Division: Teacher Education

Program Area: Mathematics Education

Course: ELE 3400 1309 002
Mathematics Instruction: PMY-8

Course Credit: 3 Semester Hours

Term/Year: WINTER 2014

Course Location: Room 255 College of Education

Time/Day: 12:50 P.M. – 3:35 P.M. Mondays

Instructor: Elsie Babcock E-mail: elsiebabcock@wayne.edu
Office: Room 275 College of Education
Office Phone: 313-577-0922
Office Hours: Wednesdays 1:15–3:15 pm
Thursdays 1:15–3:15 P.M.
Saturdays 12:30–1:30 P.M.
Please email me if you would like to schedule an appointment during these times.

Support Staff: Saundra Sumner 313.577.0911

Course Introduction, Goals and Expectations

Introduction. This is an introductory course designed to help you begin teaching mathematics. Our focus in this course will be on helping you use a number of instructional activities that are central to the content in elementary/middle school mathematics, that are deeply embedded in the curriculum, and that you can learn to do well as a novice. You will have an opportunity to demonstrate a variety of the mathematical activities that are supported and anchored in commitments to high-quality mathematics instruction expressed by mathematics education policy documents such as Principles and Standards of Teaching Mathematics (National Council of Teachers of Mathematics, 2000), and the Common Core Content Standards Initiative (2010). By learning to “do” these instructional activities well, you will learn a good deal of the mathematical content that matters for teaching elementary mathematics, but you will also learn have an opportunity to listen to your colleagues ideas, and how to adjust your teaching in response. Your knowledge of mathematics, your ability to represent ideas and hear others’ understandings of them, your skill in using mathematical tools like drawings, symbols, number lines, and your facility with language all matter greatly in teaching mathematics, and they will be practiced in the context of this course.

Mathematical proficiency. The underlying premise/questions is: What does it mean to be mathematically proficient? And then, drawing on the definition of mathematical proficiency, how would we design mathematics instruction so that students would become mathematically proficient?

Mathematical content. In one short semester, we will not be able to cover all of the mathematical topics and instructional activities that you will use over your teaching career. But we will be able to study deeply content that is pivotal in the school curriculum, and our learning together will prepare you to continue learning mathematical content and pedagogy across your career. The content for this course emphasize
Geometry, Measurement, Number and Operations strands (which includes Fractions/Fraction Decimals and Place Value). Sub categories focused on writing and literature will also be integrated within the activities and/or assignments.

This course supports the theme of the College of Education at Wayne State University of “The Effective Urban Educator: Reflective, Innovative and Committed to Diversity.” Accordingly, our course will focus on reflective teaching practice; innovation in mathematics instruction; and teaching diverse learners. These themes will be woven throughout the class.

We will have a number of different modes for learning to teach mathematics. These include:

1. Doing of mathematics ourselves, as a way to learn more about the mathematical content and the ways of listening and talking about mathematics that you will be able to use when you teach children.
2. Reading and Reflecting about mathematics teaching from the list of assigned and recommended readings and assignments. Our discussions of these readings, and your own responses to them in your Chapter Notes, will be a way to think about mathematics teaching outside of what you can experience first-hand.
3. Using several videotaped examples of teaching: the teaching of others that we can observe via videotape. Videotape has the great advantage of the pause button: you can stop the action, replay it, make conjectures about what you observed, and go back to watch again. Viewing student work will also provide an opportunity to reflect on how students think about and process the mathematics they are learning.
4. Rehearsing instructional activities (peer teaching experience and the Fraction Project).
5. Examine Foundations and Perspectives in teaching mathematics.

Goals

Mathematical proficiency. The underlying premise/questions is: What does it mean to be mathematically proficient? And then, drawing on the definition of mathematical proficiency, how would we design mathematics instruction so that students would become mathematically proficient?

Mathematical content In one short semester, we will not be able to cover all of the mathematical topics and instructional activities that you will use over your teaching career. But we will be able to study deeply content that is pivotal in the school curriculum, and our learning together will prepare you to continue learning mathematical content and pedagogy across your career. Our major focus will be on content that students consistently test less well on, specifically, fractional concepts and fractional computation, geometry and measurement. We will also explore the mathematical content of place value with whole numbers, and on procedures and meanings for whole number computation. Using these topics, we aim to develop both computational fluency and number sense, two ideas that will be basis of our focus for whole number. The content focus cut a wide swath across the elementary and middle school mathematics curriculum, so you will be knowledgeable in important mathematical content as you begin teaching.

Innovation in mathematics instruction and Reflective teaching practice: We will explore innovative methods and materials for helping students learn mathematics and what it takes to teach in innovative ways. Because innovation is a break from the past, it can be hard to adopt, challenging to teach, and difficult for parents and students to accept. And, not all innovation is necessarily good! So we will give close attention to appraising innovations in mathematics education, their value, and how to put them into practice in productive ways. Also, the course content will promote reflection on teaching practice. We will be designing lessons and implementing instruction with a group of your peers, and then develop skills of reflection. Instruction involves meticulous planning, interactive work with “students”, and then reflecting after the interactions on what “students” learned, how the lesson/activity went, and what to do moving forward. Becoming a dispassionate observer of one’s own practice, and teaching practice in general, is not an easy charge.
In mathematics education, teaching diverse learners means we will focus on *how to teach mathematics so that all children can learn*. Because mathematics is important in helping children express themselves and understand the world around them, and because mathematics is a gatekeeper to higher education and employment, we are committed to enacting instruction so that all children can have these opportunities. Often this requires making mathematical reasoning explicit, rather than assuming that children can figure out on their own what is often taken for granted. We will have an opportunity to view several classroom scenarios and respond to them in respect to the following: the different students you will teach and on how to develop many practices of teaching that are sensitive to and respectful of differences.

**Instructional Activities**
You will have many opportunities to “do mathematics” in class.

The development of a student’s power to use mathematics involves learning the signs, symbols and terms of mathematics. This is best accomplished in problem situations in which students have an opportunity to read, write, and discuss ideas in which the use of the language of mathematics becomes natural. As students communicate their ideas, they learn to clarify, refine, and consolidate their thinking. - *Curriculum and Evaluation Standards for School Mathematics*

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**Required Text:**

**References:**
*Please print articles, the syllabus and related materials prior to first class.* Follow the links on blackboard to access the GLCE’s and the Common Core State Standards for Michigan and download those documents to your computer. You can also download a copy of the *Michigan Curriculum Framework* (not required) at [http://www.michigan.gov/documents/MichiganCurriculumFramework_8172_7.pdf](http://www.michigan.gov/documents/MichiganCurriculumFramework_8172_7.pdf). Organize all of the course documents in a binder according to the following headings: **Syllabus, Articles, Handouts, and Class Notes**. Please bring the binder to class session indicated on the class schedule.

**Additional Resources:**


[http://www.blackboard.wayne.edu](http://www.blackboard.wayne.edu) (Please include name, course and section number on all materials submitted electronically.)

Websites:
- MI CLIMB – Clarifying Language in Michigan’s Benchmarks
  http://www.miclimb.net
- Sample Curriculum and Plans for Education (ScoPE)
  http://www.michigan.gov/scope
- The Math Forum
  http://mathforum.org/
- National Council of Teachers of Mathematics
  http://www.nctm.org/
- MCTM
  http://www.mictm.org
- DACTM
  http://www.dactm.org/
- Balanced Assessment
  http://balancedassessment.concord.org/
- The National Library of Virtual Manipulatives
  http://nlvm.usu.edu/

Mail Order Sources for Materials and Resources
- Cuisenaire
  1–800–237–3142
- Delta Education
  1–800–258–1302
- Didax Educational Resources
  1-800-458-0024
- Heinemann
  1-800-541-2086
- ETA
  1-800-445-5985
- Heinemann
  1–800–541–2086
- Summit
  1–800–777–8817
- Marcy Cook Materials
  http://www.marcycookmath.com/

Class Requirements and Grading Policy:

1. **Attendance and class participation:** Your participation in our class activities/discussions is important not only for your own learning but also the learning of others. If circumstances prevent you from attending a class, please email me in advance. Because much of the learning for this class will be real-time and in the presence of your colleagues, it is essential that you attend every class, since much of the work in the class is done together and is interactive. This is not a class in which reading the articles and writing papers suffices; what you will learn is in great part also through your interactions with your colleagues in class around the readings and the video and audio materials that we will view together, and in your work with “students/peers”. For this reason, please do not use laptops or cell phones during class so that you can be fully engaged with your colleagues. (If you have learning needs that necessitate technology please let me know.) Excessive absenteeism or tardiness can result in the lowering of your grade (if absent or tardy for more than 5% of in class sessions). **You are expected to complete all assignments on time and be prepared to share work in class. Attendance and participation in class, on projects, and/or virtually will be considered in assignment of grades. During the semester, students are encouraged to work cooperatively with other students, except during the final and/or quizzes**

2. **Tentative Class Schedule in the Syllabus/Weekly Announcements:** Assignments and other activities that are due each week are listed on the Tentative Class Schedule. If there is an adjustment in the schedule you will either receive an email and/or the information will be posted several days prior to class on our course Blackboard website under the Announcement link. The update/adjustment in the schedule is in response to our weekly progress. Also, a more explicit explanation may be needed for any given week. (Please refer to both documents.)

PLEASE BRING YOUR ASSIGNMENTS DUE TO CLASS. All assignments are to be turned in at the beginning of class. (Refrain for completing an assignment in class.) Unless a due date is changed, you must turn the assignment in on (or before) the date it is due. Assignments that are not turned in on time will be recorded as a zero on the due date. All assignments must be created as a word document (the only
exception are the WTLs/LOG), single spaced, 12-pt. Arial, Helvetica or a similar font and edited carefully for grammar and spelling. Staple document pages at the top left-hand corner. Remember to note the source of ANY materials (books, articles, curricular guides, text, internet...) that you use. Students at this University can be expelled for plagiarism. If you are not able to attend class on the day the assignment is due please submit the homework prior to the due date.

3. **Academic Dishonesty/Plagiarism:** The College of Education has a “zero tolerance” approach to plagiarism and other forms of academic dishonesty. (See Student Code of Conduct [http://doso.wayne.edu/codeofconduct.pdf](http://doso.wayne.edu/codeofconduct.pdf)). Plagiarism includes copying material (any more than 5 consecutive words) from outside texts or presenting outside information as if it were your own by not crediting authors through citations. It can be deliberate or unintended. Specific examples of academic dishonesty, including what constitutes plagiarism, can be found in the University’s Undergraduate Bulletin ([http://bulletins.wayne.edu/ubk-output/index.html](http://bulletins.wayne.edu/ubk-output/index.html)), the Undergraduate Student Handbook ([http://comm.wayne.edu/files/undergradhandbook.pdf](http://comm.wayne.edu/files/undergradhandbook.pdf)) and in print and online versions of the Graduate Catalog ([http://www.bulletins.wayne.edu/gbk-output/index.html](http://www.bulletins.wayne.edu/gbk-output/index.html)) under the heading “Student Ethics.” It is every student’s responsibility to read these documents to be aware which actions are defined as plagiarism and academic dishonesty. Sanctions could include failure in the course involved, probation and expulsion, so students are advised to think carefully and thoroughly, ask for help from instructors if it is needed, and make smart decisions about their academic work.

4. **Attention Students with Disabilities:** If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-202-4216 (video phone). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services’ mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.

5. **Religious Observance Policy:** Because of the extraordinary variety of religious affiliations represented in the University student body and staff, the Wayne State University calendar makes no provision for religious holidays. It is University policy, however, to respect the faith and religious obligations of the individual. Students who find that their classes or examinations involve conflicts with their religious observances are expected to notify their instructors well in advance so that alternative arrangements as suitable as possible may be worked out.

6. **Wayne State University Writing Center:** The Writing Center (2nd floor, UGL) provides individual tutoring consultations free of charge for students at Wayne State University. While the center serves both graduate and undergraduate students, undergraduate students in General Education courses, including composition courses, receive priority for tutoring appointments. The Writing Center serves as a resource for writers, providing tutoring sessions on the range of activities in the writing process – considering the audience, analyzing the assignment or genre, brainstorming, researching, writing drafts, revising, editing, and preparing documentation. The Writing Center is not an editing or proofreading service; rather, students are guided as they engage collaboratively in the process of academic writing, from developing an idea to correctly citing sources. To make an appointment, consult the Writing Center website: [http://www.clas.wayne.edu/writing/](http://www.clas.wayne.edu/writing/). To submit material for online tutoring, consult the Writing Center HOOT website (Hypertext One-on-One Tutoring) [http://www.clas.wayne.edu/unit-inner.asp?WebPageID=1330](http://www.clas.wayne.edu/unit-inner.asp?WebPageID=1330).
ASSIGNMENTS/FORMATIVE ASSESSMENTS

7. **Daily Quizzes**: Daily quizzes will be given in class during the term based on the chapters read/assigned, mathematical content and activities explored in class. You are allowed to use your notes prepared on a 3x5 index card. There are no make-ups for missing quizzes/exams. **If you are unable to take the quiz/exam on the date required you will need to make arrangements to take the exam on campus before the exam date.**

8. **Readings**: You will be reading articles along with assigned chapters for this class. For articles/chapters you will be required to write responses to these readings in a **reflective journal**. (Criteria will be shared in class.) Some of the readings will be discussed explicitly in class, while others will be used in the context of other assignments or class discussions/activities. When you read, you will want to think of how you can bring ideas from the texts/articles to inform your work with children, and our work in analyzing, planning, and exploring/teaching and reflecting on instructional strategies as well as understanding the mathematical content. Your journal for the chapter/article readings is due after each module and prior to the quiz. Refer to the schedule for specific dates.

9. **Virtual Activity**: During this term you will have an opportunity to work independently on a virtual assignment based on one or more chapters.

10. **Group and Individual Presentations/Projects**: There will be one group assignment and one individual “peer teaching” assignment that you will need to complete in addition to the course assignments. **For the Peer Teaching assignment you will identify and sign up for an activity from the text and teach a lesson that you developed to a small group of your peers and then reflect on how it went. This assignment includes you creating a lesson plan based on the College of Education plan.**

   The second assignment is a presentation- **the Fraction Project**. You will sign up for a specific content in teaching fractions and work with a 2 other classmates to create video clip of you teaching a concept using a model or a how to or a rap or song. Criteria for this presentation will be shared in class.

   General criteria for the Fraction Project will be posted on blackboard. The criteria will support you thinking about how to evaluate the quality of the connections you make between practical work and the issues raised in readings and class discussions, as well as the clarity of your oral and written presentation of your work and ideas. **This project allows you to dig deeper into your mathematical understanding/demonstrating that knowledge (“this is how I would teach the concept to students so that they understand”) and being creative.** The project should be more than 2 minutes but no longer than 4 minutes long.

Below you will find additional information for 2 of the assignments.

**WRITING TO LEARN QUESTIONS**

You will be assigned 6 Writing to Learn Questions throughout the term (2 questions from the same chapter or 2 separate chapters in the same week is consider 1 WTL). **Your name, the Course and Section Number (ELE 3400 901) and Chapter Number should appear in the upper right hand corner on an index card. The date and WTL ordinal number should appear in the upper left hand corner of the card. You will also need to include the assigned question with your response.** At scheduled intervals you will have an opportunity to share your response/thinking about the question with your peers during class. (WTL question/response will be collected at the beginning of class.) The Writing To Learn questions will be assigned weekly. Please refer to the syllabus/schedule for due dates, question number(s) and content focus/chapter readings. **TEAC EDVIDENCE OF SOURCES: TEACHING AND LEARNING**

**PEER TEACHING (INDIVIDUAL)**

1. You will have an opportunity to select and sign up for teaching an activity from the Geometry or Measurement chapter and create a lesson plan.
2. **Plan for the activity by preparing the materials**, which you will need to teach the activity to a group of your peers (maximum of 8 students) for a maximum of 10 minutes. 5 points
3. **Create and bring a draft of your lesson plan using the College of Education lesson plan format on blackboard, on the day you conduct your peer teaching.** Remember the identified CCSS should be evident in/supported by the lesson development (instructional strategies) and assessment. **You will have only 1**
opportunity to make necessary changes based on the recommended feedback and resubmit the plan the following week after receiving feedback, for full/partial credit (15 points) to receive full points. Your self-reflection should include the following:

- What you think went well, any comments from your “students” and any changes you would make the next time you “teach” the lesson, and if you think your lesson matched the objective and GLCE. The lesson plan format on blackboard includes additional reflective statements to consider.

When you receive full credit you have the option of either sending the lesson plan to the class via email or making copies to distribute in class. If you decide to send the activity as an attached file to students save the document without spaces between your last name, the document title, and include .doc at the end of the title. Example: babcockgeopeeractivity.doc.

**TEAC EDVIDENCE OF SOURCES: LESSON PLAN, TEACHING/LEARNING CURRICULUM ANALYSIS AND CLASSROOM MANAGEMENT**

**University Policy**

The College of Education faculty members strive to implement assessment measures that reflect a variety of strategies in order to evaluate a student's performance in a course. For undergraduates and post-degree students C grades will be awarded for satisfactory work that satisfies all course requirements; B grades will be awarded for very good work, and A grades will be reserved for **outstanding performance** (maximum number of points for each assignment). Please note that there is a distribution of grades from A-F within the College of Education and plusses and minuses are recorded and distinguish distinct grade point averages. An **incomplete** grade for this course is not an option. You will need to make every effort to complete all assignments/assessments.

**Course Evaluation and Grading:**

Grades for this course will be based on total points for the assignments listed below. The following point scale will be used:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Teaching (5 pts)/Lesson Plan (15 pts)</td>
<td>20</td>
</tr>
<tr>
<td>Fraction Project (rap/song, YouTube video how to...)</td>
<td>20</td>
</tr>
<tr>
<td>Writing To Learn Questions (5 @ 3 points each)</td>
<td>15</td>
</tr>
<tr>
<td>Virtual Activity/Report (1 @ 5 pts)</td>
<td>5</td>
</tr>
<tr>
<td>MATHEMATICS Journal (10 entries@ 5 pts ea)</td>
<td>50</td>
</tr>
<tr>
<td>Quizzes (3@20 points each and 1@15 points)</td>
<td>75</td>
</tr>
<tr>
<td>Professional Commitment</td>
<td>25</td>
</tr>
<tr>
<td>Attendance 10 pts</td>
<td></td>
</tr>
<tr>
<td>Class participation/preparation (10)/binder organization (5 pts)</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL POINTS: 210 Points**

In determining course grades, the following grading scale will apply:

<table>
<thead>
<tr>
<th>Points</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>95 -100</td>
<td>A</td>
</tr>
<tr>
<td>90 - 94</td>
<td>A-</td>
</tr>
<tr>
<td>87 - 89</td>
<td>B+</td>
</tr>
<tr>
<td>84 - 86</td>
<td>B</td>
</tr>
<tr>
<td>80 - 83</td>
<td>B-</td>
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<tr>
<td>77 - 79</td>
<td>C+</td>
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<tr>
<td>74 - 76</td>
<td>C</td>
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<tr>
<td>70 - 73</td>
<td>C-</td>
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<tr>
<td>67 - 69</td>
<td>D+</td>
</tr>
<tr>
<td>64 - 66</td>
<td>D</td>
</tr>
<tr>
<td>60 - 63</td>
<td>D-</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
</tr>
</tbody>
</table>
## Class Schedule (Tentative)

Refer to the Bb Announcements for any changes in schedule/assignment due dates.

<table>
<thead>
<tr>
<th>Class Assignment(s) Due Date</th>
<th>Day</th>
<th>Topic Considered</th>
<th>Readings</th>
<th>Assignments Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 6</td>
<td>1</td>
<td>○ Class Organization and Requirements: Syllabus and Lesson Plan Format</td>
<td>Chapters 1 and 2 Article: Supporting Children’s Problem Solving</td>
<td>1. Download the syllabus and review prior to class. Highlight any part of the syllabus that you may have questions about. Also, download the lesson plan format w/explanation. Bring a copy of both documents to class. 2. Review the content in Chapters 1 and 2 and view Power Point PDF in blackboard 3. Journal Entry 1 Read Article: Supporting Children’s Problem Solving</td>
</tr>
<tr>
<td>Jan 20</td>
<td>3</td>
<td></td>
<td></td>
<td>University Closed: Holiday</td>
</tr>
</tbody>
</table>
| Feb 24                       | 8   | ○ Developing Early Number Concepts  
○ Developing Whole Number Place Value  
| Mar 3                        | 9   | ○ Virtual Activity: Place Value applets/web links listed under Online Resources on pages 214. Have fun!  
○ Quiz 3                        |                                                                          | 1. Post Virtual Assignment on Blackboard in Course Messages by Midnight on Mar 3rd 2. Read Article: Thinking About Place Value in Grade 2 3. Quiz 3 Submit via Course Messages by Midnight on Mar 6th Midnight |
| Mar 10                       | 10  |                                                                                   |                                                                          | Spring Break No Classes to Mar 15th                                            |
| Mar 17                       | 11  | ○ Developing Fraction Concepts  
○ Fraction Project Plg                  | Chapter 15 (entire chap)                                              | 1. Journal Entry 8 Article: Creating, Naming and Justifying Fractions 2. Submit Journal 7 in class |
| Mar 24                       | 12  | ○ Developing Strategies for Fraction Computation Addition and Subtraction  
○ Fraction Project Plg           | Chapter 16 pp 315-324                                                 | 1. Journal Entry 9                                                            |
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Assignment</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 7</td>
<td>14</td>
<td><strong>DECIMALS AND PERCENTS</strong></td>
<td>Chapter 17 (entire chap)</td>
</tr>
<tr>
<td>Apr 14</td>
<td>15</td>
<td><strong>FINAL QUIZ 4</strong></td>
<td>1. <strong>WRITING TO LEARN 6: QUESTION 3 PAGE 356</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>FRACTION PROJECT PLG</strong></td>
<td>2. <strong>READ ARTICLE: MAKING SENSE OF DECIMALS</strong></td>
</tr>
<tr>
<td>Apr 21</td>
<td>16</td>
<td><strong>PRESENTATIONS: FRACTION PROJECT CLASSES END</strong></td>
<td>1. <strong>QUIZ 4: FRACTION CONCEPTS- CONCEPTUAL UNDERSTANDING, COMPUTATION OF FRACTIONAL NUMBERS (WHICH INCLUDES DECIMAL CONCEPTS)</strong></td>
</tr>
<tr>
<td></td>
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<td></td>
<td>2. <strong>BINDER CHECK INCLUDE REFLECTIVE JOURNALS</strong></td>
</tr>
<tr>
<td>Apr 22</td>
<td>16</td>
<td><strong>STUDY DAY</strong></td>
<td><strong>PRESENTATION FRACTION PROJECT- (SUBMIT VIDEO, MOV OR YOUTUBE SITE)</strong></td>
</tr>
<tr>
<td>Apr 23-29</td>
<td>16-17</td>
<td><strong>FINAL EXAMS</strong></td>
<td></td>
</tr>
</tbody>
</table>