MEET THE COURSE TEAM

COL Lead: Dr Evode Mukama
Lead Instructor: Dr Nathaniel Ostashewski
Technical Assistant: Daniel Wilton
Teaching Assistants: Prisca Byukusenge and Jenine Hawryluk

Lead Instructor bio:

Dr Nathaniel OSTASHEWSKI is Associate Professor of Open, Digital, and Distance Education at Athabasca University in Alberta, Canada. He taught chemistry for 18 years in grades 7-12 and utilized active learning and technology in all his science teaching. Currently Dr Ostashewski teaches graduate courses in distance education, research design, educational technology, and online and blended learning. He has been incorporating digital technology in teaching since 1990, both at the K12 and graduate education level. Since 1995 Nathaniel has been training educators how to incorporate technology-enabled learning into "worth-it" classroom, blended, and online activities. His extensive experience with digital media for education, OERs, online and blended instructional design/teaching strategies, and learner engagement tactics are evidenced in MOOCs he designs and teaches.

RELATED MOOCs

- Teaching Biology with Technology (Upcoming)
- Teaching Physics with Technology (Upcoming)
- Teaching Mathematics with Technology (https://www.mooc4dev.org/TMT2)

CERTIFICATION

Two levels of certification are available based on your level of participation and completion of tasks/ activities:

- **Certificate of Participation:** requires 70 per cent or more on each quiz and participation in at least three discussion forums.
- **Certificate of Completion:** requires 70 per cent or more on each quiz, participation in at least three discussion forums, and successful completion of a Lesson Plan on Teaching Chemistry with Technology.

Certificates are made available at no charge as verifiable PDF documents.

REGISTRATION

For further information and registration, go to:
https://www.mooc4dev.org/TCT2

TCT inquiries: tct@colfinder.org

Commonwealth of Learning
Ms Karmila Harder
TCT Course Administrator
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Burnaby, BC
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email: TeacherEducation@col.org

COMMONWEALTH of LEARNING

MOOC

Teaching Chemistry with Technology (TCTMOOC)

Second Offering

15 October to 19 November 2023

LEARNING FOR SUSTAINABLE DEVELOPMENT

COURSE OVERVIEW

In this course we explore the use of the Open Access (free-to-use) PhET Interactive Simulations in any level of chemistry teaching. Used by educators around the world, PhET simulations bring a set of worthwhile technology-enabled teaching tools to the classroom. Founded in 2002 by Nobel Laureate Carl Wieman, the PhET Interactive Simulations project (University of Colorado Boulder) creates free interactive math and science simulations. These PhET simulations are based on extensive educational research and engage students through an intuitive, game-like environment where students learn through exploration and discovery.

During the course, the participants will explore numerous examples of PhET simulations and how to incorporate them into classroom activities at both the K-12 and post-secondary level. Simulations, and other OERs, can be used to create active learning opportunities (online or offline) that can engage learners in chemistry education. TCTMOOC participants will have opportunities to meet in discussion forums and live sessions to discuss implementing PhET use in chemistry education. Over the duration of the course, chemistry and pedagogy experts will guide participants through the development of PhET simulation activity plans and worksheets that can be implemented in your classroom.

During this MOOC, you will:

- Identify foundational elements of chemistry teaching;
- Explore chemistry simulations and OER tools that support them;
- Identify blended learning approaches for chemistry education;
- Discuss strategies and tools for chemistry teaching with other teachers;
- Develop a Chemistry Lesson Plan integrating technology for teaching and learning;
- Evaluate a lesson plan using a pedagogical rubric.

WHO SHOULD TAKE THIS COURSE

This course is open to anyone, anywhere, and is mobile-friendly. This TCTMOOC has been designed to assist teachers, student teachers, teacher educators, and instructional designers to plan and develop a chemistry lesson and related assessments with technology. Chemistry teachers will benefit from the exploration tools, tactics, and strategies that expand their repertoire of chemistry teaching practice.

AT A GLANCE

Schedule	October 15, 2023 to November 19, 2023
Intended audience	K-12 and university chemistry teachers, student teachers, teacher educators and instructional designers
Language	English
Duration	5 weeks
Expected workload	3 to 5 hours per week (25 hours in total)
Challenge level	Introductory
Prerequisites	None
Certification	Certificates of Participation or Certificate of Completion at no charge

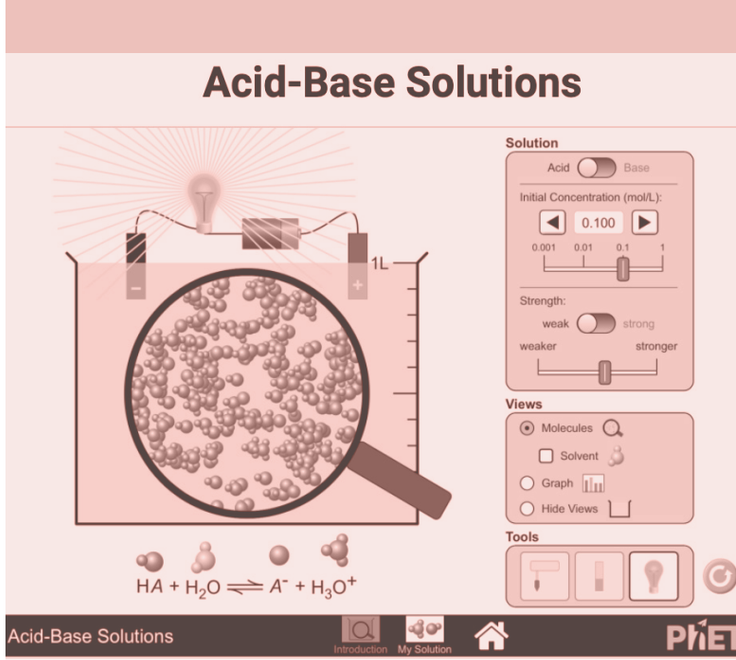
COURSE OUTLINE

Week 1

1.1 How online learning works and the Community of Inquiry (CoI); MOOC participant expectations.

1.2 Science teaching philosophy (Scientific Method); What is TPACK and why you should care.

1.3 How do teachers use PhET in Chemistry.



Week 2

2.1 Active learning and simulations in Science Education.

2.2 What is PhET and how does it work.

2.3 How do teachers use PhET in Chemistry.

2.4. OERs, Creative Commons licensing, and why they are important for teaching.

Week 3

3.1 What is Blended learning?

3.2 Blended learning for chemistry teaching.

3.3 Planning PhET simulations in chemistry teaching.

Week 4

4.1 Planning your own simulation lesson using PhET.

4.2 Assessment for chemistry simulations.

4.3 Other technology tools for chemistry teaching

Week 5

5.1 Evaluating chemistry lesson plans.

5.2 Reflections on teaching chemistry with technology