



# Vibes and Waves in Action Workshop on Blended Learning with Computing

University of Massachusetts Lowell

July 27-29, 2015

**Vibes and Waves in Action, an NSF GK-12 project at UMASS Lowell presents a novel teacher workshop on implementing Blended Learning, Flipped Classrooms and Computational Thinking in their teaching environment.**

## WHO SHOULD ATTEND:

High school teachers involved in SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS, and COMPUTING classes.

## WHY:

There is emerging evidence that students who participate in some form of online learning perform better on average than those in face-to-face classrooms alone and that a combination of the two approaches can potentially have a larger advantage than either system individually. A flipped classroom is one where students study the material posted online by teachers, participate in discussion forums and when in the classroom, solve problems and design projects while interacting with the teacher and their classmates. Building computational thinking skills is critical for all disciplines, giving students the experience to participate in high technology education and careers while improving their logic and problem solving ability. Supplemental online material when created in the right way, offers students the flexibility and individualization suited to their learning style and environment. For teachers, this combination of pedagogical skills can help manage their classroom more efficiently, allowing them to address specific needs of each student while gaining state-of-the-art skills in creating material on popular virtual learning platforms.

## WHAT WILL YOU LEARN:

In this 3-day workshop, teachers will:

- Learn to create lesson plans, learning and testing material, quizzes, and discussions on a platform such as edX, one of the current platforms for creating massive open online courses.
- Understand how to find and use a range of existing resources for blended learning activities and online materials to create the optimal learning experience for students.
- Gain an overview and see examples of lessons on e-learning platforms for topics in physics, mathematics, probability and statistics etc., that integrate course concepts and computational models using programming tools such as MATLAB.

*Participants will receive professional development points and a stipend on completing the workshop. For more information and to receive a complete application to participate in the workshop, please contact Dr. Kavitha Chandra at [kavitha\\_chandra@uml.edu](mailto:kavitha_chandra@uml.edu) or (978) 934 3356*

Vibes& Waves Workshop on Blended Learning and Computational Thinking

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|--------------------------|--|------------|------|
| First Name:              |  | Last Name: |      |
| Current Mailing Address: |  |            |      |
| City:                    |  | State:     | Zip: |
| Telephone:               |  | Email:     |      |

|   |                                       |
|---|---------------------------------------|
| Country of Citizenship:                         |                                       |
| US Permanent Resident: <input type="checkbox"/> | US National: <input type="checkbox"/> |

|                             |   |              |  |
|-----------------------------|---|--------------|--|
| <b>Academic Information</b> | <input type="checkbox"/> BS <input type="checkbox"/> MS <input type="checkbox"/> Ed.D <input type="checkbox"/> Ph.D |              |  |
| Degree Major:               |   |              |  |
| Undergraduate Degree:       | Date Received:  | Institution: |  |
| Graduate Degree(s):         | Date Received:  | Institution: |  |

|  |   |
|--|---|
| <b>Teaching Interests and Experience</b> | Briefly describe your teaching experience, interests and challenges |
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**Interest in Blended Learning & Computation**

Please describe why you are interested in the workshop topics on Blended learning and Computation in STEM classrooms. Provide any experience you have in related areas (Programming , Project Based Learning , related Pedagogical Models etc.) .

I certify that to the best of my knowledge all of the above statements are true. If selected as a workshop participant, I agree to participate in all of the workshop activities which include attendance on UMASS Lowell campus on July 27,28,29 2015. I will also interact virtually during the pre-workshop discussions and complete all of the assignments as outlined in the attached schedule.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Please submit the application package by June 15, 2015 to Prof. Kavitha Chandra, Falmouth 203, Email: [Kavitha.Chandra@uml.edu](mailto:Kavitha.Chandra@uml.edu) ; Tel: (978) 934 3356

## **Vibes and Waves in Action Blended Learning Workshop Plan**

### **(VIRTUAL) Day 1 – pre-workshop – July 14, 2015 (30 minutes)**

Online lesson: Reading material provided on:

- What is blended learning? Examples of blended learning;
- Models of blended learning

### **(VIRTUAL) Day 2 – pre-workshop – July 16, 2015 (30 minutes)**

Skype/Telephone conference call:

- Discussion about the Day 1 online material and how blended learning can be implemented in your classroom (each teacher will give their point of view)

### **(VIRTUAL) Day 3 – pre-workshop – July 20, 2015 (1 hour)**

Teachers in the role of students (online lesson):

- Review examples of short lessons we have developed on the e-learning platform in areas of physics, computing, probability and statistics.
- Teachers will develop a short plan identifying the particular curricular topic they want to develop an online lesson on and ideas on how they may incorporate this in a blended learning classroom.

### **(VIRTUAL) Day 4 – pre-workshop – July 21, 2015 (1 hour)**

Online lesson: Go through a lesson on building courses in edX Studio

### **(VIRTUAL) Day 5 – pre-workshop – July 24, 2015 (1 hour)**

- Assignment due: This will be the ticket for beginning the in-person workshop July 27,28,29
- Each teacher will submit a reasonably detailed lesson plan, that they will be taught to implement in blended learning setting during the face-to-face sessions.

### **(ON UML CAMPUS) Day 6 - workshop – July 27, 2015 (6 hours)**

Preparation of students and teachers for blended learning

- How to prepare learning materials for the blended learning classroom
- How to incorporate blended learning with in-class activities and online materials
- How to prepare students for blended learning
- Reconceiving the role of teacher in blended learning classroom
- Understand how to find and use a range of existing resources in your class, and explore options for creating your own online resources
- How to use assessments to set goals for students' learning

### **(ON UML CAMPUS) Day 7 – workshop – July 28, 2015 (6 hours)**

Creating lessons on the online platform

- Creating a sample lesson on the online platform (content will be provided as a sample)

Preparing the learning materials:

- Creating and organizing a lesson plan (each teacher will work on their own lesson plan)
- Planning lesson content (each teacher will work on the content for their own lesson)

### **(ON UML CAMPUS) Day 8 – workshop – July 29, 2015 (6 hours)**

Developing lessons:

- Develop appropriate online and in-class activities and assessment strategies
- Develop a full lesson with online and in-class content, activities and assessments
- Integrate and post all of the content and activities on the online platform



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## **Memorandum of Understanding**

**Date:** July 8, 2015

**Project:** Workshop on Blended Learning

**Purpose:** To provide high school teachers with an overview of the basic principles of blended learning and to participate in lesson design and implementation using best teaching practices in face-to-face and online interactions.

### **Goals:**

- Define blended learning
- Develop and integrate lesson plans, learning and testing material, quizzes, and discussions on a platform such as edX, one of the current platforms for creating massive open online courses.
- Align objectives with content, learning tasks, and assessments.
- Engage in the process of finding and utilizing a range of existing resources for blended learning activities and online materials to create the optimal learning experience for students.
- Evaluate and analyze examples of lessons on e-learning platforms for topics in physics, mathematics, programming, probability and statistics that integrate course concepts and computational models using programming tools such as MATLAB.

### **Project Timeline and Time Commitment:**

The workshop will run for three days July 27-29, 2015, meeting at the UMASS Lowell North Campus from 9 AM to 3 PM. Lunch will be provided. To prepare for these meetings a few pre-workshop activities will be organized that will require participants to review reading material provided and meet virtually via telephone or Skype for a brief discussion. Time commitments are given in the attached schedule. Please note that attendance and participation in all of these meetings is essential. Participants are expected to read the assigned material prior to the meetings and be prepared to discuss the main themes and how they may potentially apply these approaches in their classrooms.

Falmouth 203, 1 University Ave., Lowell, MA 01854  
Tel: (978) 934 3356; Email: [kavitha\\_chandra@uml.edu](mailto:kavitha_chandra@uml.edu)



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**Project Deliverable**

Participants will create a deliverable that will be in the form of an online lesson based on the curricular topic they have identified at the end of the pre-workshop activities. The deliverable will be available in hard copy and in electronic form on the e-learning platform.

**Stipend and PDPs:**

Participants can earn 20 PDPs for full participation in the project. The stipend for participation is \$1000. To be eligible for the stipend teachers must participate in all pre-workshop and workshop sessions and submit a deliverable as described above and outlined in meetings. Stipends will be paid in one installment at the conclusion of the workshop, contingent upon receipt of the final deliverable. Vibes & Waves project reserves the right to present the developed lessons on the project web portal for public access.

**Please sign below to indicate your agreement to the above.**

I agree to the proposal as indicated above. I understand the materials created through this project will be made available to the educational community through the Vibes and Waves project web site. The stipend will be subject to approval of the materials developed and will be paid upon completion of the project and the completion of required University payment forms.

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Signature

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Date