

BME Undergraduate Advising Sessions



Outline

- Spring : General advising
 - BME general curriculum and track advising
 - Off Campus Experiences:
Co-ops/internships & Study abroad
 - On Campus Experiences & Involvement
BMES/orgs, certificates and second majors, research

- Fall: Post BME Planning
 - Pre-health planning and application
 - BME 1 year Masters & Graduate school



Session 1: Spring General advising

Friday March 1, 2019
12:00 – 1:00 pm



BME Department Faculty Advising

- BME Faculty Advising
 - Dr. John Puccinelli, 2132 ECB
john.puccinelli@wisc.edu
General curriculum, career, academic advising
Research, opportunities
Biomaterials/cellular/tissue engineering track
Courses/careers for all tracks
Questions, comments and concerns
All things BME
- Part-time permission requests
- For appointments – email suggested days/times



BME Student Services Office

Room 170, 1410 Engineering Drive Building

- **Francisca Jofre**, Advisor
jofre@wisc.edu, 890-0625
- **Matt Nelson**, Student Services Coordinator, Advisor
mcnelson8@wisc.edu, 265-5836
- **Catherine Turng**, Student Services Coordinator, Advisor
turng@wisc.edu, 263-3746
- **Bart Upah**, Academic Advisor
upah@wisc.edu, 890-0249



BME Student Services Office



- BME course guide and waitlist information
- **Authorizations**: BME courses, **independent study**, and honors
- **Forms**: independent study, Other certificates, etc.
- COE regulation & policy questions (part-time/withdrawal/deadlines etc...)
- UW Campus resource info (tutoring assistance, UHS, scholarships....)

If you are unsure where to go for help:
Student services is a great place to start!





Upcoming Deadlines

<https://registrar.wisc.edu/dates/>

- Fall 2019
 - 11/1: Final drop deadline
- Spring 2020
 - ~10/18: Timetable / course guide available
 - 11/4: Enrollment times assigned
 - 11/11: Enrollment begins



Academic Advising

BME undergraduate academics

<https://www.engr.wisc.edu/departments/biomedical-engineering/academic-programs/bachelor-biomedical-engineering/>

Find an advisor

<https://advising.wisc.edu/>





[Home](#) > [Biomedical Engineering](#) > [Academics](#) > [Bachelor of Science in Biomedical Engineering](#)

Biomedical Engineering

BIOMEDICAL ENGINEERING

[ABOUT](#)

[RESEARCH](#)

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[Bachelor of Science in Biomedical Engineering](#)
[Master's and PhD Degrees in Biomedical Engineering](#)
[BME Courses](#)

[PEOPLE IN BME](#)

[NEWS & EVENTS](#)

[CONTACT](#)

[GIVE](#)

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Connect with Biomedical Engineering



Bachelor of Science in Biomedical Engineering

The Department of Biomedical Engineering offers an ABET-accredited Bachelors of Science (BS) degree in BME. The BME undergraduate degree program emphasizes engineering design in preparation for employment in biomedical industries and for graduate study or Medical School.

Degree Information

[Admissions](#)

[Design throughout the Curriculum](#)

[Curriculum, Advising Handbook, Courses and Forms](#)

[BME flyer for prospective students](#)

Advising Resources

- [Complete Curriculum Advising Handbook \(2015\)](#)
- [Complete Curriculum Advising Handbook \(updated 2017\)](#)
- [BME Guide at UW-Madison](#)
- [EAGLE Course Handbook \(helps you bring your DARS to life\)](#)

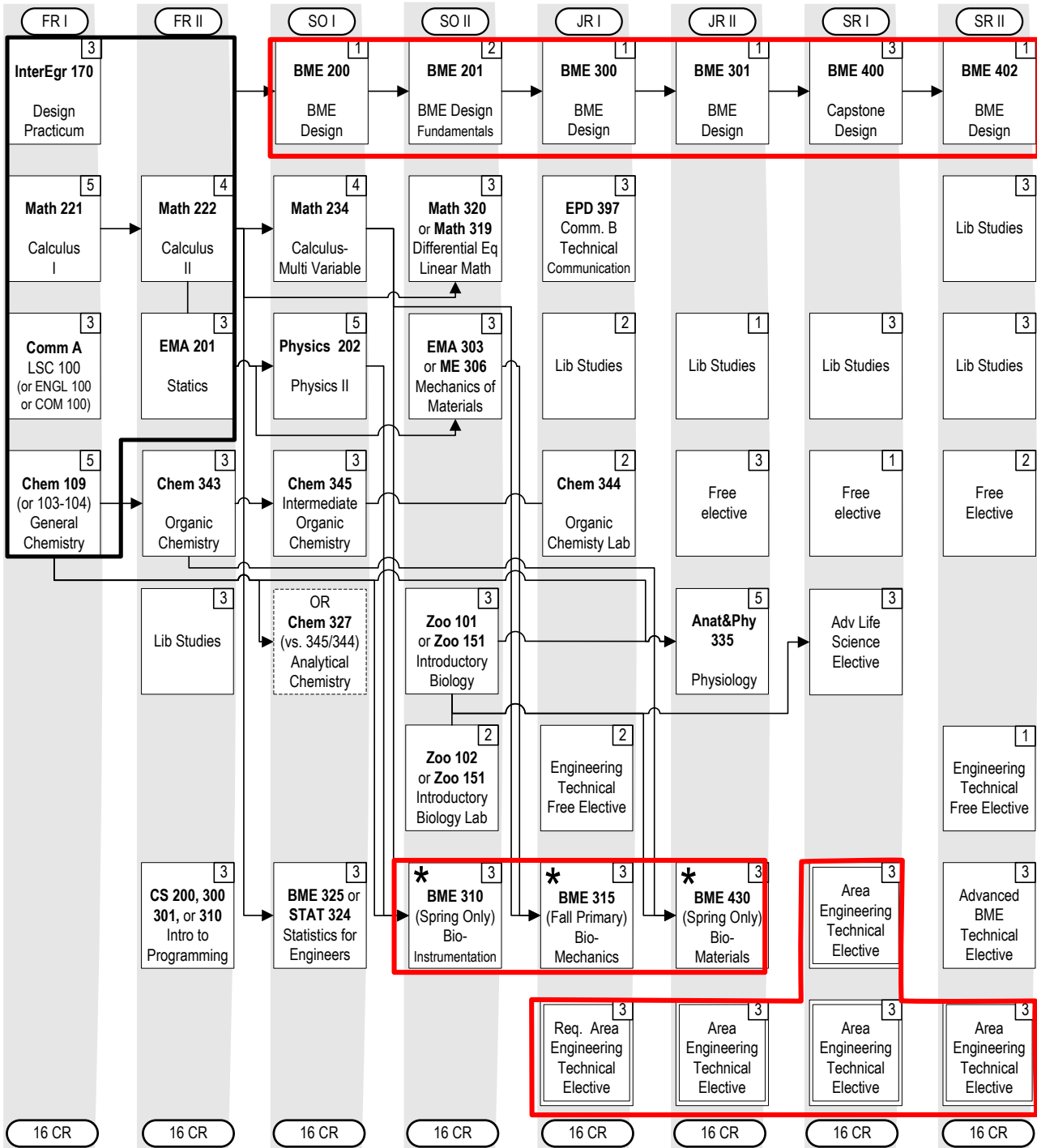
Courses

- [Tentative Schedule of BME Courses – Future course offerings](#) (login with your UW-Madison "...@wisc.edu" Google Apps account)
- [BME Tracks – Recommended list of courses](#)
- [BME courses](#)

Forms

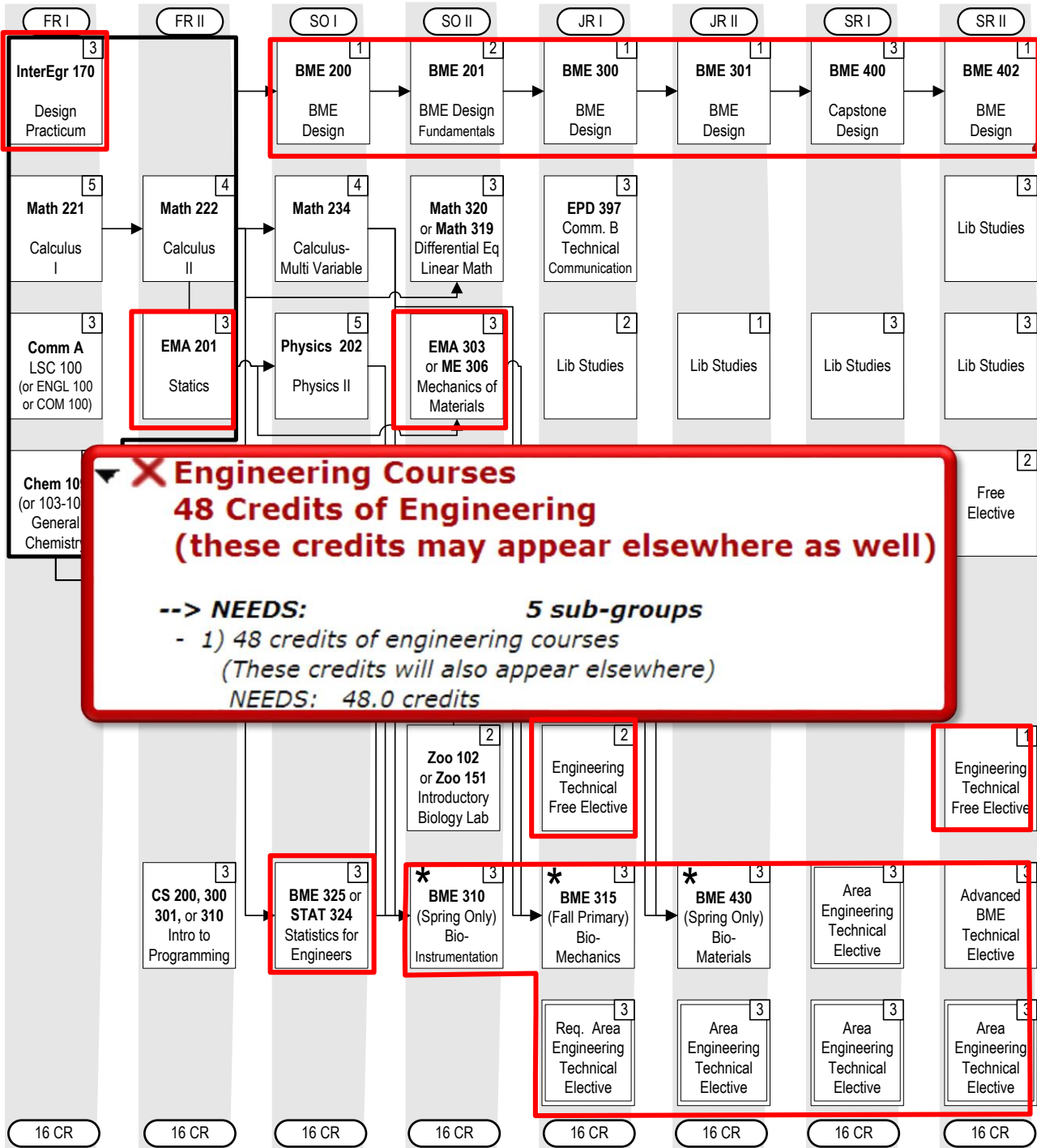
- [BME Undergraduate Research Form](#) (required for each semester)
- [Honors in research formal application form](#)
- [Scholarships](#)





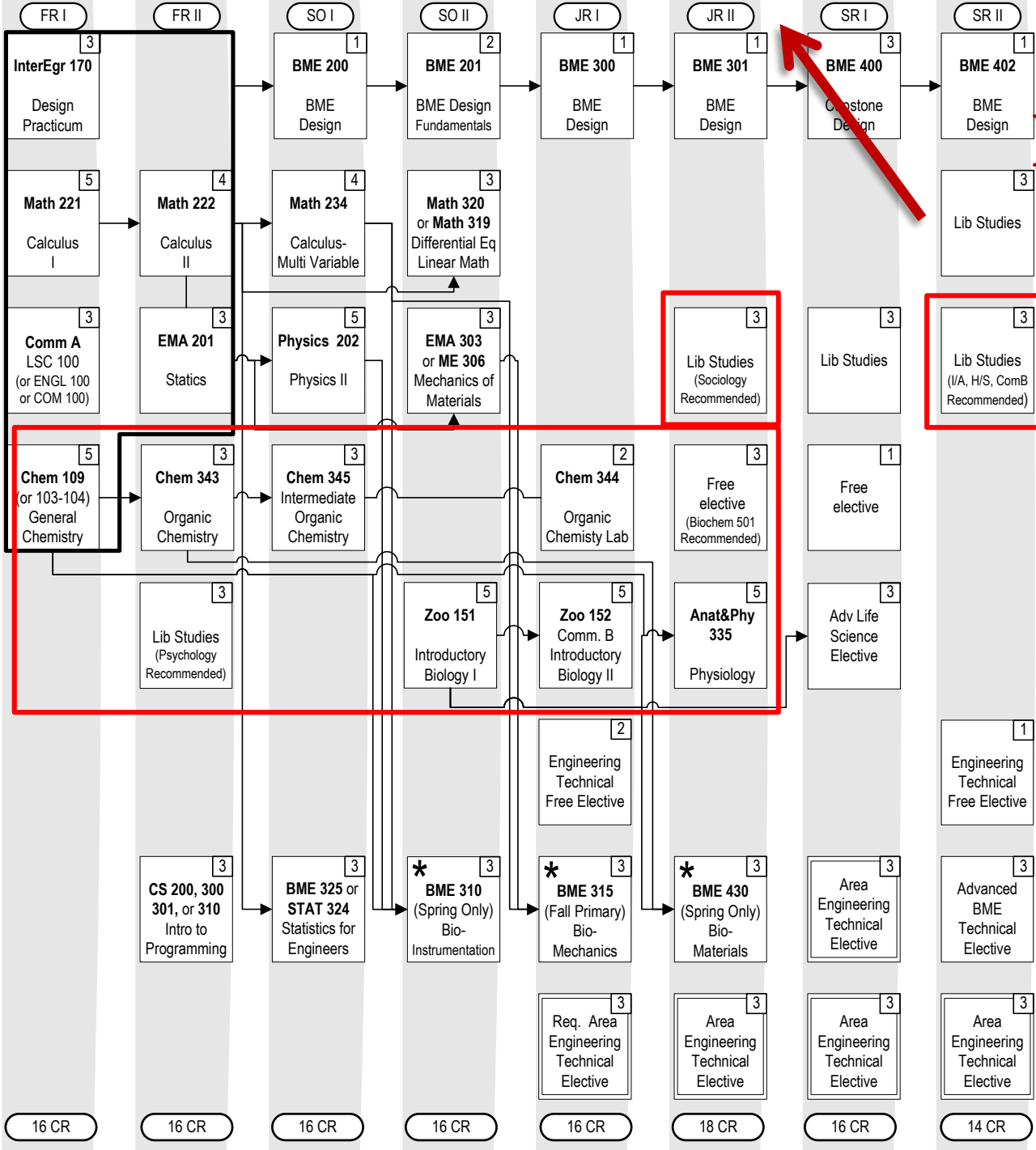
General Flowchart

- 128 credits total (16/sem)
 - Design
 - Core breadth *take yours early
 - Area depth
1. Bioinstrumentation & Devices (ECE 230)
 2. Biomedical Imaging and Optics (ECE 330)
 3. Biomechanics (ME 240/EMA 202)
 4. Biomaterials, Cell and Tissue Engineering (BME 330 or CBE 320)



48 Engineering Credits

- Design
- Engineering Mechanics
- Core breadth & Area depth
- Free Engineering Tech Elective
 - Degree granting ENGR program
 - BME 325 counts
 - Not EPD
 - Not InterEGR (except 160,170,301)
 - Up to 3 ENGR research credits
- **MUST GO TO ZERO!**

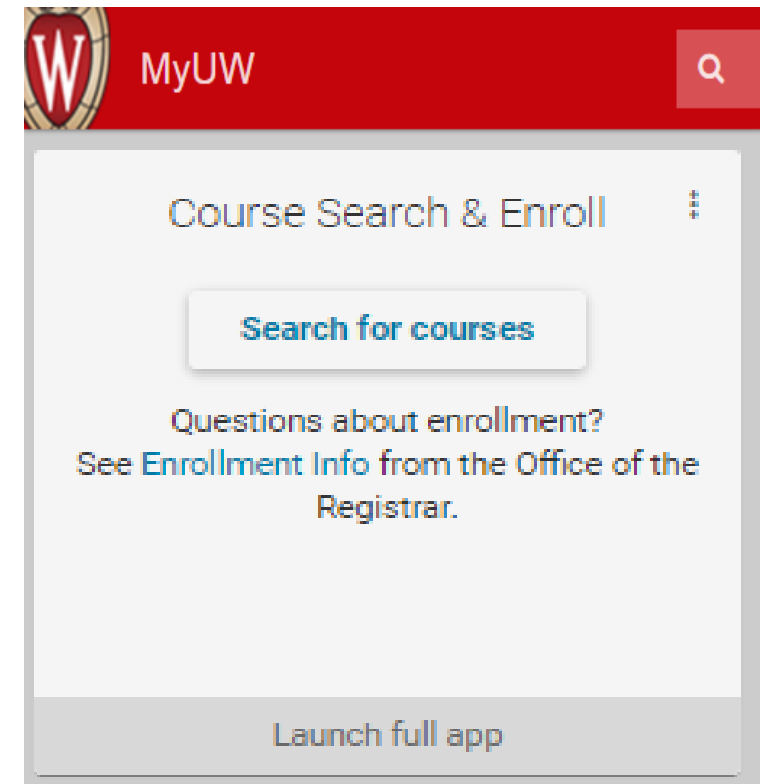


Prehealth / Premed

- Lose choices/free electives
- Can keep options open
- Structured biology/biocore
- Involvement is key!
- 4 – year plan
 - MCAT Spring/Summer Junior yr
 - Apply summer junior yr
 - Secondaries/interviews follow
- <http://www.prehealth.wisc.edu/>

Enrollment App Degree Planner

- MyUW → Course Search & Enroll
<https://registrar.wisc.edu/degree-planner/>
 - Are you a planner?!?!
 - Toss all those scraps and excel sheets
 - Build your 4-yr plan
(DARS integration coming back soon)



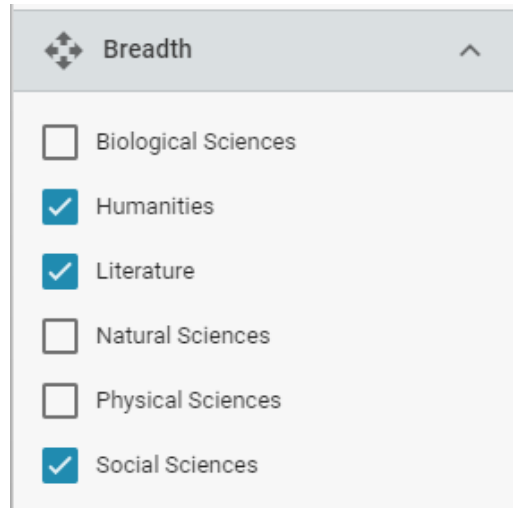
✗ Liberal Studies and Ethnic Studies Requirement: 15 credits of courses with humanities, literature or social science breadth designation, or non-retro-credit foreign language courses are required as specified in subrequirements 4 and 5. Additional specifications are outlined in 1-3 below.

- Same department

Note: You can satisfy UWs General Ed requirements without meeting the colleges requirements (left)

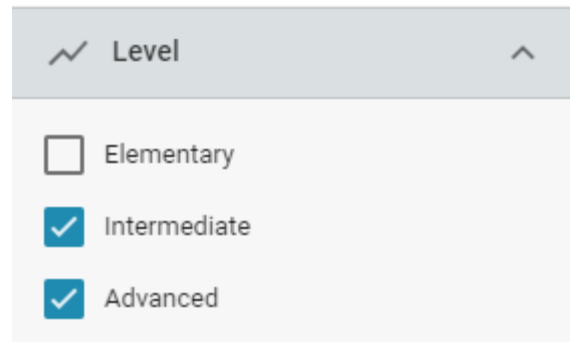
Liberal Studies Electives

- Searching (**check your DARS!!!**)
 - Course search: Breadth: Humanities, Literature, **And/Or** Social Science (Foreign Language is Humanities, only exception)
 - Transfer databases H,L,S,W,X,Y,Z



A screenshot of a web-based filter menu titled "Breadth". It contains a list of academic categories with checkboxes. The categories and their selection status are: Biological Sciences (unchecked), Humanities (checked), Literature (checked), Natural Sciences (unchecked), Physical Sciences (unchecked), and Social Sciences (checked).

Breadth
<input type="checkbox"/> Biological Sciences
<input checked="" type="checkbox"/> Humanities
<input checked="" type="checkbox"/> Literature
<input type="checkbox"/> Natural Sciences
<input type="checkbox"/> Physical Sciences
<input checked="" type="checkbox"/> Social Sciences



A screenshot of a web-based filter menu titled "Level". It contains a list of course levels with checkboxes. The levels and their selection status are: Elementary (unchecked), Intermediate (checked), and Advanced (checked).

Level
<input type="checkbox"/> Elementary
<input checked="" type="checkbox"/> Intermediate
<input checked="" type="checkbox"/> Advanced

- I/A course must be in the same dept. as another lib studies course

BME Area Specializations

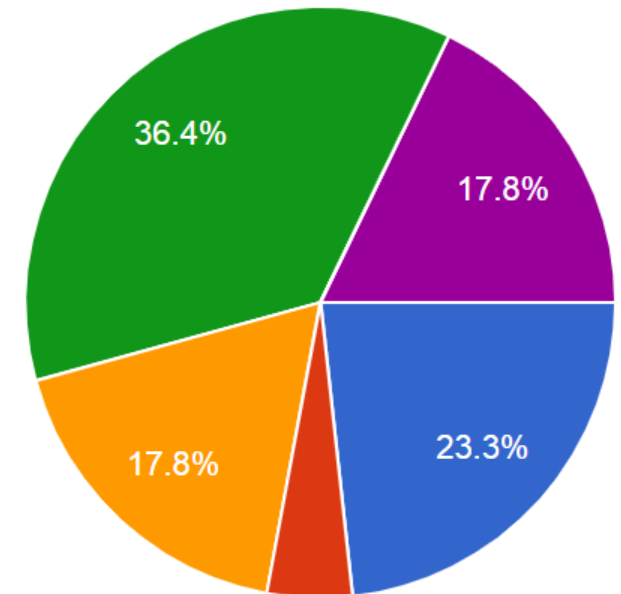
- See BME 201 site for video lectures

Note: updated course lists are in the curriculum guide

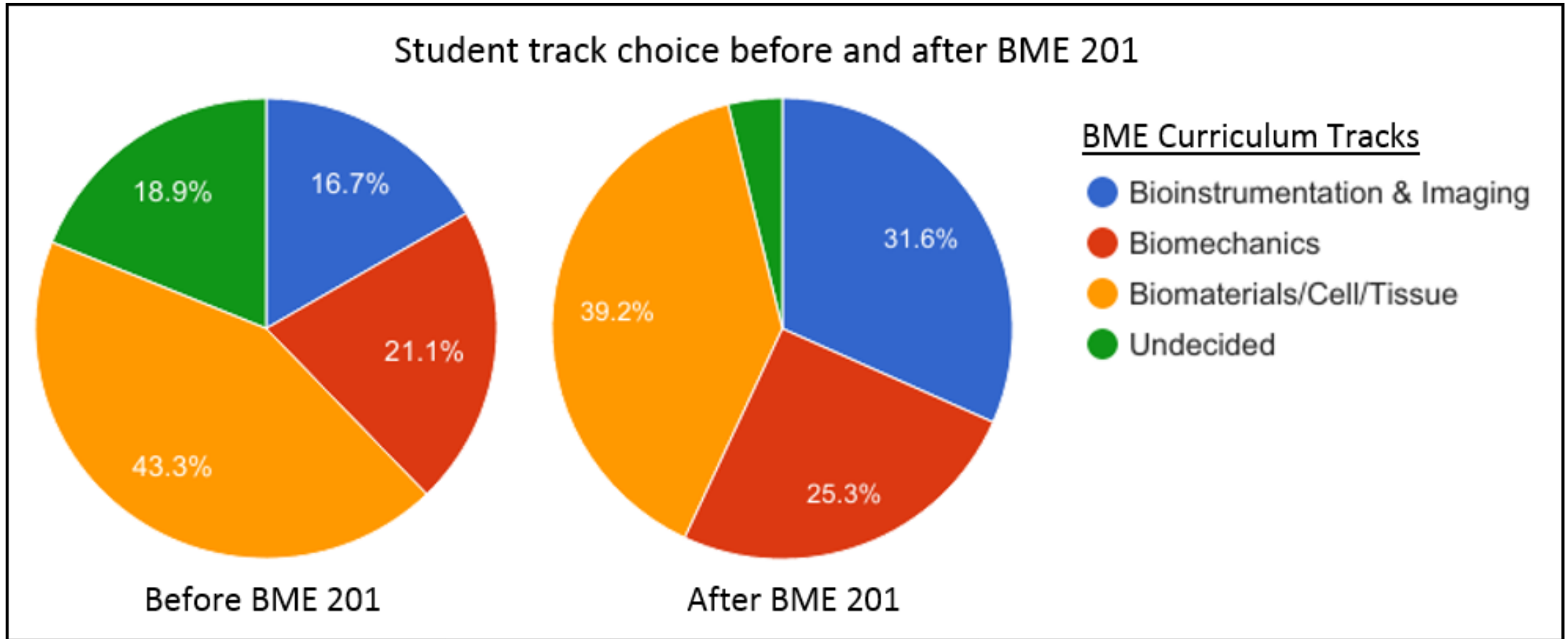
Research credits NEVER count toward track/specialization credits

- Bioinstrumentation & Medical Devices ●
- Biomedical Imaging & Optics ●
- Biomechanics ●
- Biomaterials/Cellular/Tissue Engineering ●
- Undecided ●

2019 BME 201



201 helps you choose!



BME Area Specializations - All Choices p10

Engineering Area Technical Elective Requirements

Choose 15 credits of area technical electives in one of the following five tracks and at least one advanced BME elective:

1. **Bioinstrumentation and medical devices:** Required area elective: ECE 230 - Circuit Analysis
Advanced BME Area technical electives in the area: BME 462, 463, 535, 550, 556
Other area electives: any ECE course
2. **Bio-Imaging and Optics:** Required area elective: ECE 330 - Signals and Systems
Advanced BME Area technical electives in the area: BME 530, 535, 578, 619, 650
Other area electives: ECE 203, 331, 431, 533; BME 566-574; NE 305, 408, 427, 506
3. **Biomechanics:** Required area elective: EMA 202 or ME 240 - Dynamics
Advanced BME Area technical electives in the area: BME 415, 416 (603), 505, 564, 615, 662
Other area electives: any ME or EMA course; ISyE 349, 549, 552, 555, 559; MS&E 350/1; CBE 320/30, 324, 525
4. **Biomaterials/Cell/Tissue Eng:** Required area elective: BME 330 - Engineer Principles of Cells, Molecules & Tissues or BME 320 - Transport Phenomena (note CBE 250 is not needed as a prerequisite)
Advanced BME Area technical electives in the area: BME 505 510, 520, 545, 550, 556, 615
Other area electives: any CBE course; any MS&E course; ME 417, 418; BME 511

**15 cr in area +
1 Adv. BME =
18 credits**

[Recommended list of courses](#) for each track be found at this link.



BME Area Specializations – ‘Recommended’ Lists

Biomaterials, Cell and Tissue Engineering

Course #	Title	Pre-Requisite (all equivalents are OK)	Sem.	Cr.	Good for all	Hard Materials	Soft Materials	Tissue Engr
BME 330 OR CBE 320	Engr Principles of Cell, Molec.& Tissues OR Transport Phenomena	EMA 201, Math 320, Chem 104 EMA 201, Math 320, NOT CBE 250	F F/S/M	3 4	Required			
MSE 350 OR MSE 351	Introduction to Materials Science OR Structural & Prop. Relations in Solids	Chem 103 Chem 104	F/S/M F	3	Highly Rec.			
ME 424	Statistical Experimental Design	Stat 324	F	3	Recommended			
BME 510	Introduction to Tissue Engineering	BME 430	F	3	Adv. BME			
MSE 330	Thermodynamics of Materials	Chem 104, Math 222	F	3		Highly Rec.		
MSE 352	Transformation of Solids	MSE 350/1	S	3		Highly Rec.		
MSE 433	Principles of Corrosion	MSE 330	S	3		Highly Rec.		
ME 441	Rheology of Foods and Biomaterials	CBE 320 or ME 363	S	3		Recommended	Recommended	
MSE 435	Joining of Mat.:Struc.,Elec.,Bio., Nano	MSE 350/1	S	3		Recommended		
MSE 448	Crytallography & X-Ray Diffraction	Instructor Consent	F	3		Recommended		
MSE 553	Nanomaterials & Nanotechnology	Senior	S	3		Recommended		
MSE 570	Properties of Solid Surfaces	Instructor Consent	S	3		Recommended		
BME 603	Orthopedic Biomechanics (416)	ME 306eq, BME 315	Every 3	3		Adv. BME		
CBE 440	Chemical Engineering Materials	Chem 345	F/S	3			Highly Rec.	
CBE 540	Polymer Science and Technology	Chem 345, CBE 326, 430, Statistics	F/S	3			Highly Rec.	
ME 417	Introduction to Polymer Processing	Senior	S/M	3			Highly Rec.	Recommended
ME 418 OR MSE 421	Engineering Design with Polymers OR Polymeric Materials	Senior Prereq chem 341 or equivalent	F/M S	3 3			Highly Rec.	Highly Rec.
CBE 560	Biochemical Engineering	CBE 310, 320, Zoo 101-2/151	F	3			Recommended	Recommended
BME 545	Extracellular Matrix Engineering	Zoo 101-2/151, BME 430	S	3			Adv. BME	Adv. BME
BME 550	Intro to Bio. & Med. Microsystems	Zoo 101-2/151, BME 310	F	3			Adv. BME	Adv. BME



BME Area Specializations - DARS

X OR Biomaterials/Cellular/Tissue Egr: tech electives

--> **NEEDS: 18.0 credits**

- 1) Biomaterials/Cellular/Tissue Egr: required area course

NEEDS: 1 course

Select from: B M E 320,330

- 2) Biomaterials/Cellular/Tissue Egr: area electives

Select from: CBE M S & E M E 417,418,424

B M E 510,511,520,545,550,556,560,615,650

- 3) Advanced BME elective

NEEDS: 1 course

Select from: B M E 415,462,463,505,510,520,530,535,545,

B M E 550,556,560,564,568,578,603,615,619,650,662

- ANY course in the CBE or MSE depts
- Courses count ONCE
- Need 1 adv. BME
 - Any area
 - Can take more in your area
- NO RESEARCH



Non-traditional Course Options



- Summer courses
 - Taught on-line from UW-Madison in summer for off-campus students
 - ME 418: Engineering Design with Polymers
Counts in either Biomechanics or Biomaterials/Cell/Tissue tracks
 - EPD 397: Technical Communication
 - BME 601: LabVIEW (open to anyone)
- Other online courses (off-campus) for anyone anytime
 - UW Extension Independent Learning – on-line courses
<https://il.wisconsin.edu/>
 - Tuition waiver when taking these during a full UW-Madison term
<https://www.engr.wisc.edu/academics/student-services/academic-advising/undergraduate-engineering-students/how-do-i/>

Transfer Credits – Off Campus



- Transfer Wizards / Equivalencies
 - Transfer Information System (TIS) – UW System course Equivalencies
<http://tis.uwsa.edu/wizards/>
 - Transfer equivalency database (TED) – non UW schools
<http://www.admissions.wisc.edu/transfer/ted/index.php>
 - Course Equivalency Service (CES) – everything else – use to check/approve
<http://www.admissions.wisc.edu/ces/>
 - Grade of a 'C' or better
- **Send transcript** UW-Admissions immediately after grade posts
<https://www.admissions.wisc.edu/enrolled/>



Rules and Regulations – p14



<https://www.engr.wisc.edu/academics/student-services/academic-advising/undergraduate-engineering-students/rules-and-regulations/>

- Full-time (at least 12 credits)
 - Every semester: if less than 12 credits = probation without permission
 - In residence (at UW-Madison) your last two semesters
 - Can obtain a waiver for your second last semester from the Dean's office
 - You can NEVER be gone your last semester
 - Co-op, 1 credit of BME 001 = full-time equivalent
- Pass/Fail
 - One course per term, up to 16 credits
 - ONLY free electives (not degree/certificate requirements or credits)



Other Advising Resources



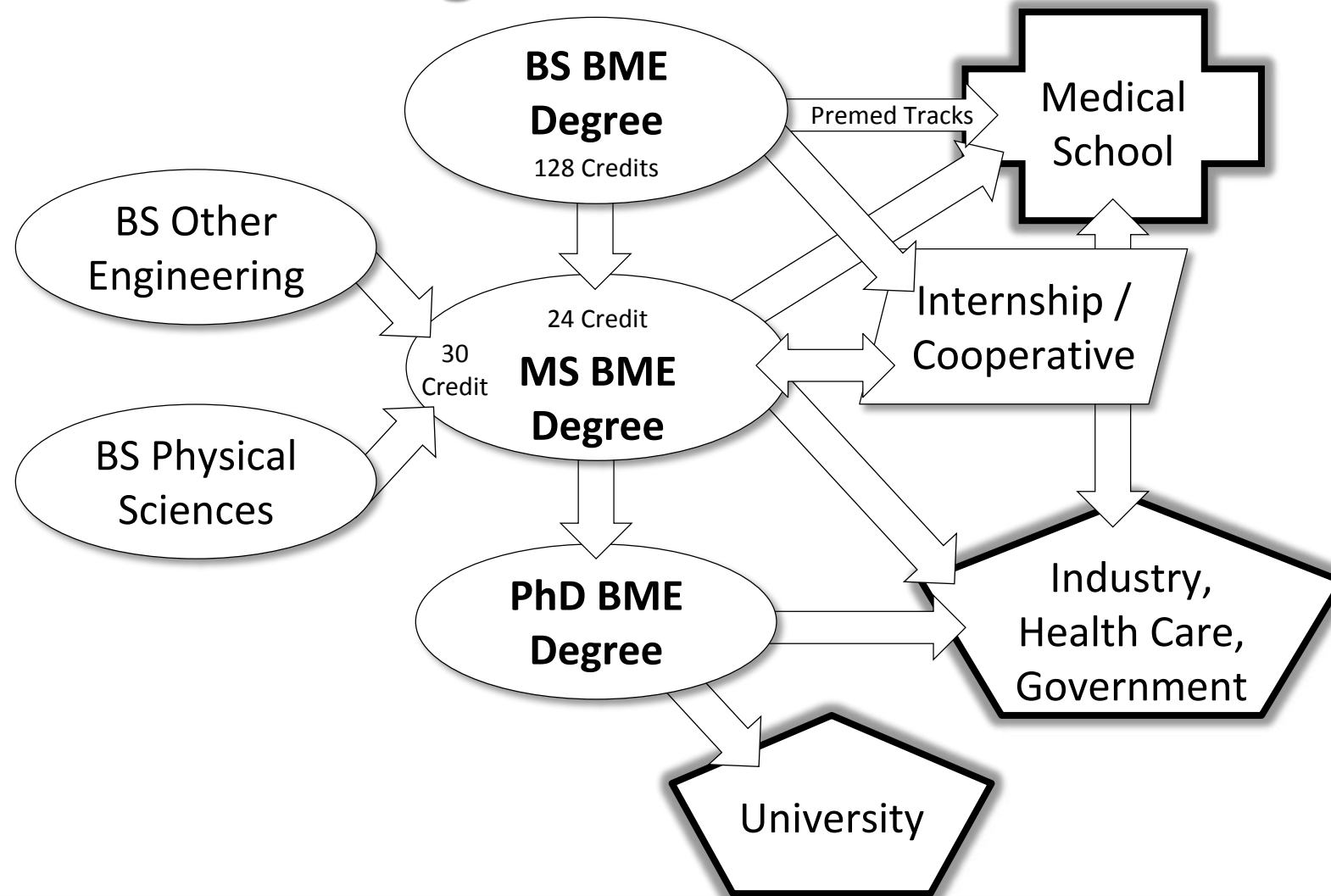
- Biocore
Due March – continue to accept applications until full
<http://www.biocore.wisc.edu/>
- BME scholarships (Application due in Spring: Early May)
Questions contact Student Services
<https://scholarships.wisc.edu/>
- Pre-health advising: MD, PA, PT, etc. (not just Medical School)
<https://prehealth.wisc.edu/>



Off Campus Experiences: Co-ops/internships & Study abroad



BME Degree Flow and Outlook





Engineering Career Services

Stephanie Salazar Kann, Assistant Director

1150 Engineering Hall

ecs@engr.wisc.edu

<https://ecs.engr.wisc.edu/>

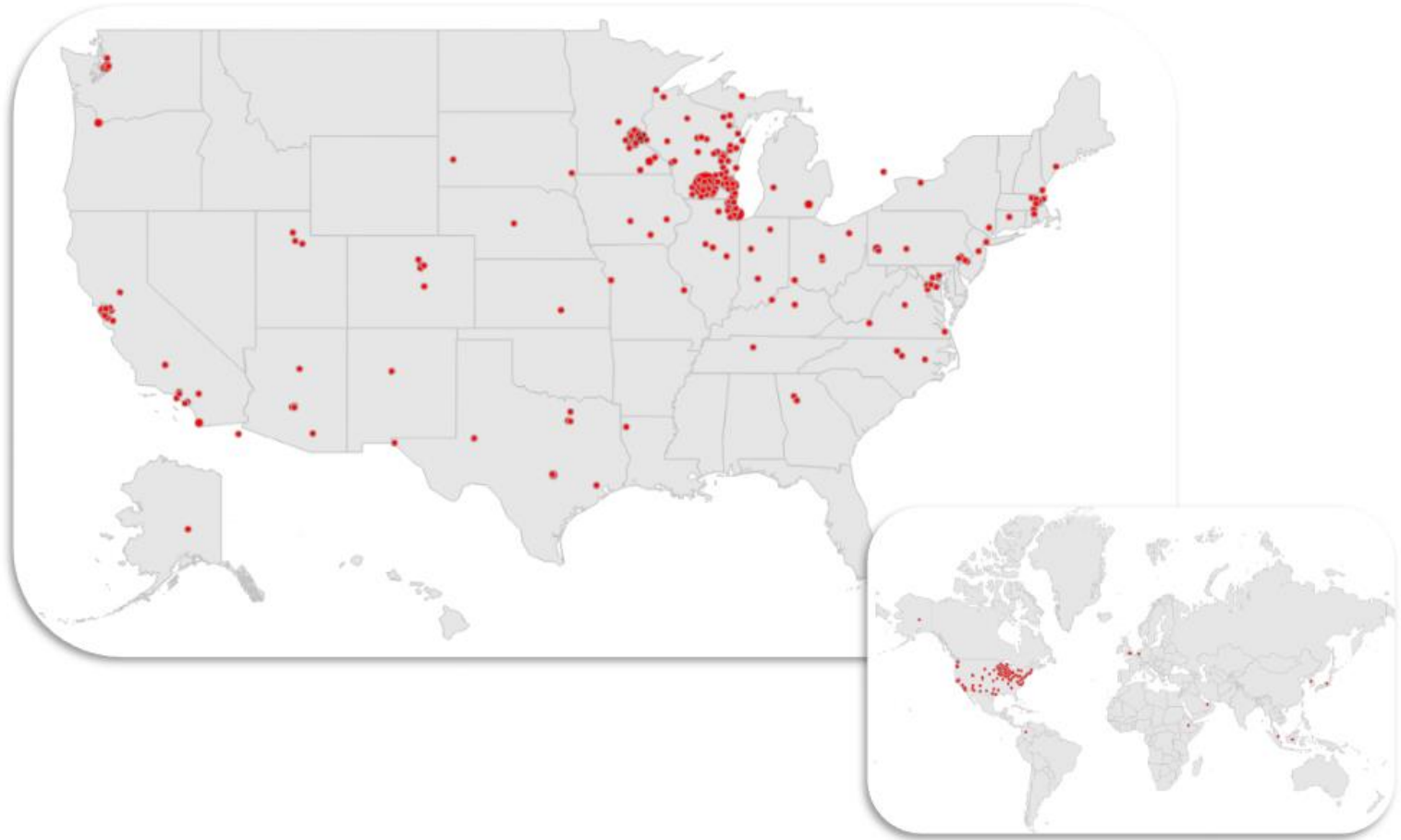
Join!
for life



BME Alumni Employment

- Top companies include:

- Top 3: GE Healthcare, Epic, Medtronic
- St. Jude Medical, Inc.
- Boston Scientific
- Baxter Healthcare Corp.
- Accenture
- Cardinal Health
- National Instruments Corp.
- Abbott Laboratories/Abbvie
- Plexus Corp.
- Procter & Gamble or Kimberly-Clark Co
- Beckman Coulter
- CareFusion
- Biomet Inc.



Co-operative Education & Internship



- Paid full-time work, supervised by engineer, performing engineering work; almost required for industry employment
- Internship: summer only (BME 001 if Full-time, 12 weeks & paid)
- Co-op: 2 terms (summer + semester = more valuable deeper exper.)
 - 20+ BME students co-op each year
 - BME average - \$19/hour
 - Maintain full-time status
 - 1 credit toward BME 200, 300 or 301 (or 1 credit as a tech elective)
- Note: GE often only recruits from their intern/co-op pool



BME Industry Advice



- Be proactive & Need to market yourself (regardless of credentials)
 - Do not just look for companies hiring BMEs (expertise vs. career fair dots)
 - If you are in Biomechanics, companies may advertise for MEs etc.
 - Instrumentation – CS, EE or ECE, etc.
 - Tissue Engineering – ChemE or MSE, etc.
 - “BME with emphasis in...” fill in the blank (Mechanical Eng., Biomechanics, etc.)
- Do your research
 - Large companies are often expanding their research
 - Cannon – bioprinting
 - Intel – BioMEMS (microfluidics)
 - Smaller companies may not advertise or recruit – Research Park





International Engineering Studies & Programs

Amanda Hammatt
1150 Engineering Hall
hammatt@engr.wisc.edu

<http://international.engr.wisc.edu/>

<https://www.engr.wisc.edu/academics/undergraduate-academics/certificate-in-international-engineering/>





International Engineering Studies & Programs

- Increasing demand for engineers with international experience
- 15% of UW COE students go abroad
- 20 programs for engineering majors
- Most IESP programs are in English
- Fulfill degree requirements abroad: Engr and non-engr courses
- Tuition is usually the same as in Madison; cost of living and travel expenses vary
- Best time to go abroad





International Engineering Studies & Programs

- China summer program
 - 8 weeks (late May to late July)
 - Courses: taught by UW faculty in English Mechanics of Materials (ME 306) and Technical Communication (EPD 397)
 - Technical and tourist excursions
- Certificate in International Engineering
 - Select focus: One country or region
 - 15 credits focused on culture and/or language (1 cr capstone seminar)
 - AP and retro credits count
 - 5+ week international experience



Two new summer programs:
Denmark and Singapore



Co-op and Abroad Rules

- When should you go: Most BMEs go Spring Junior year
 - Watch course offerings
 - Core-courses (310,315,430) – try to take at least your track core-course early
 - Some core-courses offered abroad
 - Can replace missed design course (except BME 201 and 400)
 - Can take online courses here while gone (i.e. ME 418, EPD 397)
 - You can do both co-op and abroad (consecutively too)
- When NOT to go: College rules and regulations: You must be here your last two semesters
 - Can obtain a waiver for your second last semester from the Dean's office
 - You can NEVER be gone your last semester



On Campus Experiences & Involvement

Orgs, research, certificates and second majors



Relevant Student Orgs – p18



Biomedical
Engineering
Society
UW-MADISON

- Biomedical Engineering Society (BMES) – Should be a member!

<http://bmes.slc.engr.wisc.edu/>

- Join one other student org if time permits

- Engineering Orgs (50+)

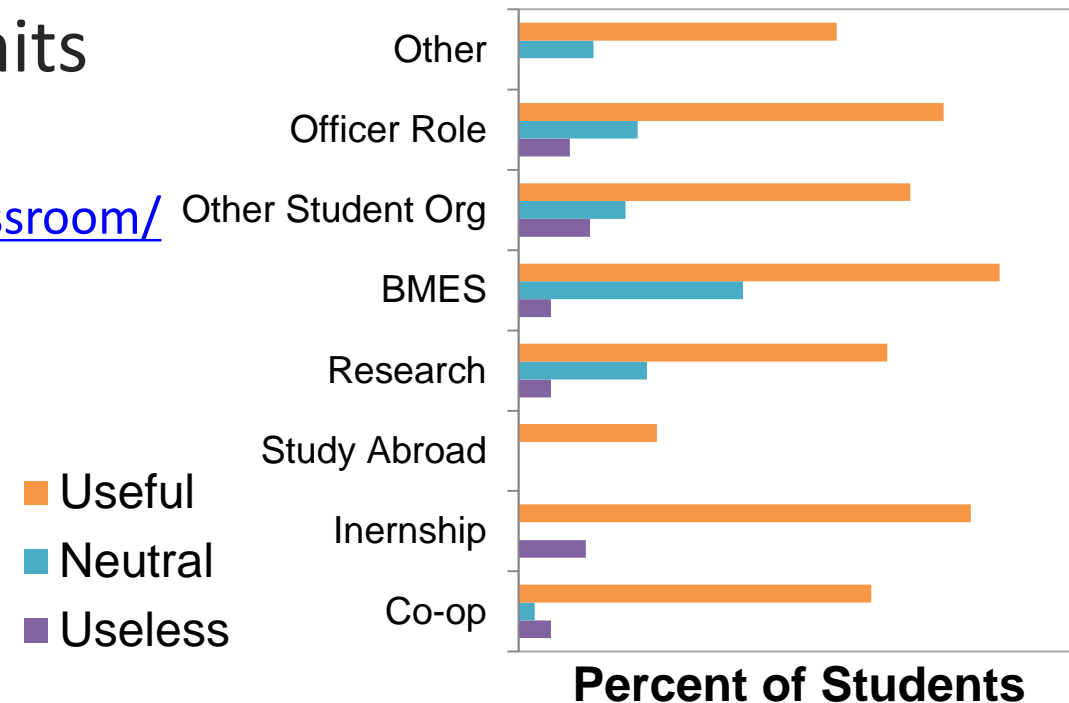
<https://www.engr.wisc.edu/academics/beyond-the-classroom/>

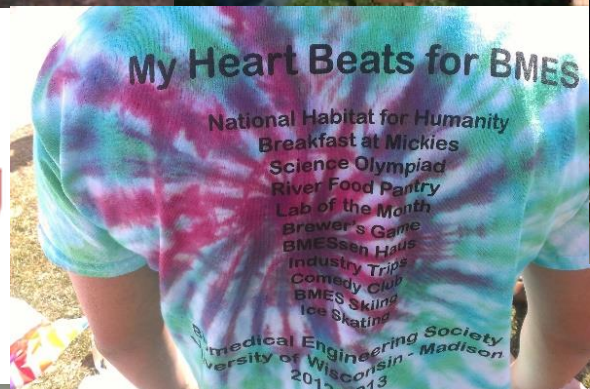
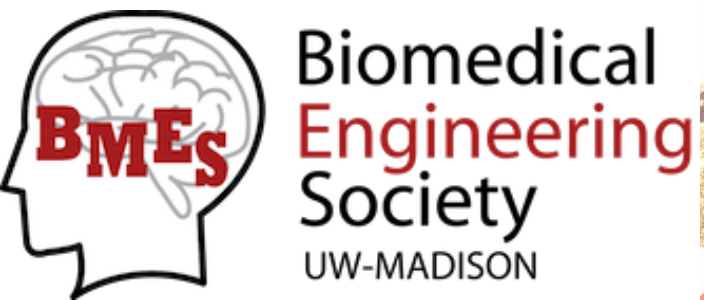
- Society for Women Engineers (SWE)
- Engineers without Borders
- Engineering World Health
- Society for Biomaterials

- Campus Orgs (940+)

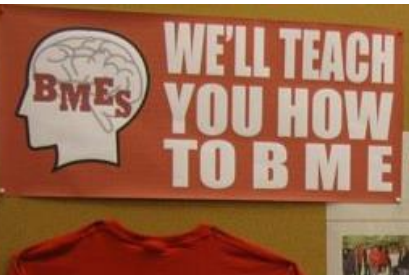
<https://win.wisc.edu/>

- Pre-health orgs
- Honors orgs





Industry Visits, Social Events,
Outreach, Volunteering,
Professional Development



Research

- Highly recommended for:
 - Graduate school (PhD or continue a project into the BME MS)
 - Medical School
 - Help decide your future
- Finding a position
 - Opportunities are rarely advertised
 - Start with BME webpage
 - Faculty profiles (core and affiliates) = BME credits
 - Research tab
 - Zoology 152 Mentored Research Project



Research

- Count up to 3 credits of engineering research
 - From any engineering degree granting program (i.e. BME 399)
 - Counts toward the free general engineering tech elective (not your area)

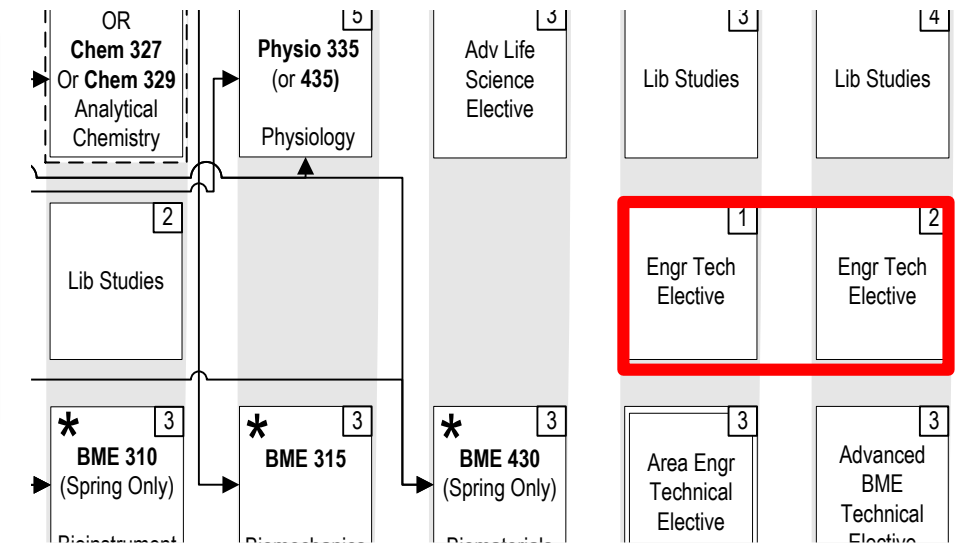


✗ Engineering Courses 48 Credits of Engineering (these credits may appear elsewhere as well)

--> **NEEDS:** **5 sub-groups**

- 1) 48 credits of engineering courses
(These credits will also appear elsewhere)

NEEDS: 48.0 credits



Research - Procedure to enroll in Credit

- For **BME** Faculty (or affiliate) Research Advisors/Mentors
<http://directory.engr.wisc.edu/bme/faculty>
 - Obtain approval from the Faculty Mentor to work in lab
 - Establish expectations and guidelines
 - Have the FACULTY mentor sign the Research Authorization form (BME **9)
https://www.engr.wisc.edu/bme_undergraduate_research_form/
Type your information and Faculty member's information
 - Take it to Student Services 1410 Engineering Drive
 - Ideal time – during enrollment
 - Less ideal time – At least 10 days BEFORE the last day to add courses
- For **NON-BME** Faculty – coordinate with your Research Advisor



Other UW/BME Research



- BME Honors in research program (BME 389/489)

<http://www.engr.wisc.edu/bme/bme-honors-in-research-degree-program.html>

- Three semesters of research in one lab (8 credits)
- Minimum 3.5 GPA to be accepted
- Final public presentation and paper/thesis

- Funding opportunities

<https://awards.advising.wisc.edu/scholarships/campus-wide/>

- Hillel Undergraduate Research Fellowship

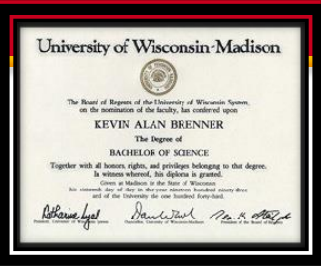


Outside Research Opportunities



- REU – Research Experience for Undergraduates
http://www.nsf.gov/crssprgm/reu/reu_search.cfm
https://www.training.nih.gov/summer_programs_outside_the_nih
<https://www.training.nih.gov/programs/sip>
 - At other universities (not at your own – UW)
 - Paid, summer long project
 - Institution specific
- National Labs (Sandia, Los Alamos, MIT Lincoln Labs)
- Watch your emails as well

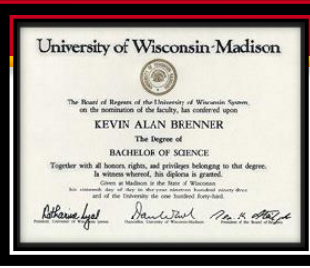




Certificates and Second Majors – p15

- Biology in Engineering Certificate (1 credit seminar)
<https://www.engr.wisc.edu/academics/undergraduate-academics/biology-in-engineering-certificate/>
- Other useful certificates for BMEs
<http://www.wisc.edu/academics/certificates/>
 - Computer Science, International, Business, Math, Physics, Global Health...
 - See the “Curriculum guide”
- All campus majors (you can only double in L&S – run MAJ on DARS)
<http://guide.wisc.edu/undergraduate/#majorscertificatestext>
 - Computer science, Math, Economics
 - Biochemistry, Biology





Certificates and Second Majors – L&S

- Meet with a certificate/major advisor
 - Start with their website or
 - Find an advisor at: <https://advising.wisc.edu/>
- L&S advisor will fill out and sign a declaration form
- Take a copy of the form to Student Services
 - 1410 Engineering Drive
 - They will send this to the Dean's office for processing
- Only appear on transcript – not diploma



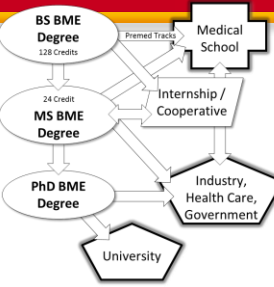
Graduation

- Check your DARS – this is your ticket to your degree
 - If you missed BME 200, If you went on co-op or abroad
 - You need a replacement for design
 - Research credit
 - Lab-based course (BME 511, ME 307, ECE 271, etc.)
 - BME 001 is the replacement for co-op
 - We will fix this in your DARS mid-way through your last semester
 - Must complete your certificate/2nd major before or simultaneously to BME
- Be sure to apply to graduate (**DARS does NOT have to clear first**)
- Be sure to pick your commencement ceremony
- BME hosts a commencement reception as well for you and your family



QUESTIONS?





Session 2: Fall 2019

BME Undergraduate Advising Session

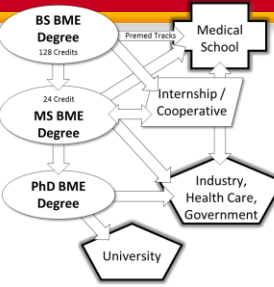
Post Graduate Planning

Friday September 13, 2019

12:00 – 1:00 pm

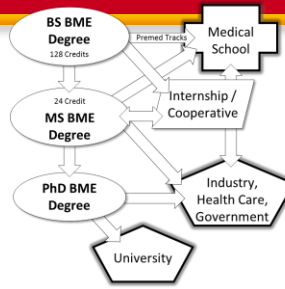


General Pointers



- Use your undergraduate experience to “build a story”
 - Gain experience while you can – easier while you are in school
 - Tie them together – Big Picture of who you are/want to go/want to be
 - Research experience here = important for post-degrees of all kinds
- Do your homework – never too late
 - What programs have the post degree options you are looking for
 - Location, people, program specifics
- Prepare for the MCAT or GRE – summer before senior year
- Think about letter writers early – need at least 3 strong ones

Writing your story – Personal statement

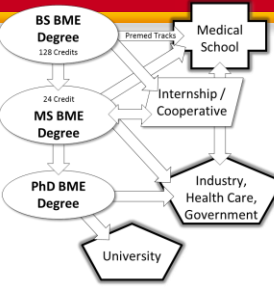


Look of Typical (and Wrong!) Statement:

- Legos → Engineer → Aunt Dies of Cancer → BME PhD or MD
- Research/Field Interest: Will do anything!
- I did this, then that, then the other thing

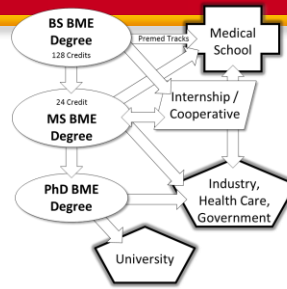


Better story



- Start with what you want to do
 - e.g., Cancer stem cells and the faculty who do it
 - Skilled writing - can throw a reasonable net (critical)
 - Your narrow experience and how that applies to your broad interest
 - Specific to each University to which you apply
- Reasonable idea of what:
 - You will achieve at University X
 - What you want to do afterwards
- Defend your plan with your life experiences - Most recent first
- CV to some extent in paragraph form - Be specific





Graduate School at UW

24 Credit Masters Degree



Graduate School Advisors

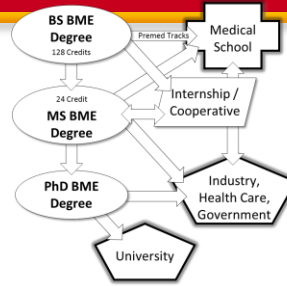
- BME Graduate Associate Chairs

- Prof. Melissa Skala, 3262 WID
Assoc. Chair of Grad Admissions
mcskala@wisc.edu
- Prof. Beth Meyerand, 2154 ECB
Assoc. Chair of Grad Advising
memeyerand@.wisc.edu

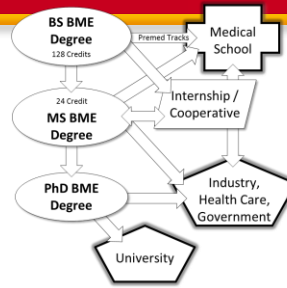


- BME Graduate Student Services

- Janna Pollock, 3180 ME Building
MS, PhD degree plan submission, warrant request / submission for graduation
janna.pollock@wisc.edu



Graduate School Options



- MS, UW BME Masters

- Stepping stone / expand credentials for
 - Medical School
 - PhD programs
- Industry focused
- One-Year!

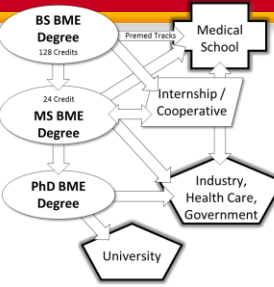


- PhD Programs

- Desire to be an independent researcher
- Write research grants
- Work in academia
- Lead projects in industry, startups, and consulting <https://www.wisolve.org/>

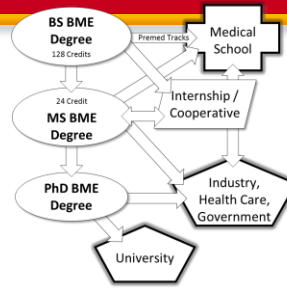


MS as a Stepping Stone: MD or PhD

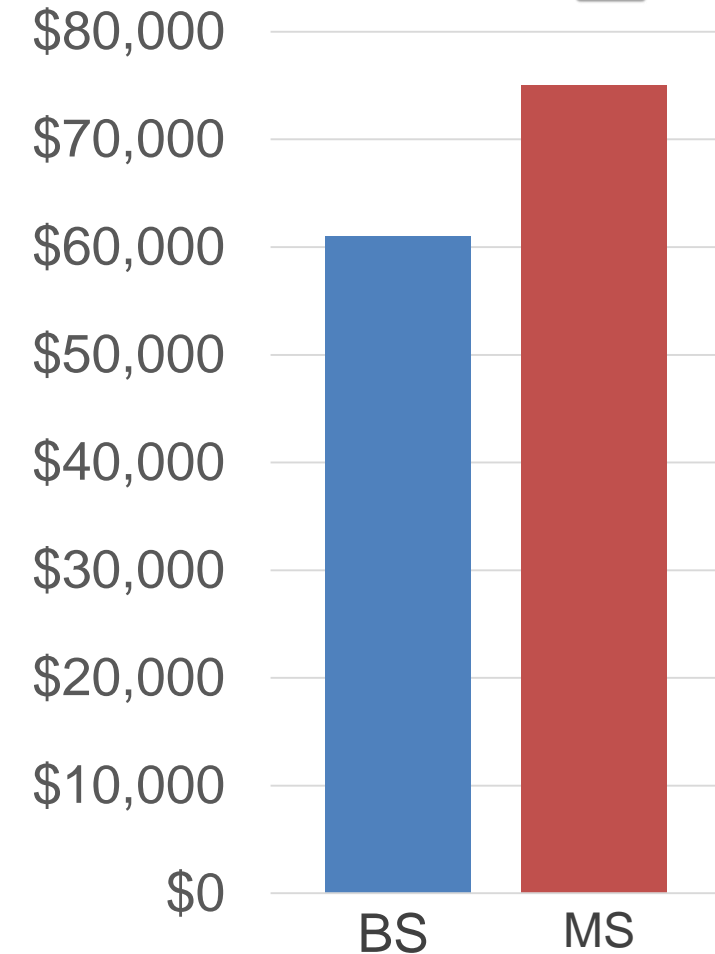


- Reasons
 - Rewrite your story
 - MD: Need time to prep for MCAT or apply for Med Schools
 - PhD: Cannot find a funded Research Assistantship
- MS will make you more desirable
 - Higher level of skills - More lab time, less class time
 - Fill gaps in your resume
 - More experiences (can list your research/thesis project on your resume)
 - Older, more maturity
- Really powerful if you add in industry/research experience

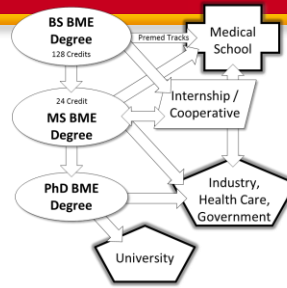
MS for Industry Oriented Students



- Reasons
 - Opens doors (credentials and experience)
 - Higher starting salary
 - Another opportunity for summer for internships
 - Can co-op during the MS as well (BME 702)
 - Time to find the dream job
- MS will make you more desirable (same as before)



Applying for BME Grad at UW-Madison?

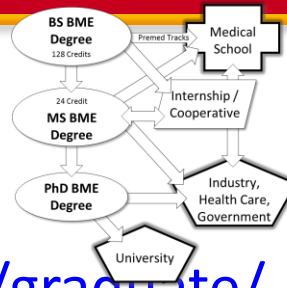


- Applying online, pay fee and submit <http://www.grad.wisc.edu/>
 - Statement of purpose: why you want to pursue further education in BME
- Special for UW BME BS students
 - ~~• Three letters of recommendation~~
 - ~~• Official GRE or MCAT scores~~
 - ~~• GRE – Quantitative section~~

} Only needed if you want the option to transition to the PhD program

 - You do NOT have to submit a copy of your transcripts
 - Easy to meet deadline of 12/1 (some flexibility)
 - Your application is reviewed separately, and we give special consideration to BME undergraduate students: Need at least a 3.0 overall / 3.0 in the last 60 credits

How to apply



<https://www.engr.wisc.edu/departments/biomedical-engineering/academic-programs/graduate/>

Application Deadlines

Fall 2020 — December 1 (Ph.D. and M.S.)

Spring 2020 — October 1 (Ph.D. and M.S.)

Summer 2020* — December 1 (Ph.D. and M.S.)

*please note summer admissions are generally limited to continuing BME students at UW-Madison or applicants who have research assistantships already arranged with UW faculty.

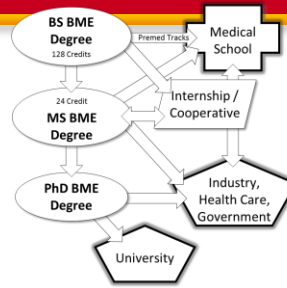


Three MS Options within BME

<https://guide.wisc.edu/graduate/biomedical-engineering/biomedical-engineering-ms/>

- Research option
 - For those continuing on for a PhD here
 - Funded by an RAship or doing a thesis
- Accelerated Program
 - Coursework only
 - Independent study/research is allowed
- Biomedical Innovation, Design, and Entrepreneurship
 - Project based
 - Partnership with business school

UW BME One-Year MS

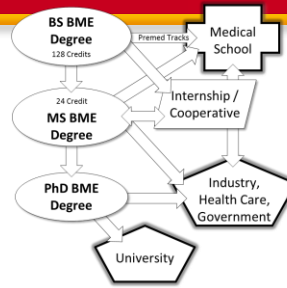


- All MS programs must be **30 credits** for accreditation (nationally)
- UW BME BS students = special
 - Count up to 6 credits of Advanced level BS coursework toward MS
 - Results in 24 credit One-Year MS (12 credits/semester)
- 50 % of the coursework must be graduate level (15 credits)
 - Advanced BME courses (save for MS)
 - Anything 700 level or higher
 - Not the courses counted from your BS
 - Research (BME 799)
 - Course Options: 50% Graduate Coursework Requirement

Other Options ^

☐ 50% Graduate Coursework Requirement

UW BME One-Year MS



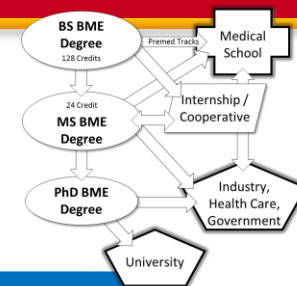
- 6 Credits from BS
- 12 Credits (min) from 400+ level engineering courses
- 0-6 Credits (6 max) of research/project
- 0-9 Credits (9 max) of courses 300+ electives (engineering or other)

30 credits

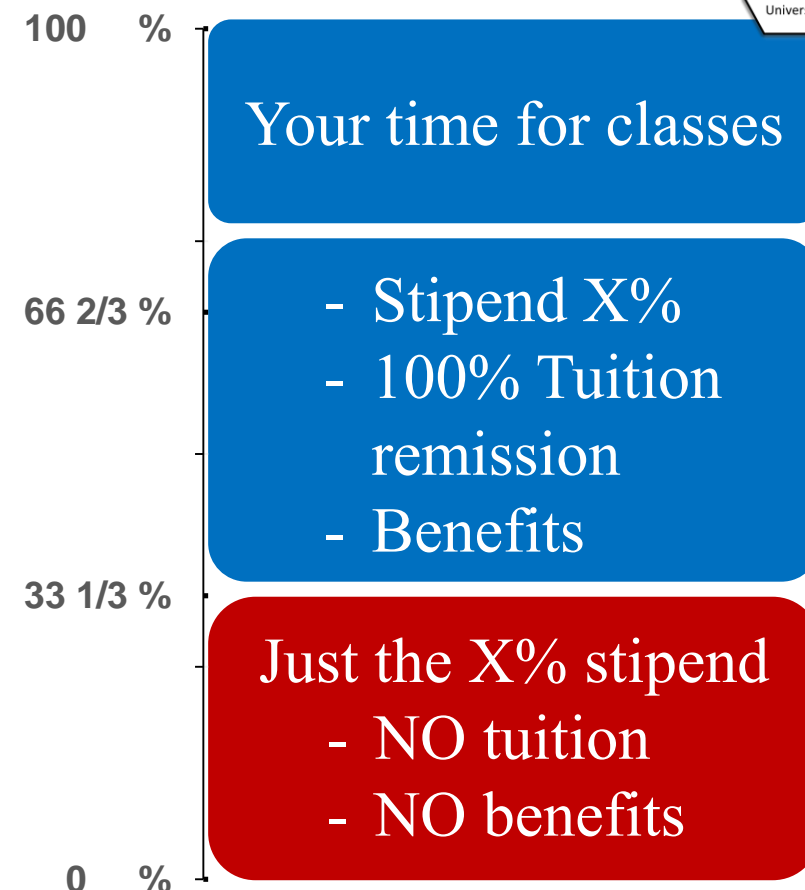
- Research/project is optional, but highly recommended
- Thesis for this project is optional (depends on research advisor)
- Your grad advisor is your Research Advisor or Prof. Beth Meyerand



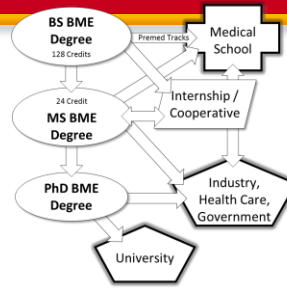
Funding your MS (or PhD)



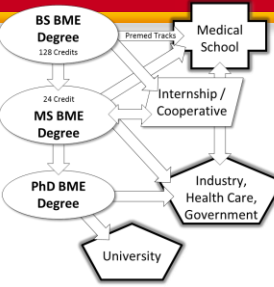
- Three types of positions
 - Teaching Assistant (TA)
 - Research Assistant (RA)
 - Project Assistant (PA)
- Generally RA funding reserved for PhDs
- Appointment %
 - TA Stipend = X % of ~\$31,000 annual salary
 - TA Time = X % of 40 hour work week (TA/PA)
 - Tuition remission $\geq \frac{1}{3}$ time
 - EX. 17% appointment = 6.8 hours/week, \$590/month, no tuition



Masters Elsewhere



- Explorer opportunities and interests
 - MEng
 - MS in Global Health
 - MS in other Engineering Dept. (here is 30+ credits)
 - MBA – generally industry pays for credits or evening options
- Similar to PhD advice later
 - Find faculty/labs performing research/work in:
 - Your passion area
 - Area that aligns with your industry interests
 - Less competitive than PhD programs, generally not funded, some admit to MS or PhD programs

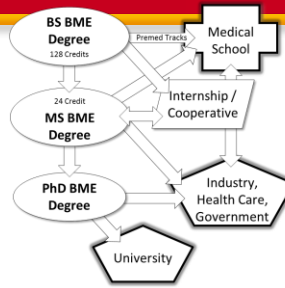


Additional advice for PhD Applicants

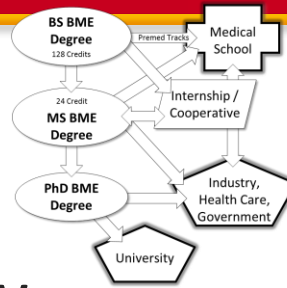


Do your research!

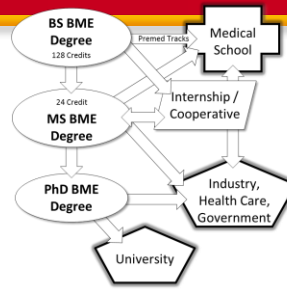
- Follow your passion, who is working in that area?
 - Network!
 - Utilize your lab PI here at Madison = Collaborators
- Build your resume/CV
 - REU – Research experience for undergrads – summer (slide 46)
 - Research is a must – Honors in Research
- External funding NSF – GFRP!!!! (recent emails/workshops)
<https://www.nsfgrfp.org/> - Due October 23rd 2018
 - Apply Fall senior year (1st time) then once more 1st year in grad school
 - UW hosts workshops – watch for my emails
<https://grad.wisc.edu/studentfunding/workshops/>



PhD Application Process



- Apply early and list names (see last slide) – most do rolling review
- Generally >3.5 GPA and 75%ile Quantitative GRE
- Review process
 - Faculty individually review applications that align with their research
 - Highly sought after candidates are invited for “Visit Weekends”
 - NSF GFRP awardees are VERY highly sought after!
 - Spring semester (Feb-March)
 - Tour the department, meet faculty, meet other prospective students
 - Looking for the best fit – both ways



Additional Advice for Medical School

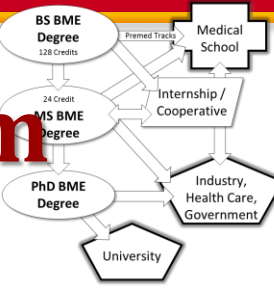


Premed Advice

- Premed (Prehealth) Advising
<http://www.prehealth.wisc.edu/>
- CHECK DESIRED SCHOOL'S REQUIREMENTS
- Special Requirements for most Medical Schools
 - Two sem. of Gen Chem (Chem 109 = 1 year equiv)
 - Chemistry 344/345
 - Two sem. of Physics, EMA 201 (& BME 315) = Physics 201
 - Two sem. of English (Lit or Communications) – use Liberal studies
 - I/A & S/H & CommB (UW) – use Liberal studies
- All can be satisfied within BMEs 128 credits – PLAN AHEAD!

Premed Advice

- MCAT 2015 - NEW
 - Psychology 202 and Sociology 100 level –Liberal Studies (Soc 134, 170 = ethnic)
 - Biochemistry 501 – use free electives
- Beyond coursework
 - Volunteer (clinical setting desired)
 - Shadow physicians
 - Build relationships = letter writers!
 - Use your design experiences (physician clients, etc.)
- Check website for other prehealth options / requirements
i.e. Dental, Physical Therapy, Physician Assistant, Public Health...



Research-Demonstrate skills outside classroom

- Convince faculty you can make book to lab jump
- Utilize BME Design projects
- Build skillsets to get into labs
 - “I will do anything” has limited appeal: sounds desperate!
 - I know this, that, and this too: sounds arrogant!
- Previous research experience
 - Undergraduate research experience(s) – can continue into MS
 - Honors in research program
 - REU (research experience for undergraduates-summer)
- Publications (see how you could get included)



What is important for future?

Research vs Class balance?

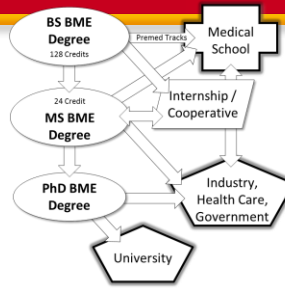
Demonstrate you can
work with others

Classwork



Research/Experiences

After these: leadership, extracurricular activities



QUESTIONS?

