




Mechanical Engineering Curriculum

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The Zhejiang University/University of Illinois Urbana-Champaign Institute (ZJU-UIUC Institute) offers a joint dual-degree engineering program. Upon successful completion of the program, and after meeting the graduation requirements of both universities, students will obtain bachelor's degrees separately from Zhejiang University (ZJU) and University of Illinois Urbana-Champaign (UIUC).

1. Overview

Mechanical engineering may be the most diverse of the engineering fields, embracing many sub-fields and affecting all aspects of our lives. Mechanical engineers work on new machines, products, and processes that hold the promise of better lives for all of us. They are concerned with both technological and economic aspects in the design, development, and use of their products. Today, one of the challenges is to design efficient, low-cost machines and processes that use the fewest possible natural resources to improve the lives of people throughout the world.

The technical portion of the Mechanical Engineering program curriculum is designed as a sequence of increasingly specialized experiences. The student's first year is spent mastering the basics of science: math, chemistry, and physics. Building on this base, in the second year, students begin to take fundamental engineering courses such as statics, dynamics, basic circuits and electronics, thermodynamics, and strength of materials. By the third year, students are taking specialized mechanical engineering courses in the sub-fields of fluid mechanics, heat transfer, dynamic systems and controls, materials, mechanical design, and manufacturing. Finally, during the senior year, students have the opportunity to both broaden and deepen their knowledge of the field through technical elective courses. At the end of the curriculum, students take the capstone senior design course in which the knowledge and skills they have learned are applied to projects submitted to the department by industrial firms or by faculty members. Engineering design, communication, teamwork, and laboratory experiences are integrated throughout the curriculum from the first year to the last year.

During their junior and senior years students are encouraged to take courses and involve themselves in research projects in cross-disciplinary areas with Civil and Environmental Engineering, Electrical Engineering, Computer Engineering, and others.

2. Graduation Requirement

1) Grade Point Average Requirement

A student must maintain a minimum GPA of 2.0 (A=4.0) to remain in good standing and graduate.

2) Junior Eligibility Requirement

To qualify for registration for the ME courses shown in the third year of the curriculum, a student must have completed, with a combined 2.25 grade point average, the mathematics, physics, computer science, and mechanical engineering courses shown in the first two years.

3) Curriculum Requirement

The curriculum leading to the degree of Bachelor of Science in Mechanical Engineering from UIUC requires 128 hours and is organized into required courses and elective courses.

I. Required courses, see section 3 for details.	2016-2017	2018-2021	2022-
a) Orientation and Professional Development	1	1	1
b) Foundational Mathematics and Science	29	29	29
c) Technical Core	53	53	53
d) Composition	6	8	8
e) Advanced Composition*	4	4	4
Total required	93	95	95
II. Elective courses, see section 4 for details.			
a) Science Electives	4	4	4

b) Statistic Electives	3	3	3
c) MechSE Electives	6	6	6
d) Technical Elective	6	6	6
e) Liberal Education.	18	18	12
f) Free Electives	2	0	6
Total required:	39	37	37

*Students take ME 470/498 to satisfy advanced composition and technical core requirement, and credits can be given for both.

For UIUC degree, in addition to above specific course and scholastic average requirements, each candidate for a bachelor's degree from UIUC must satisfy following requirements:

- **Residency Requirement:** Earn a minimum 60 semester hours of UIUC credit, of which at least 21 hours must be 300 or 400 level UIUC credit courses.
- **Transfer requirement:** Have a satisfactory English Proficiency Test score on TOEFL, IELTS or others approved by UIUC, and maintain a good standing on academic studies that all term GPAs, overall GPA on UIUC courses are suggested to be above 2.5, and get admission through transfer applications during junior year, changing status from non-degree student to degree student.

For ZJU degree, in addition to the 128 hours requirement set out above, the curriculum leading to the degree of Bachelor of Engineering from ZJU requires students to complete extra ZJU required liberal education courses for domestic students and extra five courses in Chinese language and society study for international students. Please refer to section 5 for detail.

3. Required Courses

3.1 Orientation and Professional Development

These courses introduce the opportunities and resources our institute and curriculum can offer you as you work to achieve your career goals. They also provide the skills to work effectively and successfully in the engineering profession.

Course Code	Course Name	2016-
ENG 100	Engineering Orientation	1
ME 290	Seminar	0
	Total	1

3.2 Foundational Mathematics and Science

These courses stress the basic mathematical and scientific principles upon which the engineering discipline is based.

Course Code	Course Name	2016-2020	2021-
CHEM 102	General Chemistry I	3	3
CHEM 103	General Chemistry Lab I	1	1
MATH 221	Calculus I	4	4
MATH 231	Calculus II	3	3
MATH 241	Calculus III	4	4
Math 257	Linear Algebra with Computational Application		3
MATH 415	Applied Linear Algebra	3	
MATH 285*	Intro Differential Equations	3	3
PHYS 211	University Physics: Mechanics	4	4
PHYS 212	University Physics: Elec & Mag	4	4
	Total	29	29

*Math 285 can be substituted by Math 286 (Introduction to Differential Equation Plus, 4 hours).

3.3 Technical Core

These courses stress fundamental concepts and basic laboratory techniques that comprise the common intellectual understanding of mechanical engineering.

Course Code	Course Name	2016-
CS 101	Intro Computing: Engineering & Science	3
ECE 205*	Electrical and Electronic Circuits	3
ECE 206	Electrical and Electronic Circuits Lab	1
TAM 210*	Introduction to Statics	2
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
ME 170	Computer-Aided Design	3
ME 270	Design for Manufacturability	3
ME 200	Thermodynamics	3
ME 310	Fundamentals of Fluid Dynamics	4
ME 320	Heat Transfer	4
ME 330	Engineering Materials	4
ME 340	Dynamics of Mechanical Systems	3.5
ME 360	Signal Processing	3.5
ME 370	Mechanical Design I	3
ME 371	Mechanical Design II	3
ME 470*	Senior Design Project	3
ME 498*	Senior Design Supplement	1
	Total required	53

*ECE 205 can be substituted by ECE 110 (Introduction to Electronics, 3 hours)+ECE 211 (Analog Circuit & System, 2 hours) or ECE 210 (Analog Signal Processing, 4 hours); TAM 210 can be substituted by TAM 211; ME 470+ME 498 satisfy the Advanced Composition requirements.

3.4 Composition

These courses teach the fundamentals of expository writing.

Course Code	Course Name	2016-2017	2018-
RHET 101	Principles of Writing	3	4
RHET 102	Principles of Research	3	4
	Total required	6	8

3.5 Advanced Composition

The Advanced Composition requirement is fulfilled by a writing-intensive course beyond basic composition. It is normally taken in the junior or senior years.

Course Code	Course Name	2016-
ME 470*	Senior Design Project	3
ME 498*	Senior Design Supplement	1
	Total required	4

*ECE 470+498 is also a required technical core. Students may also take other advanced composition courses from general education course list to satisfy this requirement.

4. Elective Courses

4.1 Science Electives

The science electives augment the foundational science courses in an area of interest to the student and provide preparation for later courses. The science, statistics, and MechSE electives, and additional technical courses, stress the rigorous analysis, design, and statistics principles practiced in mechanical engineering.

Select Chem 104 and Chem 105, or Phys 213 and Phys 214, or MCB 150.

Course Code	Course Name	2016-
CHEM 104	General Chemistry II	3
CHEM 105	and General Chemistry Lab II	1
PHYS 213	Univ Physics: Thermal Physics	2
PHYS 214	and Univ Physics: Quantum Physics	2
MCB 150	Molecular & Cellular Basis of Life	4
	Total required	4

4.2 Statistic Electives

One course chosen from:

Course Code	Course Name	2016-
IE 300	Analysis of Data	3
STAT 400/Math 463	Statistics and Probability I	4
ECE 313	Probability with Engineering Application	3
	Total required	3

4.3 MechSE Electives

MechSE electives include all 400 level ME courses, except 470 and potentially 497, 498 (As Approved); all 400 level TAM courses, except potentially 497, 498 (As Approved)

chose 2 courses, 6 hours, from the list below:

Course Code	Course Name	2016-
ME 400	Energy Conversion System	3
ME 401	Refrigeration and Cryogenics	3
ME 402	Design of Thermal Systems	3
ME 403	Internal Combustion Engines	3
ME 404	Internal Thermodynamics	4
ME 410	Intermediate Gas Dynamics	3
ME 411	Viscous Flow & Heat Transfer	4
ME 412	Numerical Thermo-Fluid Mechanics	3
ME 420	Intermediate Heat Transfer	4
ME 430	Failure of Engineering Materials	3
ME 431	Mechanical Component Failure	3
ME 432	Fundamentals of Photovoltaics	3
ME 440	Kinematics & Dynamics of Mechanical System	3
ME 445	Introduction to Robotics	4
ME 446	Robot Dynamics and Control	4
ME 447	Computational Design and Dynamics of Soft Systems	4
ME 451	Computer-Aided Manufacturing System	3
ME 452	Numerical Control of Manufacturing Processes	3
ME 453	Data Science in Manufacturing Quality Control	3
ME 455	Micromanufacturing Process & Automation	3
ME 458	Additive Manufacturing and Product Design	3
ME 460	Industrial Control System	4
ME 461	Computer Control of Mechanical System	3

ME 462	Advanced Computer Control	4
ME 465	Optics: Theory & Application	4
ME 471	Finite Element Analysis	3
ME 472	Introduction to Tribology	3
ME 475	Bioinspired Design	3
ME 481	Whole-Body Musculoskeletal Biomechanics	3
ME 482	Musculoskeletal Tissue Mechanics	3
ME 483	Mechanobiology	4
ME 485	MEMS Devices & Systems	3
ME 496	Honors Project	1 to 4
ME 497	Independent Study	1 to 3
ME 498	Special Topics	0 to 4
TAM 412	Intermediate Dynamics	4
TAM 413	Fund of Engineering Acoustics	3
TAM 416	Introduction to Nonlinear Dynamics and Vibrations	4
TAM 424	Mechanics of Structural Metals	3
TAM 428	Mechanics of Composites	3
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4
TAM 451	Intermediate Solid Mechanics	4
TAM 456	Experimental Stress Analysis	3
TAM 461	Cellular Biomechanics	4
TAM 470	Computational Mechanics	3
TAM 497	Independent Study	1 to 3
TAM 498	Special Topics	1 to 4

4.4 Technical Electives

Students can choose extra two technical electives from the list in section 4.3 and are also encouraged to build up their cross-disciplinary study by taking two non-MechSE technical courses shown below from Civil Engineering, Electrical and Computer Engineering, Computer Science, and others at ZJUI or during exchange at UIUC.

Course Code	Course Name	Credits
CEE 310	Transportation Engineering	3
CEE 330	Environmental Engineering	3
CEE 340	Energy and Global Environment	3
CEE 350	Water Resources Engineering	3
CEE 360	Structural Engineering	3
CEE 380	Geotechnical Engineering	3
CEE 398	Special Topics (No more than 3 hours of individual study courses may be used to satisfy the MechSE electives requirement. Additional hours may be used as Free Electives.)	0 to 4
CEE 401	Concrete Materials	4
CEE 405	Asphalt Materials I	3
CEE 406	Pavement Design I	3
CEE 407	Airport Design	3
CEE 408	Railroad Transportation Engrg	3
CEE 409	Railroad Track Engineering	3
CEE 410	Railway Signaling & Control	3

CEE 411	RR Project Design & Constr	3
CEE 412	High-Speed Rail Engineering	3
CEE 415	Geometric Design of Roads	4
CEE 416	Traffic Capacity Analysis	3
CEE 417	Urban Transportation Planning	4
CEE 418	Public Transportation Systems	3
CEE 420	Construction Productivity	3
CEE 421	Construction Planning	3
CEE 422	Construction Cost Analysis	3
CEE 424	Sustainable Const Methods	4
CEE 430	Ecological Quality Engineering	2
CEE 434	Environmental Systems I	3
CEE 437	Water Quality Engineering	3
CEE 438	Science & Environmental Policy	3
CEE 440	Fate Cleanup Environ Pollutant	4
CEE 442	Environmental Engineering Principles, Physical	4
CEE 443	Env Eng Principles, Chemical	4
CEE 444	Env Eng Principles, Biological	4
CEE 445	Air Quality Modeling	4
CEE 446	Air Quality Engineering	4
CEE 447	Atmospheric Chemistry	4
CEE 449	Environmental Engineering Lab	3
CEE 450	Surface Hydrology	3
CEE 451	Environmental Fluid Mechanics	3
CEE 452	Hydraulic Analysis and Design	3
CEE 453	Urban Hydrology and Hydraulics	4
CEE 457	Groundwater	3
CEE 458	Water Resources Field Methods	4
CEE 460	Steel Structures I	3
CEE 461	Reinforced Concrete I	3
CEE 462	Steel Structures II	3
CEE 463	Reinforced Concrete II	3
CEE 465	Design of Structural Systems	3
CEE 467	Masonry Structures	3
CEE 468	Prestressed Concrete	3
CEE 469	Wood Structures	3
CEE 470	Structural Analysis	4
CEE 471	Structural Mechanics	3
CEE 472	Structural Dynamics I	3
CEE 480	Foundation Engineering	3
CEE 483	Soil Mechanics and Behavior	4
CEE 484	Applied Soil Mechanics	4
CEE 491	Decision and Risk Analysis	3
CEE 497	Independent Study	1 to 4
CEE 498	Special Topics	1 to 4

CS 225	Data Structures	4
CS 233	Computer Architecture	4
CS 241	System Programming	4
CS 242	Programming Studio	3
CS 357	Numerical Methods I	3
CS 374	Introduction to Algorithms & Models of Computation	4
CS 410	Text Information Systems	3
CS 411	Database Systems	3
CS 412	Introduction to Data Mining	3
CS 413	Intro to Combinatorics	3
CS 414	Multimedia Systems	3
CS 418	Interactive Computer Graphics	3
CS 419	Production Computer Graphics	3
CS 420	Parallel Progrmg: Sci & Engrg	3
CS 421	Programming Languages & Compilers	3
CS 422	Programming Language Design	3
CS 423	Operating Systems Design	3
CS 424	Real-Time Systems	3
CS 425	Distributed Systems	3
CS 426	Compiler Construction	3
CS 427	Software Engineering I	3
CS 428	Software Engineering II	3
CS 429	Software Engineering II, ACP	3
CS 431	Embedded Systems	3
CS 433	Computer System Organization	3
CS 436	Computer Networking Laboratory	3
CS 438	Communication Networks	3
CS 439	Wireless Networks	3
CS 440	Artificial Intelligence	3
CS 445	Computational Photography	3
CS 446	Machine Learning	3
CS 447	Natural Language Processing	3
CS 450	Numerical Analysis	3
CS 457	Numerical Methods II	3
CS 460	Security Laboratory	3
CS 461	Computer Security I	4
CS 463	Computer Security II	3
CS 465	User Interface Design	3
CS 466	Introduction to Bioinformatics	3
CS 467	Social Visualization	3
CS 468	Tech and Advertising Campaigns	3
CS 473	Algorithms	4
CS 475	Formal Models of Computation	3
CS 476	Program Verification	3
CS 477	Formal Software Devel Methods	3

CS 481	Advanced Topics in Stochastic Processes & Applications	3
CS 483	Applied Parallel Programming	4
CS 484	Parallel Programming	3
CS 498	Special Topics	1 to 4
ECE 329	Fields and Waves I	3
ECE 330	Power Ckts & Electromechanics	3
ECE 333	Green Electric Energy	3
ECE 340	Semiconductor Electronics	3
ECE 342	Electronic Circuits	3
ECE 343	Electronic Circuits Laboratory	1
ECE 380	Biomedical Imaging	3
ECE 385	Digital Systems Laboratory	3
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 401	Signal and Image Analysis	4
ECE 402	Electronic Music Synthesis	3
ECE 403	Audio Engineering	3
ECE 408	Applied Parallel Programming	4
ECE 411	Computer Organization & Design	4
ECE 412	Microcomputer Laboratory	3
ECE 414	Biomedical Instrumentation	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 416	Biosensors	3
ECE 417	Multimedia Signal Processing	4
ECE 418	Image & Video Processing	4
ECE 419	Security Laboratory	3
ECE 420	Embedded DSP Laboratory	2
ECE 422	Computer Security I	4
ECE 424	Computer Security II	3
ECE 425	Intro to VLSI System Design	3
ECE 428	Distributed Systems	3
ECE 431	Electric Machinery	4
ECE 432	Advanced Electric Machinery	3
ECE 435	Computer Networking Laboratory	3
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3
ECE 439	Wireless Networks	3
ECE 441	Physcs & Modeling Semicond Dev	3
ECE 444	IC Device Theory & Fabrication	4
ECE 447	Active Microwave Ckt Design	3
ECE 448	Artificial Intelligence	3
ECE 451	Adv Microwave Measurements	3
ECE 452	Electromagnetic Fields	3
ECE 453	Wireless Communication Systems	4
ECE 454	Antennas	3
ECE 455	Optical Electronics	3

ECE 456	Global Nav Satellite Systems	4
ECE 457	Microwave Devices & Circuits	3
ECE 458	Applc of Radio Wave Propag	3
ECE 459	Communications Systems	3
ECE 460	Optical Imaging	4
ECE 462	Logic Synthesis	3
ECE 463	Digital Communications Lab	2
ECE 464	Power Electronics	3
ECE 465	Optical Communications Systems	3
ECE 466	Optical Communications Lab	1
ECE 468	Optical Remote Sensing	3
ECE 469	Power Electronics Laboratory	2
ECE 470	Introduction to Robotics	4
ECE 472	Biomedical Ultrasound Imaging	3
ECE 473	Fund of Engrg Acoustics	3
ECE 476	Power System Analysis	3
ECE 478	Formal Software Devel Methods	3
ECE 480	Magnetic Resonance Imaging	3
ECE 481	Nanotechnology	4
ECE 482	Digital IC Design	3
ECE 483	Analog IC Design	3
ECE 485	MEMS Devices & Systems	3
ECE 486	Control Systems	4
ECE 487	Intro Quantum Electr for EEs	3
ECE 488	Compound Semicond & Devices	3
ECE 489	Robot Dynamics and Control	4
ECE 490	Introduction to Optimization	3
ECE 491	Numerical Analysis	3
ECE 492	Parallel Progrmg: Sci & Engrg	3
ECE 493	Advanced Engineering Math	3
ECE 495	Photonic Device Laboratory	3
ECE 498	Special Topics in ECE	0 to 4
MSE 304	Electronic Properties of Matls	3
MSE 307	Materials Laboratory I	3
MSE 308	Materials Laboratory II	3
MSE 401	Thermodynamics of Materials	3
MSE 402	Kinetic Processes in Materials	3
MSE 403	Synthesis of Materials	3
MSE 405	Microstructure Determination	3
MSE 406	Thermal-Mech Behavior of Matls	3
MSE 420	Ceramic Materials & Properties	3
MSE 421	Ceramic Processing	3
MSE 422	Electrical Ceramics	3
MSE 423	Ceramic Processing Laboratory	3
MSE 440	Mechanical Behavior of Metals	3

MSE 441	Metals Processing	3
MSE 442	Metals Laboratory	3
MSE 443	Design of Engineering Alloys	3
MSE 445	Corrosion of Metals	3
MSE 450	Polymer Science & Engineering	3
MSE 452	Polymer Laboratory	3
MSE 453	Plastics Engineering	3
MSE 454	Mechanics of Polymers	3
MSE 455	Macromolecular Solids	3
MSE 456	Mechanics of Composites	3
MSE 457	Polymer Chemistry	3
MSE 458	Polymer Physics	3
MSE 460	Electronic Materials I	3
MSE 461	Electronic Materials II	3
MSE 462	Electronic Materials Lab	3
MSE 466	Materials in Electrochem Syst	3
MSE 470	Design and Use of Biomaterials	3
MSE 472	Biomaterials Laboratory	3
MSE 473	Biomolecular Materials Science	3
MSE 474	Biomaterials and Nanomedicine	3
MSE 480	Surfaces and Colloids	3
MSE 481	Electron Microscopy	3
MSE 484	Composite Materials	3
MSE 485	Atomic Scale Simulations	3
MSE 487	Materials for Nanotechnology	3
MSE 488	Optical Materials	3
MSE 489	Matl Select for Sustainability	3
MSE 497	Independent Study	1 to 4
MSE 498	Special Topics	1 to 4

Technical electives approved in other areas are as below:

Aerospace Eng. (AE): 352, 402, 403, 410, 412, 416, 419, 420, 428, 433, 434, 435, 442, 443, 451, 460, 461, 482, 483, 497, 498

Agri. Bio Eng. (ABE): 420, 430, 436, 445, 455, 456, 459, 463, 466, 469, 474, 476, 483, 488, 489, 497, 498

Biochemistry (BIOC): 406, 440, 446, 455

Bioengineering (BIOE): 380, 414, 415, 416, 461, 473, 476, 479, 481, 482, 497, 498

Biophysics (BIOP): 401, 419, 432¹

Chem & Bio Eng (CHBE): 422, 424, 451, 452, 453, 456, 457, 471, 472, 473, 474, 475, 476

Chemistry (CHEM): 232, 233, 236, 237, 312, 315, 317, 332, 420, 436, 437, 438, 440, 442, 444, 445, 447, 450, 451, 460, 472, 474, 480, 482, 483, 488, 497

Computational Science and Engineering (CSE): 401, 402, 412, 441, 450, 451, 461

ECON: 302

Engineering (ENG): 461

System Engineering and Design (SE): 402, 411, 412, 413, 420, 422, 423, 424, 450, 462, 497, 498

Industry Engineering (IE): 310, 311, 330, 340, 360, 410, 411, 412, 413, 420, 430, 431, 445, 497, 498

Mathematics (MATH): 347, 357, 403, 409, 412, 413, 414, 417, 418, 423, 424, 425, 427, 428, 432, 442, 444, 446, 447, 448, 450, 453, 464, 469, 471, 472, 473, 475, 476, 478, 479, 481, 482, 484, 487, 488, 489, 490, 492

Molecular and Cell Biology (MCB): 401, 402, 403, 404, 450, 493

Nuclear, Plasma, Radiological Engineering (NPRE): 402, 412, 421, 423, 429, 431, 435, 441, 442, 444, 446, 447, 448, 451, 455, 457, 461, 470, 475, 498

Physics (PHYS): 330, 401, 402, 403, 404, 406, 427, 435, 436, 460, 466, 470, 475, 485, 486, 487, 496, 497, 498

Statistics (STAT): 410, 420, 424, 425, 426, 428, 429, 430, 440, 443, 448, 458, 466, 480

Technology and Management (TMGT): 460, 461

4.5 Liberal Education

The liberal education courses develop students' understanding of human culture and society, build skills of inquiry and critical thinking, and lay a foundation for civic engagement and lifelong learning. To satisfy the Liberal Education requirements, students must take all courses for grade and complete courses based on the table below:

	2016-2017	2018-2019	2020-2021	2022-
1) Humanities & Arts (Two courses)	6	6	6	6
2) Social & Behavioral Sciences (Two courses)	6	6	6	6
3) Culture Studies				
Western/Comparative Culture(s) (One course)	3	3	3	3
Non-Western Culture(s) (One course)	3	3	3	3
U.S. Minority Culture(s) ¹ (One course)		3	3	3
4) Aesthetic Education ² (One course)			3	3
Total required	18	18	18	12

¹Not required if students pursue ZJU degree only. ²Required only for ZJU degree.

One of the Social and Behavioral Science courses must be an introductory economics course ([ECON 102](#) or [ECON 103](#)).

Proper choices on Social and Behavioral Sciences and in Humanities and the Arts will assure that these courses also satisfy the requirements in the areas of Western, non-Western and US minority cultures.

4.6 Free Electives

These unrestricted electives give the student the opportunity to explore any intellectual area of unique interest. This freedom plays a critical role in helping students to define research specialties or to complete minors. Students are encouraged to take cross-discipline courses as free electives.

Free electives	2016-2017	2018-2021	2022-
Total	2	0	6

5. ZJU Required Liberal Education

These courses introduce Chinese modern history, social development, government policies, etc., help students to improve their English and maintain a healthy lifestyle.

Domestic students must complete all courses below, which can be taught in Chinese, to fulfill the graduate requirement along with the above 128 credit hour courses towards the Bachelor of Engineering Degree at ZJU.

Course Code	Course Name	2016-2017	2018	2019	2020	2021	2022-
LAW1001	Mental Education and Foundation of Law	2.5	3	3	3		
LAW1002	Ideology, Morality and Rule of Law					3	3
HIST2001	Modern Chinese History	2.5	3	3	3	3	3
PHIL2001	Introduction to the Principle of Marxism	2.5	3	3	3		
PHIL2002	Introduction to the Principle of Marxism					3	3
PS2011	Intro.to Mao Thought & Theoretical System of China Socialism	4	5	5	5	5	3
PS3011	General Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era		2	2	2	2	3
PS1001	Situation and Policy I	1	1	1	1	1	1
PS2001	Situation and Policy II	1	1	1	1	1	1
ENGL1001	Integrated English I	4	4	1.5	1.5	1.5	1.5
ENGL1002	Integrated English II	2	2	1.5	1.5	1.5	1.5
ENGL2001	Advanced Spoken English I				1.5	1.5	1.5
ENGL2002	Advanced Spoken English II				1.5	1.5	1.5
PE1001	Physical Education I	1	1	1	1	1	1
PE1002	Physical Education II	1	1	1	1	1	1
PE2001	Physical Education III	1	1	1	1	1	1
PE2002	Physical Education IV	1	1	1	1	1	1
PE3001	Physical Education V			1	1	1	1
PE3002	Physical Education VI			1	1	1	1
PE3011	Physical-fitness Test I	0.5	0.5				
PE4011	Physical-fitness Test II	0.5	0.5				
PE4021	Physical Education VII--Fitness test and exercise			0.5	0.5	0.5	0.5
MITR1001	Military Training	2	2	2	2	2	2
MITR2001	Military Theory	1.5	1.5	2	2	2	2
	Total	28	32.5	31.5	34.5	34.5	33.5

International students are required to complete the following courses in Chinese language study and Chinese society to fulfill the graduation requirements along with the above 128 credit hours of courses towards the Bachelor of Engineering Degree at ZJU.

		2016-2022	2023
Course Code	Course Name	Credits	Credits
CHIN 1001	Chinese I	4	4
CHIN 1002	Chinese II	5	4
CHIN 1003	Chinese III	4	4
CHIN 1004	Chinese IV	4	4
CHIN 1005	Language Proficiency and Testing		2
CULT 2001	China Survey	3	
	Total	20	21

6. Sample Schedule by Semester

6.1 First Year-First (Fall) Semester

No	Course Code	Course Name	Credit Hours
1	Rhet 101	Principles of Writing	4

2	Chem 102	General Chemistry I	3
3	Chem 103	General Chemistry Lab I	1
4	Math 221	Calculus I	4
5	ECE 110	Intro to Electronics	3
6	CS 101	Introduction to Computing: Engineering & Science	3
7	Eng 100	Engineering Orientation	1
8	ME 290	Seminar	0
		Total	19

No	Course Code	Course Name	Credit Hours
1	MITR 1001	Military Training	2
2	ENGL 1001	Integrated English I	1.5
3	PE 1001	Physical Education I	1
4	PS 1001	Chinese Social Development Situation and Policies I	
5	CHIN1001*	Chinese I	4.0

*International students required only

6.2 First Year-Second (Spring) Semester

No	Course Code	Course Name	Credit Hours
1	Rhet 102	Principles of Research	4
2	Math 231	Calculus II	3
3	Phys 211	University Physics: Mechanics	4
4	ME 170	Computer-Aided Design	3
5	Chem 104	General Chemistry II	3
6	Chem 105	General Chemistry II Lab	1
		Total	18

No	Course Code	Course Name	Credit Hours
1	LAW1001	Mental Education and Foundation of Law	2.5
2	LAW1002	Ideology, Morality and Rule of Law	
3	ENGL1002	Integrated English II	2
4	PE1002	Physical Education II	1
5	PS 1001	Chinese Social Development Situation and Policies I	1
6	CHIN1002*	Chinese II	5

*International students required only

6.3 Second Year-First (Fall) Semester

No	Course Code	Course Name	Credit Hours
1	Math 241	Calculus III	4
2	MATH 257	Linear Algebra with Computational Application	3
3	Phys 212	University Physics: Elec& Mag	4
4	TAM 211	Statics	3
5	ME 270	Design for Manufacturability	3
		Total	17

No	Course Code	Course Name	Credit Hours
1	PS2011	Intro.to Mao Thought & Theoretical System of China Socialism	3
2	ENGL2001	Advanced Spoken English I	1.5
3	PE2001	Physical Education III	1
4	MITR2001	Military Theory	2
5	PS2001	Situation and Policy II	
6	CHIN1003*	Chinese III	4
7	CULT2001*	China Survey	3

*International students required only

6.4 Second Year-Second (Spring) Semester

No	Course Code	Course Name	Credit Hours
1	Math 285	Intro to Differential Eq	3
2	TAM 212	Introductory Dynamics	3
3	TAM 251	Introductory Solid Mechanics	3
4	ME 200	Thermodynamics	3
5	ECE 211	Analog Circuits & Systems	2
6	GenEd 1	Liberal Education Elective	3
		Total	17

No	Course Code	Course Name	Credit Hours
1	HIST2001	Modern Chinese History	3
2	PHIL2002	Introduction to the Principle of Marxism	3
3	ENGL2002	Advanced Spoken English II	1.5
5	PS2001	Situation and Policy II	
5	PE2002	Physical Education IV	1
6	CHIN1004	Chinese IV	4

*International students required only

6.5 Third Year-First (Fall) Semester

No	Course Code	Course Name	Credit Hours
1	ME 340	Dynamics of Mechanical Systems	3.5
2	ME 330	Engineering Materials	4
3	ME 370	Mechanical Design I	3
4	STAT 400*	Statistics and Probability I	4
5	ECE 206	Elec & Electronic Circuits Lab	1
		Total	15.5

*IE 300, Math 463, ECE 313 can be a substitute.

No	Course Code	Course Name	Credit Hours
1	PE3001	Physical Education V	1

6.6 Third Year- Second (Spring) Semester

Juniors continue exchange to UIUC (dual degree only)

No	Course Code	Course Name	Credit Hours
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1	ME 310	Fundamentals of Fluid Dynamics	4
2	ME 371	Mechanical Design II	3
3	ME 360	Signal Processing	3.5
4	FE	Free Elective	3
5	GenEd	Liberal Education Elective	3
		Total	16.5

No	Course Code	Course Name	Credit Hours
1	PE3002	Physical Education VI	1

6.7 Fourth Year-First (Fall) Semester

No	Course Code	Course Name	Credit Hours
1	ME 320	Heat Transfer	4
2	MechSE E	MechSE Elective	3
3	MechSE E	MechSE Elective	3
4	Free Elec	Free Elective	3
5	GenEd	Liberal Education Elective	3
		Total	16

No	Course Code	Course Name	Credit Hours
1	PS3011	General Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	3
2	PS2001	Situation and Policy II	1

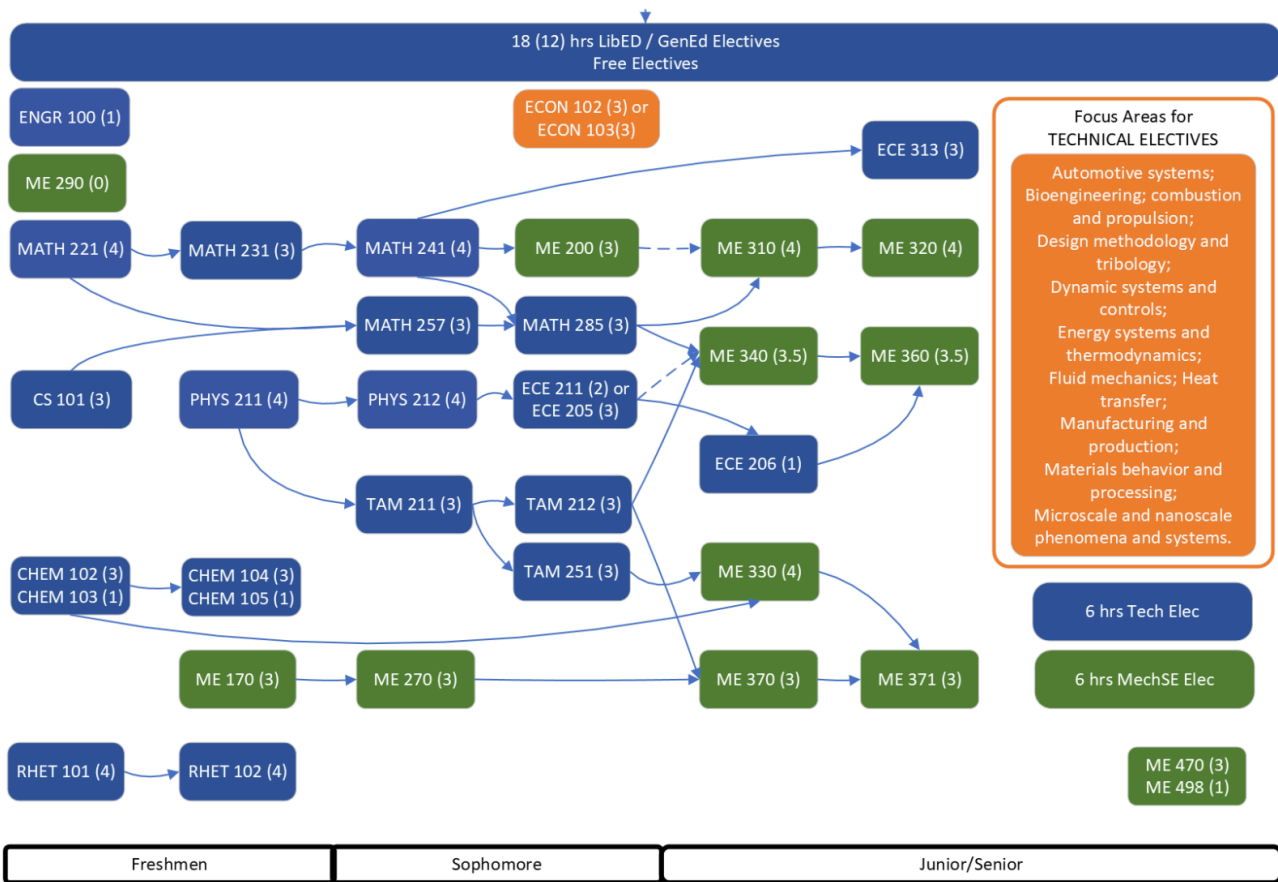
6.8 Fourth Year- Second (Spring) Semester

No	Course Code	Course Name	Credit Hours
1	ME 470	Senior Design Project	4
2	ME 498	Senior Design Supplement	1
3	Tech Elec	Technical Elective	3
4	Tech Elec	Technical Elective	3
5	Free Elec	Free Elective	3
6	GenEd	Liberal Education Elective	3
		Total	17

No	Course Code	Course Name	Credit Hours
1	PE4021	Physical Education VII--Fitness test and exercise	3
2	PS2001	Situation and Policy II	1

7. Curriculum Flow Map

The following flow map offers a quick summary of the main features of the Mechanical Engineering curriculum.



ZJU Required Liberal Education Course

