

# Biomedical Engineering:

A collaboration between the School of Engineering and Applied Sciences and the School of Medicine and Biomedical Sciences

Alexander Cartwright

Professor & Chair, Biomedical Engineering

Albert Titus, Associate Professor and Associate Chair,  
Biomedical Engineering

# Motivation for Establishing Program

- Need
  - Demand
  - Opportunity
- The opportunity to create a new program to address the needs and demands
  - There is a need for a trained workforce that can contribute to the local medical and biomedical industry
  - State-wide and nation-wide there is also a need for a trained workforce to tackle the health needs into the future
  - There has been a clear demand from many students for a Biomedical Engineering program at UB

# What is a Biomedical Engineer?

- “A Biomedical Engineer uses traditional engineering expertise to analyze and solve problems in biology and medicine, providing an overall enhancement of health care. “ –from: <http://bmes.seas.wustl.edu/careers.asp>

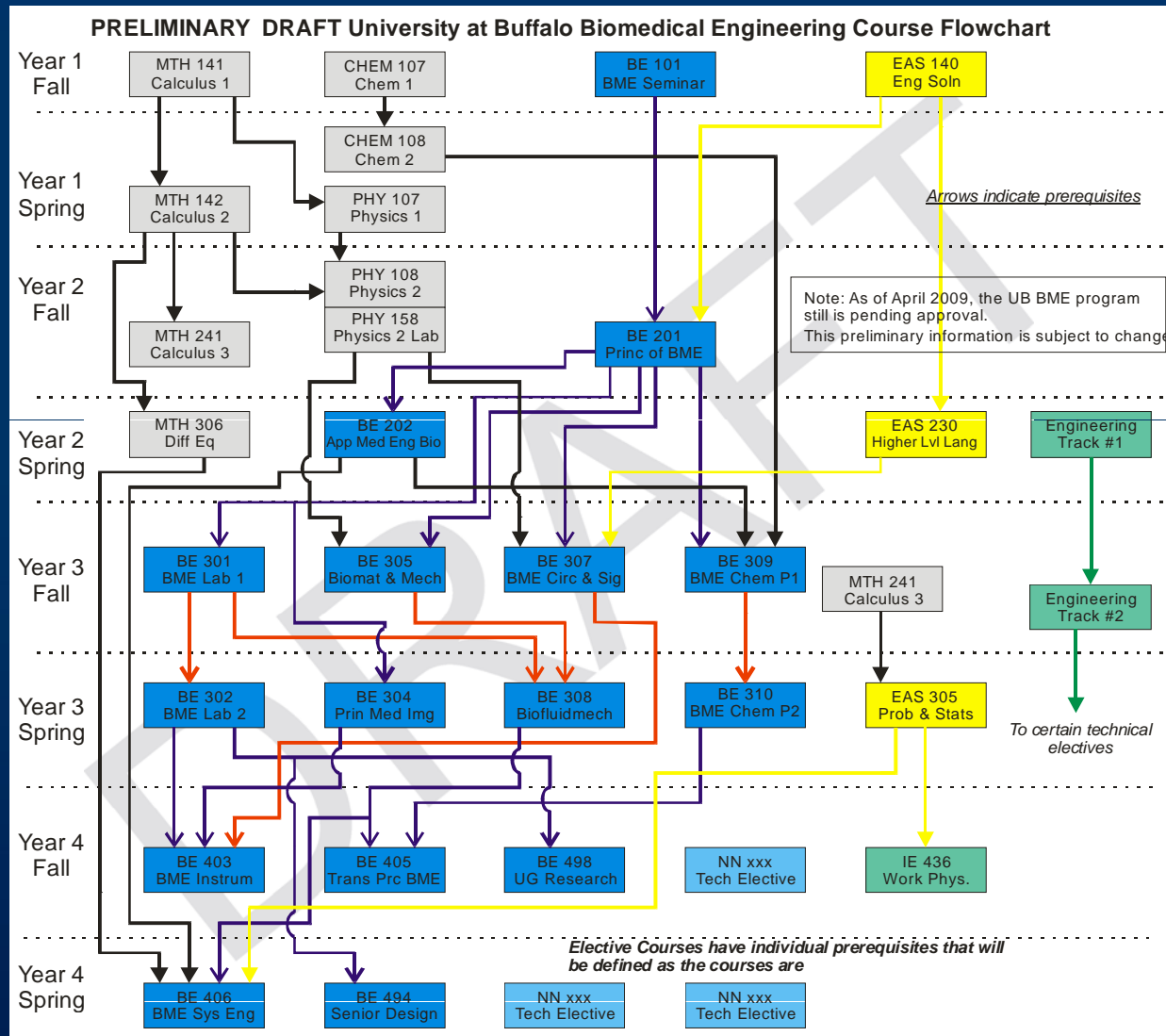
# Why UB?

- The University at Buffalo is the most comprehensive campus in the 64-campus SUNY system.
- With Engineering and Medicine, Dental Medicine, Pharmaceutical Sciences, Nursing, and others, UB is ideally positioned to offer an outstanding Biomedical Engineering Program

# About Biomedical Engineering @ UB

- The Department of Biomedical Engineering has been created.
  - Chair is Dr. Alexander Cartwright
  - Associate Chair is Dr. Albert Titus
- The *degree program* in Biomedical Engineering is awaiting approval from the state
  - Approval is expected during the summer or fall of 2009

# A Diverse Undergraduate Curricula



First two years are similar to other UB Engineering programs in general

# New Courses

List of new courses with prerequisites: ordered by course number

Course #	Course Name	Offered (yr-sem)	Prerequisites Needed	Is a pre-req of	first offered
BE 101	Biomedical Engineering Seminar	1 - F	none	BE201	Fall 2010
BE 201	Principles of Biomedical Engineering	2 - F	EAS140, BE101	BE202, BE301, BE304, BE305, BE307, BE309	Spring 2010
BE 202	Applied Medical & Engineering Biology	2-S	BE201	BE309, BE406	Spring 2010
BE 301	BME Laboratory I	3-F	BE201	BE302, BE308	Fall 2010
BE 302	BME Laboratory II	3-S	BE301	BE403, BE494, BE498	Sp 2011
BE 304	Principles of Medical Imaging	3-S	BE201	BE403	Sp 2011
BE 305	Biomaterials and Mechanics	3-F	PHY 108, PHY158 BE201	BE308	Fall 2010
BE 307	Biomedical Circuits and Signals	3-F	EAS230, BE201, PHY108, PHY158	BE 403	Fall 2010
BE 308	Biofluidmechanics	3-S	BE301, BE305	BE406, BE405	Sp 2011
BE 309	Biomedical Chemical Principles 1	3-F	BE201, BE202 CHE108	BE310	Fall 2010
BE 310	Biomedical Chemical Principles 2	3-S	BE 309	BE405	Sp 2011
BE 403	Biomedical Instrumentation	4-F	BE 302, BE 304, BE 307	None	Fall 2011
BE 405	Transport Processes in BME	4-F	BE 308, BE310	None	Fall 2011
BE 406	Biomedical Systems Engineering	4-S	BE202, MTH306, EAS305, BE308	None	Sp 2012
BE 494	Senior Design Project	4-S	BE302, permission	None	Sp 2012
BE 498	Undergraduate Research	4-F	BE 302, permission	None	Fall 2011

Yellow highlighted courses are to be offered in Spring 2010, but BE 201 will normally be a Fall semester course.

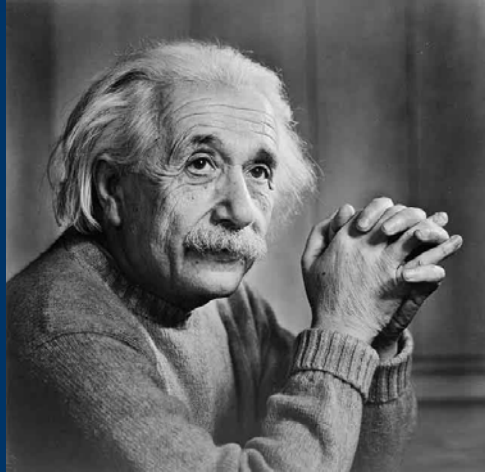
# What should you do?

- Students new in fall 2009:
  - Take standard engineering curriculum
  - BE101 will be offered in Fall 2009
- Current Freshman (2<sup>nd</sup> year in fall 2009):
  - Take 2<sup>nd</sup> year courses in your current major
  - Enroll in BE101 Fall 2009
  - Plan on taking BE201 and BE202 in spring 2010
  - Take EAS 230 in the fall of 2009
  - Normal sequence as of fall 2010 (your 3<sup>rd</sup> year)
- Current Sophomores (3<sup>rd</sup> year in fall 2009):
  - Switching into BE will result in a one-year delay in graduation
  - Take courses in current major as normal
  - Start taking BE courses in the spring 2010
- Student 3<sup>rd</sup> and 4<sup>th</sup> year students
  - Switching will delay you, think about graduate school

# Graduate School?

- Graduate Program is under development now
- Students thinking of graduate school should visit the department website for updates during the next academic year
- <http://www.bme.buffalo.edu>

# Questions?



“Question everything.”

“If I had an hour to solve a problem and my life depended on the answer, I would spend the first 55 minutes figuring out the proper questions to ask. For if I knew the proper questions, I could solve the problem in less than 5 minutes.”

<http://www.bme.buffalo.edu>

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