Southwest Center for Microsystems Education (SCME)
University of New Mexico

BioMEMS Applications Overview Learning Module

This booklet contains six (6) units:
Knowledge Probe (KP or pre-test)
BioMEMS Applications Overview Primary Knowledge (PK)
BioMEMS Applications Activity: Nanomachines
BioMEMS Applications Activity: ELISA
BioMEMS Applications Activity: DNA Hybridization
BioMEMS Applications Assessment

A Learning Module Map is included as a suggested outline on how to use this learning module.

This learning module is an overview of some of the major biomedical developments and applications of BioMEMS. There are three activities that provide further exploration into some of these applications, how they are used and how they work.

Target audiences: High School, Community College, University

Website: www.scme-nm.org

Learning Module Map for
BioMEMS Applications Overview

This learning module is an overview of some of the major biomedical developments and applications of BioMEMS. There are three activities that provide further exploration into some of these applications, how they are used and how they work.

BioMEMS = Bio MicroElectroMechanical Systems

Learning Module units (6):

- Knowledge Probe (KP or pre-test)
- BioMEMS Applications Overview Primary Knowledge (PK)
- Activity: Nanomachines
- Activity: ELISA
- Activity: DNA Hybridization
- BioMEMS Applications Assessment

Following is a suggested map on the implementation of this learning module.

IMPORTANT STEPS	KEY POINTS	REASONS
Knowledge Probe	Have the participants complete the knowledge probe in their learning module booklets.	This probe will determine the current knowledge of the participants prior to starting this learning module. The results of the KP and final assessment could be compared to determine the level of learning that took place as a result of completing this module.
Inquiry Activity: BioMEMS Applications Activity: Nanomachines	Have the participants complete the on-line Activity: Nanomachines before presenting the PK.	This activity deals with the use of nanoparticles as machines. It should start the participants thinking about scale and molecular applications of micro-sized devices.

Unit Presentation: Present the BioMEMS Applications Overview PK	Participants should read the PK. A PowerPoint presentation can be downloaded from scme-nm.org and presented to all participants.	An introduction into the various applications of MEMS within the medical field will enhance the learning in the activities related to this learning module.
Activity: Assign the "BioMEMS Applications Activity: ELISA."	This is an on-line interactive activity.	This activity will enhance the participants' understanding of the use of biomolecules and micro-size devices for diagnostics in the medical field.
Activity: Assign the "BioMEMS Applications Activity: DNA Hybridization."	This is an on-line interactive activity.	This activity will enhance the participants' understanding of how bioMEMS are used in the medical field, specifically in the fields of genetics and diagnostics.
Assessment: Complete the Assessment.		Participants are evaluated on what they have learned about MEMS and their applications in the medical fields.

Adapted from Graupp, P. & Wrona, R. (2006) The TWI Workbook: Essential Skills for Supervisors. New York, NY. Productivity Press.