



## Mathematizing ESOL I: Integrating Whole Number Operations Course Overview and Schedule

The idea of integrating math into the ESOL classroom originated with ESOL teachers and students who saw both the need and the opportunity to learn math skills for employment, academics, and daily life. ESOL lessons are often contextualized using themes such as shopping, banking, and employment — topics where math is inherent. The wonderful reality about teaching ESOL in adult education is that learners are eager to learn and are grateful for the opportunity to grow personally and professionally — and that includes being fluent in basic math skills.

This course is designed to help ESOL teachers build conceptual understanding of math topics around whole numbers and to offer strategies for integration of math into ESOL instruction. The intention is to encourage teachers to look for where, when, and how it makes sense to include math in lessons while continuing to focus on language acquisition and effective communication.

*This course is brought to you through a partnership between World Education and the [Adult Numeracy Center at TERC](#).*

**Format:** Scheduled, Facilitated

**Estimated Completion Time:** 4 hours per week for 5 weeks (18 hours total)

**Contact:** [literacy@worlded.org](mailto:literacy@worlded.org)

### Course Objectives

By the end of course, you will be able to:

- Compare and contrast math notation in US and other countries
- Describe key elements of effective planning for math integration
- Articulate the different meaning of subtraction and division
- Perform basic operations using U.S. and European algorithms
- Scaffold vocabulary needed for teaching related operations with whole numbers for ESOL learners
- Reflect on your own teaching vis-à-vis integrating math operations using whole numbers
- Create a lesson plan for ESOL learners with integrated math content

### Course Completion

To successfully complete this course, the instructor will assess your work based on whether and to what extent you have:

- ✓ Completed the required activities and postings\*: total of 75%
  - Lesson 3: Influences posting (5%)
  - Lesson 3: Cultural Context Lesson Plan and Cultural Context Lessons posting (10%)

<http://edtech.worlded.org/professional-development/online-courses/>

- Lesson 4: Skill Inventories posting (5%)
- Lesson 4: Pair assignment and SMART Goals posting (10%)
- Lesson 4: Self-Exploration Lesson Plan and Self-Exploration Lessons posting (10%)
- Lesson 5: Navigating Websites posting (5%)
- Lesson 5: Occupational Exploration Lesson Plan and Occupational Exploration Lessons posting (10%)
- Lesson 6: Educational Pathway Worksheet and Educational Pathway posting (10%)
- Lesson 6: Career Planning Skills Lesson Plan, Part 1, and Career Planning Skills Lessons posting (10%)

✓ Completed the Final Lesson Planning Project: 25%

\*In all cases where the assignment is a Forum posting, the requirement includes participating in the discussion by reading and responding thoughtfully to some of the other posts.

If you score an 80% or above, you will successfully complete the course and earn a Certificate of Completion.

## COURSE SCHEDULE

### *Week 1*

#### ***Lesson 1: Getting Started***

- Required Software and Course Features
- Course Overview
- Course Objectives
- Course Outline and Schedule
- Course Requirements
- Activity: Introductions
- Lesson Summary

#### ***Lesson 2: Key Concepts for ESOL Math***

- Overview and Objectives
- Where is the Math in Your Life?
- Numerous Notations (Variations in Notation)
- Comma or Decimal
- Integration in ESOL Classes
- Lesson Summary

### *Weeks 2 and 3*

#### ***Lesson 3: Operation Sense with Whole Numbers***

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| <ul style="list-style-type: none"> <li><input type="checkbox"/> Overview and Objectives</li> <li><input type="checkbox"/> What are the Four Operations?</li> <li><input type="checkbox"/> Activity: The Four Operations</li> <li><input type="checkbox"/> A Look at Subtraction           <ul style="list-style-type: none"> <li>▪ Activity 12-5</li> <li>▪ Exploring the Meaning of Subtraction</li> <li>▪ Connecting Addition and Subtraction</li> <li>▪ Counting Up</li> <li>▪ Using a Number Line</li> <li>▪ Different Approaches</li> <li>▪ Contextualizing the Lesson</li> <li>▪ Different Algorithms</li> <li>▪ Do We Have to Borrow?</li> <li>▪ Reflection on the European Method</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> A Look at Division           <ul style="list-style-type: none"> <li>▪ Visual Representation Activity</li> <li>▪ Two Models of Division</li> <li>▪ Math Proficiency</li> <li>▪ Division Algorithms I</li> <li>▪ Another Approach</li> <li>▪ Division Algorithms II</li> <li>▪ Contextualizing the Lesson</li> <li>▪ Activity: Integrating Division into Lessons</li> </ul> </li> <li><input type="checkbox"/> Lesson Summary</li> </ul> |
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**Week 4****Week 5****Lesson 4: Integrating All Skills**

- Overview and Objectives
- Introductions
- Visual and Spatial Senses
- Key Words
- Unfamiliar Contexts
- Simplifying Linguistic Complexities
- Integrating Math Role Play
- Lesson Summary

**Lesson 5: Course Closure**

- Course Summary
- Final Assignment: Pulling it All Together
- Final Reflections
- Evaluation
- Certificate

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**Course materials are available for one month from the course end date.**

*This course was developed by the MA SABES PD Center for Mathematics and Adult Numeracy at TERC, with funding from the Massachusetts Department of Elementary and Secondary Education. This course is also offered for free to MA ABE practitioners through the SABES PD Center for Mathematics and Adult Numeracy.*