ways that appeal to students' varying modes of understanding? Be sure to reference elements from your personal tutoring experiences, course activities/readings, and online discussion posts.
- *Reflection Paper*: A critical analysis that highlights your educational growth as a student-tutor OR the tracked learning progress of a particular student throughout the algebra course. Each of these paper topics must be developed using specific references of tutored

algebraic topics, your one-on-one tutoring experiences, and seminar/online discussions. This includes mention of employed teaching techniques, use of different forms of mathematical representation, skill-building support, possible in-class interventions, and so on.

- For papers about your student-tutor development, consider the following questions: What are some initial struggles and challenges that you encountered as a student tutor? Which algebraic topics proved to be most difficult to tutor and why? How did you overcome these instructional obstacles? Were they any major turning points in your experience as an algebra student-tutor? How has tutoring prepared you for your future role as a high school mathematics teacher?
- For papers about a student's algebraic learning progress, consider the following questions: What are some learning struggles and mathematical misconceptions that the student demonstrated? Were there any specific algebraic topics that the student found particularly difficult to understand? Why do you think so? How did the one-on-one tutoring sessions play role in the student's growth as a mathematical learner? What are some critical learning moments that took place both during and outside of your tutoring sessions?

Collect two feedback forms from your instructor.

You will be given feedback forms to give to your instructor and return to me. This will happen twice, once in the middle of the semester and again at the end.

Course Schedule by Week

Week	Description	Assignments & Readings
1: January 20	Introduction	
2: January 27	Class Meeting	
3: February 3	Online Discussion	
4: February 10	Discussion Meeting	
5: February 17	Online Discussion	Draft of Essay 1 (optional)
6: February 24	Class Meeting	Reading 1: Kieran (1999)
7: March 3	Online Discussion	
8: March 10	Discussion Meeting	Essay 1 & Feedback 1 due
Spring Break		
10: March 24	Online Discussion	
11: March 31	Class Meeting	Reading 2: Tall et al. (2001)
12: April 7	Online Discussion	Draft of Essay 2
13: April 14	Discussion Meeting	
14: April 21	Online Discussion	
15: April 28	Class Meeting	Essay 2 & Feedback 2 due