

## Topics for an ideal MEMS curriculum

1. Teach basic science (Physics, Chemistry, ..) with emphasis on scaling
2. Introduce a life science course, since MEMS may have many bio applications
3. Manufacturing course for Chemical engineers
4. Make design engineers from all disciplines (ME, EE, Chem) accessible to micro technology and available tools so that they can optimize their design whenever possible.
5. Introduce system engineering course emphasizing on flow of energy and information between components (electrical, mechanical, ...)

## Topics for an ideal MEMS curriculum

6. Add quantum mechanics and atomic physics in engineering curricula and show at what scale quantum and atomic physics are important.

7. Offer flexibility to students in taking courses so that they can choose to specialize according to their choice (MEMS, NEMS, coming from different engineering fields).

Overall: **Teach basics, add scaling issues at second level basic courses, have some hands on fab.**

# Integrating MEMS into Engineering School Curricula

## Challenges:

- Finite class hrs, so some items need to be deleted to add a few new ones
- Limited financial support. Not all institutions can have cleanroom
- MEMS is still primarily in large research institutions
- Academic institutions are conservative, difficult to change curriculum (need MEMS faculty to group and convince the rest)
- have MEMS curriculum for undergraduates.

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## Best practices:

Training students with hands on fabrication

Collaboration with industry, academia and national labs

Federal funding

Getting into new technology

Low cost, rugged fabrication technique for hand on experience

A collaborative effort between academia and industry for student internship would be very useful

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Introduce the concept of small scale in nature (such as in biology) from high school level and develop the excitement.