



Weldon School of
Biomedical Engineering

Biomedical Engineering (BME) Undergraduate Handbook Bachelor of Science Degree in Biomedical Engineering

V2018: For students entering IUPUI in Fall 2018 or later, but starting BME courses in Spring 2025 or earlier.

IMPORTANT: This handbook only applies to ‘continuing students’, i.e. students who are following the former IUPUI curriculum after integration between IUPUI and Purdue.

Students who started their sophomore year of BME courses in Fall 2025 or later will follow the updated Purdue curriculum and this handbook does NOT apply to them. For information on the updated Purdue curriculum and program please visit <https://engineering.purdue.edu/BME/Academics/Undergraduate> instead.

Last Revision 30 April 2025

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Revisions to v2018 BS BME Handbook

v2018

2/4/19 Plans of study and curriculum map updated to v2018 approved curriculum, Course names and numbers updated, Advising Team updated, Depth Area course list revised, Procedure on how to get non-approved Depth Area course reviewed by UG Committee added

12/15/20 Updated GPA language to reflect campus change from cumulative GPA to program GPA, website links updated, Minimum Grade of C- language clarified for all BME courses, Updated Depth Area Chart.

11/26/24 Updated content to reflect changes due to integration between IUPUI and Purdue University.

4/30/25 Updated content to reflect course options for depth area courses for students on the IUPUI curriculum. These updates are highlighted in yellow.

Courses Required for Graduation

The BME Undergraduate Plan of Study is included below. BME students must complete a minimum of 130 credit hours of courses in three categories:

Required engineering, science, and BME courses

ENGR 12500, 19600, 19700, 29700 BIOL-K 101, 324 PHYS 15200, 25100
CHEM-C 105, 106, 125, 341 MATH 16500, 16600, 17100, 26100, 26600
BME 22201, 22400, 24101, 24300, 30200, 32200, 33100, 33400, 35200, 35400, 38100, 38300, 38800, 41101, 44200, 46100, 49101, 49200

Required and elective General Education classes

ENG-W 131 COMM-R 110 TCM 21800, 35900

Four General Education electives chosen from the approved list and meeting all requirements for Gen Ed electives.

Depth Area electives

This sequence of four courses must be selected in consultation with a BME advisor to gain some depth in a sub-discipline of Biomedical Engineering. At least two of these four electives must be engineering courses (BME, ECE, ME); the other two may be engineering, science, or math electives as approved by an advisor. To ensure depth, at least one depth area elective must be 400-level or higher, and no more than two may be 200-level. Depth areas are described in more detail below, under “Schedule Planning in the BME Program”. More information can be found in “BME Depth Areas”. The table of approved courses is available in Appendix A.

Grade Policy

Beginning with courses taken in Fall 2009, students must earn a minimum grade of C- in all required BME and ENGR courses to count those courses for credit on the Plan of Study. REQUIRED BME and ENGR courses are those courses that are required of ALL students for the undergraduate BME degree. A grade of C- or higher constitutes a passing grade for all required BME courses on the Plan of Study. As of Fall 2018, these courses include:

ENGR 19600*, 19700* and 29700 (*minimum grade of C required to enter BME)
BME 22201, 22400, 24101, 24300, 30200, 32200, 33100, 33400, 35200, 35400, 38100, 38300, 38800, 41101, 44200, 46100, 49101, and 49200

Course Schedule Policy

BME courses taught on the Purdue Indianapolis campus follow the Purdue academic calendar for class start dates, end dates, final exams, campus holidays, and fall/spring break periods. Students taking courses on more than one campus (for example, through a Dual Degree program) should be aware that these dates do not always match across different campuses. As with any absence from class, students who make travel plans during times that another campus is on break but Purdue is holding classes will be responsible for the coursework and material they miss during their absence. Students in this situation should talk with their instructor well in advance of the absence about expectations for making up missed work.

Other Policies for the College of Engineering

In addition to BME-specific policies, BME students are subject to the policies and procedures of the College of Engineering. These policies are described at <https://engineering.purdue.edu/Engr/InfoFor/CurrentStudents/index.html>. In particular, students should review the following topics on this website:

- **Academic Notice**
- **Course withdrawal**
(Registrar -> Select “Course Withdraw” from the drop down under “Select your area of inquiry”)

Academic Progress Review

The BME department conducts an academic progress review at the end of the sophomore year (for students who have previously enrolled in both BME 24101 and BME 22201) and at the end of the junior year (for students preparing to enter BME 49101, Senior Design, the following fall). Enrollment in BME classes for the fall semester is contingent upon successful academic progress in major courses.

Sophomore students who earn grades of F in either BME 24101 or BME 22201 will not be permitted to enroll in the junior-level classes for which the course they failed serves as a prerequisite. Students who earn non-failing grades below C- may likewise be unable to enroll in the next BME class in sequence without successfully repeating the course. These students will be considered on a case-by-case basis. Sophomore students who earn grades of C- or below in BOTH BME 24101 and BME 22201, with a combined grade-point average in these two classes below 1.7, will not be permitted to continue in the BME program and must meet with their BME advisor to discuss their academic progress.

All junior students must meet with their academic advisor to review academic progress and discuss post-graduation plans before registering for BME 49101.

More information on BME Advising procedures and contacts can be found here:
<https://engineering.purdue.edu/BME/Academics/Undergraduate/Current/academic-advising>.

BME Plan of Study

BS Biomedical Engineering Plan of Study

v2021

Freshman Year

<i>First Semester</i>	<i>SCH</i>	<i>Second Semester</i>	<i>SCH</i>
BIOL-K 101 Concepts of Biology I	5	CHEM-C 105 Principles of Chemistry I	3
ENG-W 131 Reading, Writing, and Inquiry I	3	CHEM-C 125 Experimental Chemistry I	2
ENGR 12500 First-Year Seminar for Engr Majors	1	ENGR 29700 Computer Tools for Engineering	1
ENGR 19600 Introduction to Engineering	3	MATH 16600 Analytic Geometry & Calculus II	4
ENGR 19700 Introduction to Comp. Programming	2	MATH 17100 Multidimensional Mathematics	3
MATH 16500 Analytic Geometry & Calculus I	4	PHYS 15200 Mechanics	4
TOTAL SCH	18	TOTAL SCH	17

Sophomore Year

<i>First Semester</i>	<i>SCH</i>	<i>Second Semester</i>	<i>SCH</i>
BME 24101 Introductory Biomechanics	3	BME 22201 Introductory Biomeasurements	3
BME 24300 Biomechanics Lab	1	BME 22400 Biomeasurements Lab	1
CHEM-C 106 Principles of Chemistry II	3	BIOL-K 324 Cell Biology	3
MATH 26100 Multivariate Calculus	4	COMM-R 110 Fundamentals of Speech Comm.	3
PHYS 25100 Heat, Electricity, and Optics	5	MATH 26600 Ordinary Differential Equations	3
TCM 21800 Intro to Engr Technical Reports	1	General Education Elective	3
TOTAL SCH	17	TOTAL SCH	16

Junior Year

<i>First Semester</i>	<i>SCH</i>	<i>Second Semester</i>	<i>SCH</i>
BME 33100 Biosignals and Systems	3	BME 32200 Probability and Statistics in BME	3
BME 33400 Biomedical Computing	3	BME 35200 Cell and Tissue Mechanics	3
BME 38100 Implantable Materials & Biol. Resp.	3	BME 35400 Cell and Tissue Lab	1
BME 38300 Implantable Materials Lab	1	BME 30200 Prof Development & Design in BME	2
CHEM-C 341 Organic Chemistry I	3	BME 38800 Applied Biomaterials	3
TCM 35900 Tech Data Reporting and Presentation	1	BME 44200 Biofluid Mechanics	3
General Education Elective	3		
TOTAL SCH	17	TOTAL SCH	15

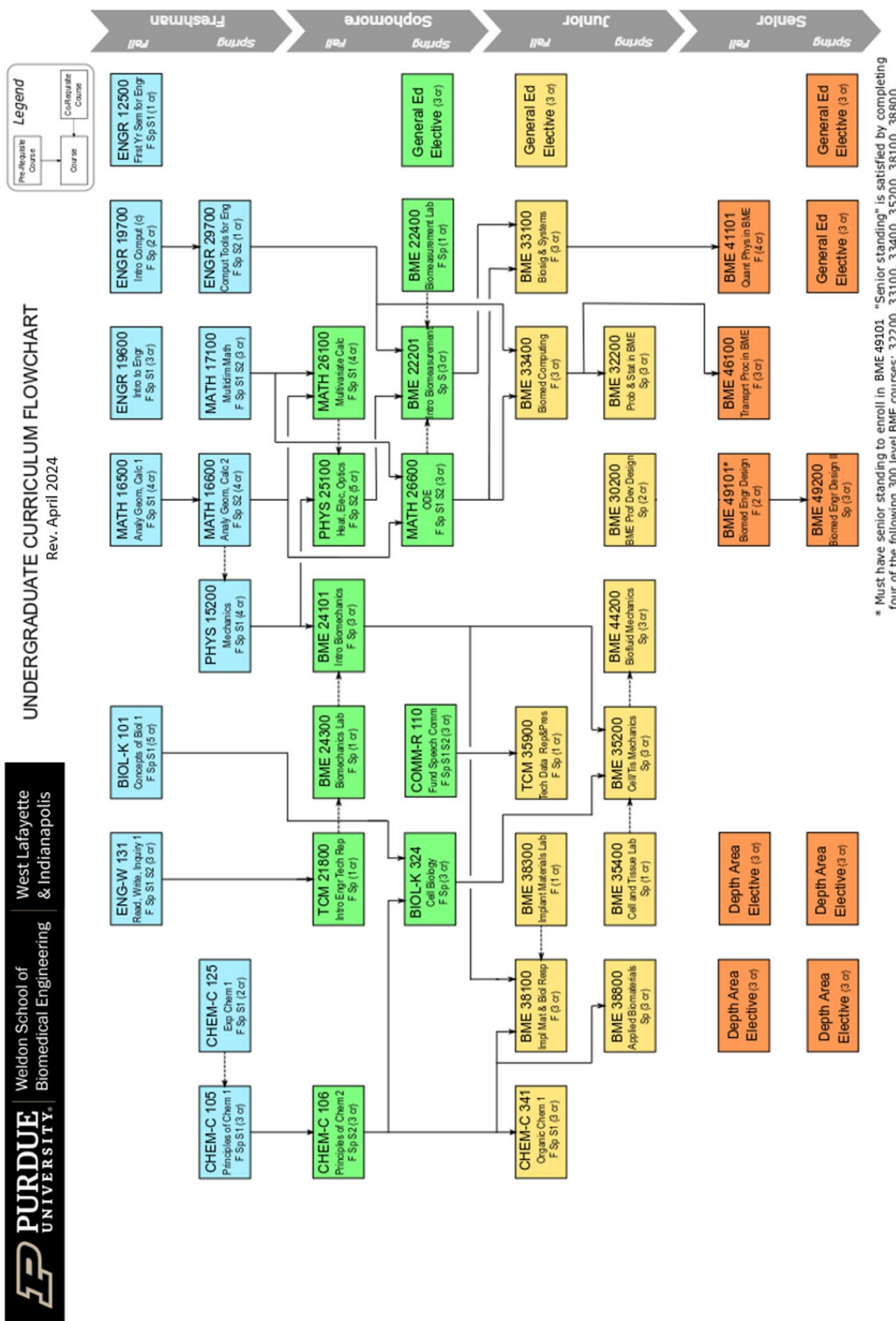
Senior Year

<i>First Semester</i>	<i>SCH</i>	<i>Second Semester</i>	<i>SCH</i>
BME 49101 Biomedical Engineering Design	2	BME 49200 Biomedical Engineering Design II	3
BME 41101 Quantitative Physiology in BME	4	BME/Engr Elective*	3
BME 46100 Transport Processes in BME	3	BME/Sci/Engr Elective*	3
BME/Engr Elective*	3	General Education Elective	3
BME/Sci/Engr Elective*	3	General Education Elective	3
TOTAL SCH	15	TOTAL SCH	15

* The four BME/Sci/Engr electives must be selected in consultation with an advisor to form an appropriate Depth Area. This is an example plan of study and individual plans of study could differ.

TOTAL CH = 130

Curriculum Flow Chart



Schedule Planning in the Biomedical Engineering Program

Because the Biomedical Engineering Program (1) offers most of its required BME courses **only once per year**, and (2) requires many courses with laboratory and/or recitation components, planning your schedule for the coming semester should take into account how the courses you choose may affect your schedule in future semesters.

The curriculum flowchart shows the prerequisites (solid arrows) and co-requisites (dotted arrows) for all the courses in the BME Plan of Study. The sections below provide scheduling information that will help ensure all BME requirements can be completed in four years. Please note, though, that students who feel that they may improve their chances of success in the program by taking fewer credit hours per term and spreading the requirements out over an extra semester or year can be easily accommodated. Such students, particularly those who have work or other outside commitments, are encouraged to speak to their BME advisor if they think such an option may be a good choice for them.

Biology Sequence

BIOL-K 101 – The Prerequisite to Cell Biology

The official prerequisite for Cell Biology is BIOL-K 103. **However**, BME students have special permission from the Biology department to use BIOL-K 101 as the prerequisite instead of BIOL-K 103. Grade data from recent years indicates that on average BME students perform as well as or better than other students in the Cell Biology class; the missing prerequisite does not seem to be a hindrance to dedicated students.

If Cell Biology is to be taken in spring of the sophomore year, BIOL-K 101 must be completed no later than fall of the sophomore year. **It is recommended, however, that students take BIOL-K 101 either during the freshman year or over the summer before the sophomore year.** If the course is taken during fall of the sophomore year, students end up with three courses in the same semester with a lab component: BME 24300 (a prerequisite to junior-year BME classes), PHYS 25100 (a prerequisite for BME 22201), and BIOL-K 101. While do-able, this makes for a challenging semester, and is not recommended, especially for students who also work or participate in research projects or extracurricular activities with more than a couple-hour-per-week time commitment.

BIOL-K 324 Cell Biology Lecture

BIOL-K 324, Cell Biology Lecture, has for the past few years been offered both in the Fall and Spring (but not Summer). It is recommended that students take BIOL-K 324 during the spring semester of the sophomore year. Note that BIOL-K 324 is a prerequisite for BME 352, Cell/Tissue Behavior and Properties, normally taken during the spring of the junior year. Therefore, to stay on-track, **BIOL-K 324 should be taken no later than the fall of the junior year.** The Biology department is aware that BME students can use BIOL-K 101 as a prerequisite for BIOL-K 324. Your BME advisor can guide you on how to gain enrollment permission for BIOL-K 324.

Chemistry Sequence

The two freshman Chemistry lecture classes, CHEM-C 105 and CHEM-C 106, are closely linked – so much so that the final exam for C106 is cumulative for **both** classes (that is, it contains material from both C105 and C106). It is recommended, therefore, that students complete these two courses in back-to-back semesters if possible.

Math Sequence

The required sequence of math courses on the BME Plan of Study is MATH 16500, 16600, 17100 (freshman year), 26100 and 26600 (sophomore year). Note that 16600 and 17100 are the prerequisites for both 26100 and 26600, and 26600 is the prerequisite for several BME courses in the junior year. Since MATH 26100 is not a direct prerequisite for either MATH 26600 or any 1st-semester junior year BME courses, if you are unable to fit all five math courses into your schedule during the first two years, MATH 26100 is the best choice to delay to a later semester. It should, however, be completed prior to the spring of the junior year; both BME 32200 Probability and Applications in BME and BME 35200 Cell/Tissue Behavior and Properties rely on familiarity with multivariate concepts.

Physics Sequence

Because MATH 16600 is a co-requisite for PHYS 15200, students who start the freshman year in MATH 16500 can take PHYS 15200 no earlier than their 2nd semester. If not taken in the spring of the freshman year, it should be taken over the summer: it is a prerequisite for BME 24101 and PHYS 25100, which in turn is a prerequisite for BME 22201 in the spring semester of the sophomore year. Because BME 22201 is a prerequisite for many courses in the junior year, delaying Physics may delay your graduation by at least a semester.

Senior Design

The Senior Design Class, BME 49101/49200, is meant to be a *capstone* experience – that is, it integrates and reinforces concepts from the freshman, sophomore, and junior curriculum. For this reason, students must have already successfully completed (i.e., earned a grade of C- or higher) all of the sophomore courses and at least four of the six **required** (non-elective) junior-level BME courses (32200, 33100, 33400, 35200/35400, 38100/38300, 38800), and must enroll in at least one other required senior-level course, in order to be considered eligible for senior design.

Schedule Planning Considerations for Dual Degree and Transfer Students

Dual Degree Students: Students enrolled in BME through an Engineering Dual Degree Program (EDDP) are typically pursuing two degrees in parallel at two different universities. Managing schedules across multiple campuses can be tricky; to assist with schedule planning, almost all BME classes are offered on the same days and at the same times from one year to the next. EDDP students are encouraged to work proactively with their EDDP advisors on scheduling their non-Purdue classes, and with BME faculty advisors Steve Higbee (shigbee@purdue.edu) and Sharon Miller (mill3416@purdue.edu) and Academic Advisor Danny King (djking@purdue.edu) on BME-specific scheduling concerns. Furthermore, because many courses taken at the non-Purdue university are not transferred to Purdue until all degree requirements are completed (in order to save money on processing fees), some EDDP students run into errors when trying to enroll in some junior-level BME or other Purdue classes: the automated system cannot see the prerequisite courses taken at another university, and so gives an error. For these students, the BME department can grant course permissions to override those errors; contact Danny King for assistance if you run into these errors.

Transfer Students: Transfer students will not be accepted into the cohorts of continuing students that are completing the former IUPUI curriculum. Transfer students that are interested into joining Purdue BME should visit: <https://www.purdue.edu/futureengineers/info/applying/transfer-engineering.php>.

BME Depth Areas

The four courses labeled “BME/Engr Elective” or “BME/Sci/Engr Elective” should be selected in consultation with your BME advisor to form a depth area: a sequence of courses exploring a sub-discipline of Biomedical Engineering. To form a cohesive Depth Area:

- at least two of these courses must be from either the BME department or another engineering department; the other two may be math or science courses, if they are appropriate to the depth area.
- to ensure depth, at least one elective must be 400-level or higher
- no more than two courses may be 200-level
- 100-level courses cannot be applied toward the depth area

The primary depth areas for Biomedical Engineering are Biomaterials/Tissue Engineering; Bioinstrumentation/Biosignal Processing/Neural Engineering; and Biomechanics.

Appendix A lays out the list of courses that have been approved for each depth area. **In Appendix B, there are approved courses from the new Purdue/IU system following the integration with IUPUI.** The courses listed are the most common choices for these depth areas, along with the semester in which each course is typically offered. BME 500-level courses are typically taught every other year; pairs of BME 500-level courses listed with an “OR” mean that they are taught by the same instructor, and each year, only one of the two will be offered. Since undergraduates are not eligible to take 500-level (graduate) courses until they reach senior standing, this means most students will only take one of the two classes as part of their depth area. However, if a student does take both courses (by sticking around for an extra year, for example), both may be applied to the appropriate depth area. For other (non-BME) courses separated by “OR”, only one of the two courses may be applied to the depth area due to a significant overlap in course content. (So, for example, a student who takes MATH 35100 would not be eligible to also use MATH 51100 for the depth area, because they are both linear algebra courses with significant content overlap.)

When appropriate, courses not included on the list may also be applied to the depth area if approved by the BME Undergraduate Committee. To submit a petition to include a course not listed, provide your BME Advisor with the course syllabus, a list of your depth area courses, and a paragraph stating why the course you are petitioning relates to your chosen area of depth. Please cc your email with this request to: WeldonBMEUndergrad@purdue.edu.

To identify other potential courses that would support your depth area in the IUPUI curriculum and your career goals, you can

- review the list of approved electives for the Purdue Curriculum which you can find here: <https://engineering.purdue.edu/BME/Academics/Undergraduate/Current/curriculum/tech-engr-selectives>
- some 500 level course options are listed here: https://engineering.purdue.edu/BME/Academics/Graduate/Degree_Certificate_Options/MS/Ugrad%20Courses%20that%20Meet%20Grad%20Requirements

The following courses are NOT approved as depth area electives, either because they overlap too much with required BME courses or because they are not sufficiently technical:

- Any course in the Psychology (PSY) department
- Any Exercise Science (HPER) course
- ECE 20100 or 20200 (overlaps with BME 22201)
- ECE 30100 or ME 33000 (overlaps with BME 33100)

5-Year BS/MS Program

Continuing students who are interested in joining the 4+1 BS/MS Master's program should discuss this with their academic advisors. More information on the program and requirements can be found at:

https://engineering.purdue.edu/BME/Academics/Graduate/Degree_Certificate_Options.

There are two options for 5th year Masters:

1. Thesis option
2. Professional Master's

Course options (non-exhaustive list) that you can take as an undergrad that would count for Master's credit can be found here:

https://engineering.purdue.edu/BME/Academics/Graduate/Degree_Certificate_Options/MS/Ugrad%20Courses%20that%20Meet%20Grad%20Requirements.

Preparing for Employment and Graduate Study

Regardless of post-graduation plans – finding a job in industry, staying at Purdue for a BME Master's degree, or pursuing other educational or career opportunities – the College of Engineering and Purdue provide a number of resources to help students prepare.

- Resources including pre-professional support (including medical school applications), student organizations and scholarships can be found here:
<https://engineering.purdue.edu/BME/Academics/Undergraduate/Current/resources>
- Experiential learning opportunities beyond the classroom (including undergraduate research) can be found here: <https://engineering.purdue.edu/BME/Academics/Undergraduate/Experiential>
 - o For help identifying and reaching out to potential faculty research advisors, please contact the BME Director of Undergraduate Programs, Dr. Elsje Pienaar (epienaar@purdue.edu).
- Career coaching resources can be found here:
<https://engineering.purdue.edu/BME/Academics/Undergraduate/Current/academic-advising>

Medical School Prerequisites and the BME Curriculum

Most of the prerequisites for medical school (including calculus, physics, and much of the biology and chemistry requirement) are automatically satisfied by the courses in the BME plan of study. However, students who plan to apply to medical school will need to take a few additional courses that are not part of the BME requirements (although some may be used to fulfill electives, when appropriate).

Scheduling Considerations

Medical school applications should be submitted approximately a year before the desired start date – thus, students who wish to enter medical school in the fall after graduation should be completing their applications (and submitting MCAT scores) no later than the summer before the senior year. Particularly with the addition of new subjects to the MCAT, completing all the premed requirements in time to take the MCAT during or just after the junior year will require most students to take summer classes. Many students opt to complete Organic Chemistry I and II during the summer before the junior year; this would allow for picking up Biochemistry during the junior year. The two general education classes are likewise good candidates for summer completion.

Academic Integrity

Academic integrity is vital to your success. More information can be found at:

<https://www.purdue.edu/odos/osrr/academic-integrity/undergraduate.html>

What is Academic Dishonesty?

- Purdue prohibits “dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty.”
- Additionally, the University Senate has stipulated that “the commitment of acts of cheating, lying, and deceit in any of their diverse forms is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest.”

Why Does Academic Integrity Matter?

- As a student, it is understood that learning is the most important goal, that we embrace ethical values and principles, and reject academic dishonesty in all of our learning endeavors.
- When not addressed, academic misconduct:
 - Devalues the work of other individuals
 - Hurts the reputation of the university and the value of a Purdue University degree
- At Purdue, all members of the community are responsible for upholding and promoting academic integrity.

APPENDIX A: Approved Depth Area Courses

BS BME Depth Areas Indianapolis

Biomaterials & Tissue Engineering: This depth area focuses on the use of materials to repair, enhance or replace human tissue. BMEs in this field aim to better understand the interactions of cells and biomolecules with implanted materials. Applications in this area include functional materials, tissue regeneration, and drug delivery.

Biomechanics: This depth area involves the application of mechanical principles to biological systems. BMEs in this field aim to better understand the response of macro- and microstructures in the body to mechanical stimuli. Applications in this area include cellular mechanics, orthopedic joint replacement, and prosthetics.

Biosignals & Bioinstrumentation: This depth area focuses on the recording and analysis of biological signals. BMEs in this field aim to better understand the body's use of electrical and other signals to convey information. Applications in this area include cardiac electrophysiology, implantable systems, and neural engineering.

 PURDUE UNIVERSITY Weldon School of Biomedical Engineering		Biomaterials & Tissue Engineering	Biomechanics	Biosignals & Bioinstrumentation
BME Electives				
BME 39500	Bioinstrumentation			x
BME 49500	Advanced Biomaterials	x		
BME 52700	Implantable Systems			x
BME 54400	Musculoskeletal Biology and Mechanics		x	
BME 57100	Drug Delivery	x	x	
BME 58200	Advanced Biomedical Polymers	x		
BME 59500	Biomolecular Engineering	x	x	
BME 59500	Cancer Engineering	x		
BME 59500	Cardiac Electrophysiology			x
BME 59500	Cellular Electrophysiology			x
BME 59500	Cellular Mechanotransduction		x	
BME 59500	Embedded Bioinstrumentation			x
BME 59500	Engineering Analysis of Tissues	x	x	
BME 59500	Engineering Principles of Biomolecular Interaction	x		
BME 59500	Engineering Principles of Biotechnology	x	x	x
BME 59500	Experimental Methods in BME	x	x	x
BME 59500	Molecular and Cellular Mechanics	x	x	
BME 59500	Neural Engineering			x
BME 59700	Orthopedic Biomechanics		x	
BME 59500	Polymers for Biomedical Applications	x		
BME 59500	Tissue Engineering	x		
BME 59500	Vascular Biomechanics		x	
Other Engineering Electives				
ECE 25500	Introduction to Electronics Analysis & Design			x
ECE 27000	Introduction to Digital System Design			x
ECE 36200	Microprocessor Systems & Interfacing			x
ECE 38200	Feedback Systems and Analysis			x
ECE 53801	Digital Signal Processing			x
ME 20000	Thermodynamics	x	x	x
ME 54600	CAD/CAM Theory and Advanced Applications		x	
ME 56900	Mechanical Behavior of Materials	x	x	
ME 59700	Topology of Optimization		x	
ME 56802	Ceramic Materials	x	x	

Science & Mathematics Electives (limit 2)				
ANAT-D 501	Human Gross Anatomy	x	x	x
ANAT-D 527	Neuroanatomy			x
BIOL 50700	Principles of Molecular Biology	x		
BIOL 51600	Molecular Biology of Cancer	x		
BIOL 55600	Physiology I	x	x	x
BIOL 55700	Physiology II	x	x	x
BIOL 55900	Endocrinology	x		
BIOL 56100	Immunology	x		
BIOL 57310	Stem Cell Biology	x		
BIOL 57410	Molecular and Cell Bone Biology	x	x	
BIOL-K 384	Biochemistry	x	*	*
BIOL-K 416	Cellular and Molecular Neuroscience			x
BIOL-K 484	Cellular Biochemistry	x		
BIOL-N 217	Human Physiology	x	x	x
BIOL-N 261	Human Anatomy	x	x	x
BIOL-N 461	Cadaveric Human Anatomy	x	x	x
CHEM-C 310	Analytical Chemistry	x		
CHEM-C 325	Introductory Instrumental Analysis	x		
CHEM-C 342	Organic Chemistry II	x	*	*
BIOL-K 325 and CHEM-C 343	Cell Biology Lab (2 credits) and Organic Chemistry Lab I (2 credits)	x	*	*
CHEM-C 360	Introductory Physical Chemistry	x		
CHEM-C 361	Physical Chemistry of Bulk Matter	x		
CHEM-C 384	Biochemistry	x	*	*
CHEM-C 485	Biosynthetic Pathways and Control of Metabolism	x		
ECE 26400	Advanced C Programming			x
MATH 35100	Elementary Linear Algebra	x	x	x
MATH 42600	Introduction to Applied Math & Modeling	x	x	x
MATH 51000	Vector Calculus	x	x	x
MATH 51100	Linear Algebra with Applications	x	x	x
MATH 52500	Intro to Complex Analysis			x
MATH 53700	Applied Math for Sci/Engr I	x	x	x
MATH 55200	Applied Computational Methods II		x	x
PHSL-F 503	Human Physiology	x	x	x
STAT 51200	Applied Regression Analysis	x	x	x
STAT 51400	Design of Experiments	x	x	x
STAT 52300	Categorical Data Analysis	x	x	x
STAT 52800	Introduction to Mathematical Statistics	x	x	x

* Can be applied for students needing as a pre-requisite to professional school application

BS BME Student Depth Area Requirements

Additional information regarding BME Depth Area requirements can be found in the *BS BME Undergraduate Handbook*. All students (especially dual degree students) should consult with their undergraduate BME advisor to discuss their depth area electives.

The following should be used in consultation with your undergraduate BME advisor to form a cohesive Depth Area:

- at least two of these courses must be from either the BME department or another engineering department; the other two may be math or science courses, if they are appropriate to the depth area.
- to ensure depth, at least one elective must be 400-level or higher
- no more than two courses may be 200-level
- 100-level courses cannot be applied toward the depth area

BS BME Student Depth Area Planning

Two BME or other engineering depth courses	Two engineering, mathematics, or science depth courses
1	3
2	4

NOTES: However, the Science electives separated by **OR** are courses with significant overlapping content. Therefore, only one of these courses (e.g. only one Anatomy class, not both) can be taken for credit toward the BME degree requirements. Last updated: 12/15/20

APPENDIX B: Additional course information relating to Purdue courses

Course	Biomechanics Depth	Biosignals and Bioinstrumentation Depth	Biomaterials/Tissue Engineering
BME 50100 Multivariate Analyses in Biostatistics	X		
BME 51100 Biomedical Signal Processing		X	
BME 53000 Imaging Diagnostic Technology-		X	
BME 55600 Introduction to Clinical Medicine for Engineering Solutions	X	X	X
BME 56100 Preclinical and Clinical Study Design	X	X	X
BME 59500 Entrepreneurship in BME	X	X	X
BME 460/495 Cardiovascular Mechanical Support and Devices	X	X	

Other alternative courses that students on the Purdue Curriculum take for the Purdue depth areas (these are defined differently than the IUPUI curriculum depth areas), that you are free to choose from as long as they don't overlap with courses you've already taken, include:

Biomechanics

BME 21400 Fund of Biomes Analysis
 BME 21401 Biomech & Biomaterial lab
 BME 31300 Biofluid Mechanics
 BME 31400 Exp. Methods in Biomechanics
 BME 41300 Advanced Biomedical Transport
 BME 41400 Computational Mechanics in Biomedical Engineering

Biomaterials

BME 32000 Biomaterials Course
 BME 32001 Biomolec & Cellular Syst Lab
 BME 32500 Implantable Materials
 BME 32600 Applied Biomaterials

Bioimaging

BME 23100 Fund of Bioinstr & Meas
 BME 23101 Bioinstrumentation Lab
 ECE 30100 Signals & Systems
 BME 36000 Biomed Image Processing
 BME 45000 Deep Learning and Medical Imaging
 BME 46000 Cardiovascular Mechanical Support and Devices

Bioinstrumentation

BME 23100 Fund of Bioinstr & Meas
 BME 23101 Bioinstrumentation Lab
 BME 33100 Bioelectronics
 ECE 30100 Signals & Systems
 BME 43100 Neural Engineering

Computational Biomedicine

BME 20200 Thermodynamics in Biomedical Engineering
 BME 25600 Physiol. Modeling of Human Health
 BME 35600 Math Mod & Method in Physio
 BME 35700 Foundations in Data Sci in BME
 BME 45000 Deep Learning and Medical Imaging
 BME 49500 Smart Healthcare Engineering

Approximate mapping of IUPUI vs Purdue curricula depth areas	
Purdue Curriculum Depth Areas	IUPUI curriculum Depth Areas
Biomechanics	Biomechanics
Bioimaging Bioinstrumentation	Biosignals and Bioinstrumentation
Biomaterials	Biomaterials/Tissue Engineering
Computational Biomedicine	

Approximate mapping of Purdue course numbers that have close equivalents in IUPUI course numbers (<i>this list may not be 100% complete. Please reach out to your advisor and WeldonBMEUndergrad@purdue.edu if you have questions about a specific Purdue curriculum course that you don't see on this list, but you think could have an IUPUI equivalent</i>).	
Purdue Course Number	IUPUI Course Number
BME 21400 Intro Biomechanics	BME 24101 Intro to Biomech
BME 21401 Fund Biomech Analysis	BME 24300 Biomech Lab
BME 23100 Fund Bioinstr & meas	BME 22201 Intro Biomeas.
BME 23101 Bioinstr Lab	BME 22400 Bioinstr Lab
BME 31300 Biofluid mech.	BME 44200 Biofluid mech.
BME 32000 Biomaterials	BME 38100 Implantable materials
BME 32001 Biomolec. And Cellular Syst. Lab	BME 38300 Implantable materials Lab
BME 32600 Applied Biomaterials	BME 38800 Applied Biomaterials
ECE 30100 Signals and Systems	BME 33100 Biosignals Systems
BME 41300 Advanced Biomedical Transport	BME 46100 Transport processes in BME