

## GK-12 Fellowship Application

First Name:		Last Name:	
Current Mailing Address:			
City:	State:	Zip:	
Telephone:	Email:		
UML ID:	Gender*: <input type="checkbox"/> F <input type="checkbox"/> M		*Optional

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

<b>Academic Information</b>	Currently Enrolled in: <input type="checkbox"/> MS <input type="checkbox"/> PhD <input type="checkbox"/> Eng.D <input type="checkbox"/> Sc.D		
Degree Major:	Number of Years in Current Program:		
Thesis/Research Advisor Name:			
Expected Date of Graduation and Degree:			
Doctoral Students: Have you completed your qualifying exams? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Undergraduate Degree:	Date Received:	Institution:	
Graduate Degree:	Date Received:	Institution:	

<b>Research Interests</b>	Provide a brief description of your research and address how this will be a match to the Vibes and Waves Theme of the GK-12 program.

<b>Teaching Interests and Experience</b>	Briefly describe any teaching experience and interests:

<b>Reference</b>	
Provide name and contact information of a UML faculty member (other than your thesis advisor) or other professional contact that can serve as a reference	
Name:	
Email:	Telephone:

<b>Attachments</b>
<u>Personal Statement</u> : Attach a statement that describes any experiences that would make you a good candidate for the GK-12 fellowship. Identify the unique characteristics, strengths and leadership skills that you will bring to the program. How will this fellowship and the work that you will carry out in the high schools contribute to your career goals?
<u>Support statement from your Thesis Advisor</u> : See attached form (pg 3-4)
<u>Transcripts (Unofficial copy ok)</u> : For current degree program
<u>Curriculum Vitae</u>

I certify that to the best of my knowledge all of the above statements are true. If selected as a GK-12 fellow, I agree to participate in all of the program activities from June 1, 2012 to May 30, 2013. I authorize the UML GK-12 personnel to access my UML academic records.	
<hr style="width: 30%; margin: 0 auto;"/> Signature	<hr style="width: 30%; margin: 0 auto;"/> Date

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

NSF GK-12: Vibes and Waves in Action  
A Cross-Disciplinary Network for GK-12 Education  
University of Massachusetts Lowell  
<http://vibes.uml.edu>

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## GK-12 Fellowship Application

### Thesis Advisor Information and Support Statement

Name of Graduate Student Applying for GK-12 Fellowship:

Thesis Advisor:

**Program Overview:** The goals of the GK-12: Vibes and Waves in Action program at University of Massachusetts Lowell are to train graduate students to communicate technical concepts to a diverse audience, bring research methods, tools and findings into high school classrooms and involve high school teachers and students in the research innovation taking place at the University. The GK-12 fellows will partner with high school teachers from Lowell High School and Lawrence High Schools for Math, Science and Technology and Performing and Fine Arts. During their tenure as GK-12 fellows they will collaborate with the teachers to develop classroom resources and modules that incorporate their research activity and enrich the K-12 education and learning process. The content of the modules must be broadly aligned with the project theme: Vibes and Waves in Action. The program will also create a cross-disciplinary network of eight GK-12 fellows each year from the College of Engineering and Sciences and provide opportunities for fellows to acquire leadership skills for academe and corporate careers, build community partnerships, learn to listen, question and communicate effectively in an interdisciplinary environment and develop skills to be mentors and role-models.

The basic requirements, roles, responsibilities of a GK-12 fellow and the rewards are briefly outlined on page 5 of this package. It is expected that the thesis advisor will play an active role in the GK-12 program activities. In particular, the research advisor will provide direction to their GK-12 fellow and the partner teacher during the preparation of research and education modules and experiments for the classroom. The advisors will be encouraged to visit and observe the classroom presentations of their graduate student and contribute to the evaluation activities that will drive the project. You may also be asked to speak about your research during Vibes and Waves seminars and workshops.

Gk-12 fellows will be evaluated quarterly. Continued funding will be based on these performance evaluations. Fellows may not be employed in other jobs or receive any other form of financial support from the University during their tenure as GK-12 fellows.

**Recommendation:** Please indicate your reasons for nominating your graduate student for a GK-12 Fellowship.

**Statement of Support:**

I am strongly committed to support my graduate student  \_\_\_\_\_ in the GK-12 program activities. As his/her thesis advisor, I agree to provide direction during the development of classroom modules and ensure that research progress is continued during the fellowship period. The content of the modules will be broadly aligned with the project theme: Vibes and Waves in Action.

\_\_\_\_\_  
**Signature of Thesis Advisor**

\_\_\_\_\_  
**Date**

## NSF GK-12: Vibes and Waves in Action

### A Cross-Disciplinary Network for GK-12 Education

#### University of Massachusetts Lowell

GK-12 Fellows Requirements	GK-12 Fellows Roles	GK-12 Fellows Responsibilities	GK-12 Fellows Rewards
Enrolled in degree program at the Masters or Doctoral level at UMass Lowell as a full time student.	Commit to GK-12 Fellows Program for one calendar year	Minimum of 10 hours per week in high school physics and/or mathematics classroom and 5 hours per week of preparation for duration of the school year	\$30,000 stipend for completion of the year's project
Engaged in research that will culminate in a thesis. Expected to continue individual research and all commitments to the graduate program while a GK-12 fellow	Work cooperatively and collaboratively with participating high school teachers to develop and deliver relevant content to students	Attend all project workshops and events including summer workshops, weekly meetings, monthly seminars, and classroom observations during the year with teachers, UML faculty and project staff	Tuition assistance provided by UMass Lowell
Submit to CORI check by participating Public Schools	Be a role model as scientist/researcher to high school students in participating classrooms	Enroll in "Creating Waves: A Special Topics Graduate Course that will meet weekly for one semester	Receive graduate course credit for the "Creating Waves" course
Participate in project evaluation activities including focus groups, interviews, surveys, classroom observations conducted by the project evaluator	Collaborate with other GK-12 fellows and build inter-disciplinary research and education modules for classrooms. Maintain alignment of modules developed to the Vibes and Waves Theme.	Participate in the Vibes and Waves Blogs and associated cyber-infrastructure development. Maintain a consistent presence in the common Vibes and Waves Community Space (Cyber and Land-Based)	Increase and strengthen scientific communication skills and be part of an interdisciplinary university/industry/school district network and the nationwide NSF GK-12 fellows community.

# GK-12: Vibes and Waves in Action

## Project Theme & Target Curriculum

The project theme, Vibes and Waves in Action is focused on the science, technology, engineering and mathematics of sound and electromagnetic vibrations and waves. GK-12 fellows are expected to develop their research and experiment modules for the classroom by considering one or more of the following three areas in relation to the Vibes and Waves theme: (i) Transduction principles; (b) Transmission principles and (c) Engineering Applications that use these principles.

Table 1 presents curriculum topics from Physics and Mathematics as well as Scientific Inquiry skills that are target areas for anchoring the research projects of graduate fellows and preparing content for the schools. All curriculum modules are directly linked to the Massachusetts Curriculum Frameworks, which guide school instruction in the State.

**Table 1. Selected Curriculum Topics**

<b>Introductory Physics</b>	<b>Mathematics Skills</b>	<b>Scientific Inquiry Skills</b>
Motion and Force Conservation of energy Momentum	Algebra I Algebra II Geometry	Make observations, Raise questions Formulate hypotheses Design and conduct scientific investigations
Vibrations & Waves Heat and heat transfer Electromagnetism (EM) EM Radiation	Pre-calculus Calculus Probability Statistics	Analyze and interpret results of scientific investigations Communicate and apply the result of scientific investigations

Each module developed will be aligned to the Massachusetts State Curriculum Frameworks (MCF) topics and standards in STEM disciplines to support and enhance instruction in high school classes where GK-12 Fellows will work. These frameworks guide all school instruction in the state and provide the content for state assessment tests. The modules will be integrated into school curriculum in science and mathematics as appropriate for the sequence of skills and knowledge development set forth by school staff. The MCF Math topics, including Number Sense and Operations; Patterns, Relations and Algebra; Data Analysis, Statistics and Probability; Geometry; and Measurement, will be addressed as appropriate in each module.

General Information about the NSF GK-12 program and current projects can be found at <http://www.nsfgk12.org>