Electrical Engineering Curriculum

Lu, Qiang

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 the University of Illinois Urbana-Champaign (UIUC).

1.Overview

Electrical engineering is a multifaceted discipline that over the last century has produced an astounding progression of technological innovations that have shaped virtually every aspect of modern life. Electrical engineers need a broad and solid foundation in mathematics and physics to support their education in the engineering principles of analysis, synthesis, design, implementation, and testing of the devices and systems that provide the bedrock of modern energy, communication, sensing, computing, medical, security, and defense infrastructures. Within each sub-discipline one can find application domains that strongly rely on hands-on experimental work or that are based on theoretical, mathematical, and computational approaches. The multidisciplinary nature of electrical engineering education addresses the growing demand for the innovation and design of sensing, communication, computing, and decision-making systems of increasing complexity in consumer, defense, and medical applications.

The core curriculum focuses on fundamental courses on circuits, electromagnetics, solid-state electronics, and computer systems, leading to a comprehensive array of specialized courses and laboratories in all of the important areas of modern electrical engineering. These range from power and energy systems to electronic, opto-electronic, and photonic devices; integrated circuits; telecommunications and remote sensing; control systems; robotics; signal processing; and biomedical instrumentation and sensing.

Students are encouraged to take courses and participate in research projects in interdisciplinary areas with Civil and Environmental Engineering, Mechanical Engineering, Computer Engineering, and others during their junior and senior years.

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 be eligible to enroll in the ECE courses listed 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 electrical and computer engineering courses listed in the first two years.

3) Curriculum Requirement

The curriculum leading to the degree of Bachelor of Science in Electrical Engineering at UIUC requires 128 hours and is organized into required courses, technical electives, liberal education, and other electives.

I. Required courses, see section 3 for details.	2016-2017	2018-2020	2021	2022	2023
a) Orientation and Professional Development	1	1	1	1	1
b) Foundational Mathematics and Science	31	31	33	33	33
c) Technical Core	28	28	28	28	28
d) Other Mathematics	3	3	3	3	3
e) Composition	6	8	8	8	8
f) Advanced Composition*	4	4	4	4	4
Total required	73	75	77	77	77

II. Elective courses, see section 4 for details.					
a) Technical Electives	32	32	30	30	31
b) Liberal Education.	18	18	18	12	12
c) Free Electives	9	7	7	13	12
Total required:	59	57	55	55	55

**Students take ECE 445 to satisfy advance composition and technical elective requirement, and credits can be given for both.*

For UIUC degree, in addition to the specific course and grade point average requirements listed above, each candidate for a bachelor's degree from UIUC must meet the 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-hour requirement listed above, the curriculum leading to the degree of Bachelor of Engineering from ZJU requires students to complete additional ZJU-required liberal education courses for domestic students and additional five courses in Chinese language and society study for international students. Please refer to section 5 for details.

3. Required Courses

3.1 Orientation and Professional Development

This course introduces students to the opportunities and resources our institute and curriculum can offer you as you work to achieve your career goals. It also provides the skills to work effectively and successfully in the engineering profession.

Course Code	Course Name	Credit
ENG 100	Engineering Orientation	1

3.2 Foundational Mathematics and Science

These courses emphasize the fundamental mathematical and scientific principles upon which the engineering discipline is based.

Course Code	Course Name	2016-2020	2021-
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 285	Introduction to Differential Equation		3
MATH 286	Intro to Differential Equations Plus	4	
CHEM 102	General ChemistryI	3	3
CHEM 103	General Chemistry LabI	1	1
PHYS 211	University Physics: Mechanics	4	4
PHYS 212	University Physics: Elec & Mag	4	4
PHYS 213	University Physics: Thermal Physics	2	2
PHYS 214	University Physics: Quantum Physics	2	2
	Total required	31	33

3.3 Technical Core

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

Course Code	Course Name	2016-
ECE 110	Intro to Electronics	3
ECE 120	Intro to Computing	4
ECE 220	Computer Systems & Programming	4
ECE 210	Analog Signal Processing	4
ECE 329	Fields and Waves I	3
ECE 385	Digital Systems Laboratory	3
ECE 340	Semiconductor Electronics	3
ECE 445	Senior Design Project Lab	4
	Total required	28

3.4 Other Mathematics

This course lays the groundwork for understanding problems ranging from communications engineering to data analysis in diverse areas such as medicine and manufacturing.

Course Code	Course Name	2016-
ECE 313	Probability with Engineering Application	3
or STAT 410	Statistics and Probability II	3
	Total required	**3**

3.5 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	6	8

3.6 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-
ECE 445*	Senior Design Project Lab	4
	Total required	4

**ECE 445 is also a required technical elective. Students may also take other advanced composition courses from general education course list to satisfy this requirement.*

4. Elective Courses

4.1 Technical Electives

This elective requirement gives each student the freedom to develop a technical course of study in electrical engineering of considerable breadth and focus. The Advanced Core ECE Electives provide an introduction to the major sub-disciplines of electrical engineering, such as electrical and computer engineering: bioengineering, acoustics, and magnetic resonance engineering; circuits and signal processing; communication and control; computer engineering; electromagnetics, optics, and remote sensing; microelectronics and quantum electronics; power and energy systems.

Students must complete a minimum of the total required hours in technical electives, including at least:

		2016-2020	2021-2022	2023-
1) 2 courses	Non-ECE courses, see below section 4.1.1 for detail.			
2) 3 courses	Selected from the following list of **Advanced Core ECE** electives, see below section 4.1.2 for detail.			
3) 3 courses	ECE Labs, see below section 4.1.3 for detail.			
4) 20 hours	ECE courses, see below section 4.1.4 for detail.	20	20	20
	Total required	32	30	31

4.1.1 Non-ECE Courses

Students are encouraged to build up their interdisciplinary studies by taking non-ECE technical courses from Civil Engineering, Mechanical Engineering, Computer Science, and others at ZJUI or during exchange at UIUC. Two courses are required.

Civil & Env. Eng. (CEE): 310, 330, 408, 410, 416, 430, 447, 491

Course Code	Course Name	Credits
CEE 310	Transportation Engineering	3
CEE 330	Environmental Engineering	3
CEE 408	Railroad Transportation Engineering	3 or 4
CEE 410	Railway Signaling & Control	3 or 4
CEE 416	Traffic Capacity Analysis	3 or 4
CEE 430	Ecological Quality Engineering	2
CEE 447	Atmospheric Chemistry	4
CEE 491	Decision and Risk Analysis	3 or 4

Mechanical Eng. (ME): 200, 310, 320, 330, 340, 370, 371, 400, 401, 402, 403, 404, 410, 411, 412, 420, 430, 431, 440, 445, 450, 451, 452, 460, 461, 471, 472, 485, and 487

Course Code	Course Name	Credits
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 370	Mechanical Design I	3
ME 371	Mechanical Design II	3
ME 400	Energy Conversion Systems	3 or 4
ME 401	Refrigeration and Cryogenics	3 or 4
ME 402	Design of Thermal Systems	3 or 4
ME 403	Internal Combustion Engines	3 or 4
ME 404	Intermediate Thermodynamics	4
ME 410	Intermediate Gas Dynamics	3 or 4
ME 411	Viscous Flow & Heat Transfer	4
ME 412	Numerical Thermo-Fluid Mechs	2 to 4
ME 420	Intermediate Heat Transfer	4
ME 430	Failure of Engineering Materials	3 or 4
ME 431	Mechanical Component Failure	3 or 4

ME 440	Kinematics & Dynamics of Mechanical System	3 or 4
ME 445	Introduction to Robotics	4
ME 450	Modeling Materials Processing	3
ME 451	Computer-Aided Manufacture Systems	3 or 4
ME 452	Num Control of Manufacture Processes	3 or 4
ME 460	Industrial Control Systems	4
ME 461	Computer Control of Mech Systems	3 or 4
ME 471	Finite Element Analysis	3 or 4
ME 472	Introduction to Tribology	3 or 4
ME 485	MEMS Devices & Systems	3
ME 487	MEMS-NEMS Theory & Fabrication	4

Theoretical & Applied Mechanics (TAM): 211, 212, 251, 324, 335, 412, 435, 445, 451

Course Code	Course Name	Credits
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
TAM 251	Introductory Solid Mechanics	3
TAM 324	Behavior of Materials	4
TAM 335	Introductory Fluid Mechanics	4
TAM 412	Intermediate Dynamics	4
TAM 435	Intermediate Fluid Mechanics	4
TAM 445	Continuum Mechanics	4
TAM 451	Intermediate Solid Mechanics	4

Computer Science (CS): (101, by approval), 173, 225, 242, 357, 410, 411, 412, 413, 414, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 431, 433, 436, 438, 439 ,440, 445, 446, 447, 450, 460, 461, 463, 465, 466, 467, 473, 475, 476; 477, 481, 484; CS 398 & 498 Special Topics, as approved.

Other technical electives approved in other areas are as below:

Aerospace Eng. (AE): 202, 302, 311, 312, 321, 352, 353, 402, 403, 410, 412, 416, 419, 420, 428, 433, 434, 435, 451, 460

Agri. Bio Eng. (ABE): any 300- and 400-level[1] course EXCEPT 440

Astronomy (ASTR): 210, 310, 330, 350, 404, 405, 406, 414, 450

Atmospheric Science (ATMS): 201, 301, 302, 303, 304, 305, 404, 405, 406, 410, 411, 420, 421, 447, 449

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

Bioengineering (BIOE): 201, 202, 302, 414, 415, 461, 467, 473, 476, 480, 485

Biophysics (BIOP): all 400-level courses[1]

Chem & Bio Eng (CHBE): 221, 321, 421, 422, 424, 430, 431, 440, 451, 452, 453, 456, 457, 471, 472, 473, 474

Chemistry (CHEM): Chem 104, 105, any 200/300/400-level class EXCEPT 396/7, 497, 499

Crop Sciences (CPSC): 265

Geology (GEOL): 107, 208, 333, 380, 411, 417, 432, 436, 440, 450, 452, 460

Industrial Eng. (IE): 310, 330, 360, 361, 400, 410, 411, 412, 413, 420, 430, 431

Integrative Biology (IB): 150, 202, 203, 204, 302, 335, 348, 368, 401, 405, 420, 421, 426, 427, 431, 432, 440, 443, 444, 451, 452, 453, 461, 462, 463, 464, 467, 468, 471, 472, 473, 481, 482, 483, 485, 486

Linguistics (LING): 300, 406, 407, 427

Material Science & Engineering (MSE): 280, any 300/400-level[1] class EXCEPT 304, 460, 461

Math: 213, 257*, 347, 348, 357, 402, 403, 412, 413, 414, 415*, 416*, 417, 418, 423, 424, 425, 427,428, 432, 442, 444, 446, 447, 448, 450, 453, 473, 475, 481, 482, 484, 487, 489, 494

**Electives for EEs prior to Fall 2021 catalog year*

Molecular & Cellular Biology (MCB): 150, 250, 251, 252, 253, 300, 301, 314, 316, 354, 400, 401, 402, 403, 404, 406, 408, 410, 413, 419, 421, 424, 426, 430, 431, 433, 435, 446, 480

Music (MUS): 407, 409

Neuroscience (NEUR): 453

Nuclear Plasma & Radiological (NPRE): 201, 247, 402, 412, 421, 423, 429, 431, 432, 435, 441, 442, 444, 446, 447, 448, 451, 455, 457, 458, 470, 475

Physics (PHYS): 225, 246, 325, 326, 370, 371, 401, 402, 403, 406, 419, 420, 427, 460, 466, 470, 485, 486, 487

Psychology (PSYC): 204

Speech & Hearing Science (SHS): 200, 240, 300, 301, 320, 450, and 470

Statistics (STAT): 420, 424, 425, 428, 429, and 440

Systems Eng (SE): 411, 420, 423, 424

4.1.2 Advanced Core ECE

Select three courses from the list below:

Course Code	Course Name	Credits
ECE 391	Computer Systems Engineering **or** CS 225 - Data Structure	4
ECE 310	Digital Signal Processing	3
ECE 330	Power Circuits & Electromechanics	3
ECE 342	Electronic Circuits	3
ECE 350	Fields and Waves II	3

4.1.3 ECE Labs

Students must take 3 labs, at least one of which must be a hardware lab.

1) Hardware Labs

Course Code	Course Name	Credits
ECE 343	Electronic Circuits Laboratory	1
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 402	Electronic Music Synthesis	3
ECE 415	Biomedical Instrumentation Lab	2
ECE 420	Embedded DSP Laboratory	2
ECE 431	Electric Machinery	4
CS 436	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 443	LEDs and Solar Cells	4

ECE 444	IC Device Theory & Fabrication	4
ECE 446	Principles of Experimental Research in Electrical Engineering	4
ECE 447	Active Microwave Ckt Design	3
ECE 451	Adv Microwave Measurements	3
ECE 453	Wireless Communication Systems	4
ECE 456	Global Nav Satellite Systems	4
ECE 460	Optical Imaging	4
ECE 463	Digital Communications Lab	2
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 481	Nanotechnology	4
ECE 486	Control Systems	4
ECE 489	Robot Dynamics and Control	4
ECE 495	Photonic Device Laboratory	3

2) Software Labs

Course Code	Course Name	Credits
ECE 311	Digital Signal Processing Lab	1
ECE 314	Probability in Engineering Lab	1
ECE 365	Data Science and Engineering	3
ECE 411	Computer Organization & Design	4

4.1.4 ECE courses

Students must take at least 20 hours ECE courses from the list below:

ECE: 297, 304, 307, 310, 311, 314, 330, 333, 342, 343, 350, 365, 374, 380, 391, 395, 396, 397, 402, 403, 408, 411, 412, 414, 415, 416, 417, 418, 419, 420, 422, 424, 425, 428, 431, 432, 435, 437, 438, 439, 441, 443, 444, 446, 447, 448, 449, 451, 452, 453, 454, 455, 456, 457, 458, 459, 461, 460, 462, 463, 464, 465, 466, 467, 468, 469, 470, 472, 473, 476, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 495, 496, 499; ECE 398 & 498 Special Topics, as approved.

Course Code	Course Name	Credits
ECE 297	Individual Study	1
ECE 304	Photonic Devices	3
ECE 307	Techniques for Engineering Decisions	3
ECE 310	Digital Signal Processing	3
ECE 311	Digital Signal Processing Lab	1
ECE 314	Probability in Engineering Lab	1
ECE 330	Power Circuits & Electromechanics	3
ECE 333	Green Electric Energy	3
ECE 342	Electronic Circuits	3
ECE 343	Electronic Circuits Laboratory	1
ECE 350	Fields and Waves II	3
ECE 365	Data Science and Engineering	3
ECE 374	Introduction to Algorithms & Models of Computation	4

ECE 380	Biomedical Imaging	3
ECE 391	Computer Systems Engineering	4
ECE 395	Advanced Digital Projects Lab	2 or 3
ECE 396	Honors Project	1 to 4
ECE 397	Individual Study in ECE	0 to 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 or 4
ECE 420	Embedded DSP Laboratory	2
ECE 422	Computer Security I	4
ECE 424	Computer Security II	3 or 4
ECE 425	Intro to VLSI System Design	3
ECE 428	Distributed Systems	3 or 4
ECE 431	Electric Machinery	4
ECE 432	Advanced Electric Machinery	3
ECE 435	Computer Networking Laboratory	3 or 4
ECE 437	Sensors and Instrumentation	3
ECE 438	Communication Networks	3 or 4
ECE 439	Wireless Networks	3 or 4
ECE 441	Physics & Modeling Semiconductor Device	3
ECE 443	LEDs and Solar Cells	4
ECE 444	IC Device Theory & Fabrication	4
ECE 446	Principles of Experimental Research in Electrical Engineering	4
ECE 447	Active Microwave Circuit Design	3
ECE 448	Artificial Intelligence	3 or 4
ECE 449	Machine Learning	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 or 4
ECE 456	Global Nav Satellite Systems	4
ECE 457	Microwave Devices & Circuits	3
ECE 458	Application of Radio Wave Propagation	3
ECE 459	Communications Systems	3
ECE 460	Optical Imaging	4
ECE 461	Digital Communications	3

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 467	Biophotonics	3
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 Engineering Acoustics	3 or 4
ECE 476	Power System Analysis	3
ECE 478	Formal Software Development Methods	3 or 4
ECE 479	IoT and Cognitive Computing	4
ECE 480	Magnetic Resonance Imaging	3 or 4
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	Introduction Quantum Electronics for EEs	3
ECE 488	Compound Semiconductor & Devices	3
ECE 489	Robot Dynamics and Control	4
ECE 490	Introduction to Optimization	3 or 4
ECE 491	Numerical Analysis	3 or 4
ECE 492	Parallel Program: Science & Engineering	3 or 4
ECE 493	Advanced Engineering Math	3 or 4
ECE 495	Photonic Device Laboratory	3
ECE 496	Senior Research Project	2
ECE 499	Senior Thesis	2
ECE 398	Special Topics in ECE (As approved)	0 to 4
ECE 498	Special Topics in ECE (As approved)	0 to 4

4.2 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

	2016-2017	2018-2019	2020-2021	2022-
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

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

One of the Social and Behavioral Science courses is recommended to be an introductory economics course (ECON 102 or ECON 103).

Proper selection of 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.

4.3 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. Students are encouraged to take cross-discipline courses as free electives.

Free electives	2016-2017	2018-2021	2022	2023-
Total	9	7	13	12

5. ZJU Required Liberal Education

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

Domestic students must complete all the courses below that can be taught in Chinese to fulfill the graduation requirements along with the above 128 credit hours of courses for 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				

Course Code	Course Name	2016-2017	2018	2019	2020	2021	2022
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	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
		Total	19

**Electives for EEs*

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	3

2	Math 231	Calculus II	3
3	Phys 211	University Physics: Mechanics	4
4	ECE 120	Intro to Computing	4
5	MATH 257	Linear Algebra with Computational Application	3
		Total	17

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	Phys 212	University Physics: Elec& Mag	4
3	ECE 220	Computer Systems & Programming	4
4	Math 213*	Basic Discrete Mathematics	3
5	GenEd 1**	Liberal Education Elective	3
		Total	18

**Electives for EEs; **Suggest selecting ECON 102 or ECON 103*

No	Course Code	Course Name	Credit Hours
1	*PS2011*	*Intro.to Mao Thought & Theoretical System of China Socialism*	*3*
2	*ENGL2001*	*Advanced Spoken EnglishI*	*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	Phys 213	Univ Physics: Thermal Physics	2
3	Phys 214	Univ Physics: Quantum Physics	2
4	ECE 210	Analog Signal Processing	4
5	CS 225*	Data Structure	4
6	GenEd 2	Liberal Education Elective	3
		Total	18

**Electives for EEs*

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

Juniors exchange to UIUC (dual degree only)

No	Course Code	Course Name	Credit Hours
1	ECE 329	Fields and WavesI	3
2	ECE 385	Digital Systems Laboratory	3
3	Tech Elec 1	3-of-5 Electives	3
4	Tech Elec 2	3-of-5 Electives	3
5	GenEd 3	Liberal Education Elective	3
		Total	16

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
1	ECE 313/314	Probability with Engrg Applic/Lab	3+1
2	ECE 340	Semiconductor Electronics	3
3	Tech Elec 3	3-of-5 Electives	3
4	Tech Elec	Technical Elective	3
5	GenEd 4	Liberal Education Elective	3
		Total	16

No	Course Code	Course Name	Credit Hours
1	*PE3002*	*Physical EducationVI*	*1*

6.7 Fourth Year-First (Fall) Semester

No	Course Code	Course Name	Credit Hours
1	Tech Elec	Technical Elective	3
2	Tech Elec	Technical Elective	3
3	Tech Elec	Technical Elective	3
4	Free Elec	Free Elective	3
5	Free Elec	Free Elective	3
		Total	15

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*

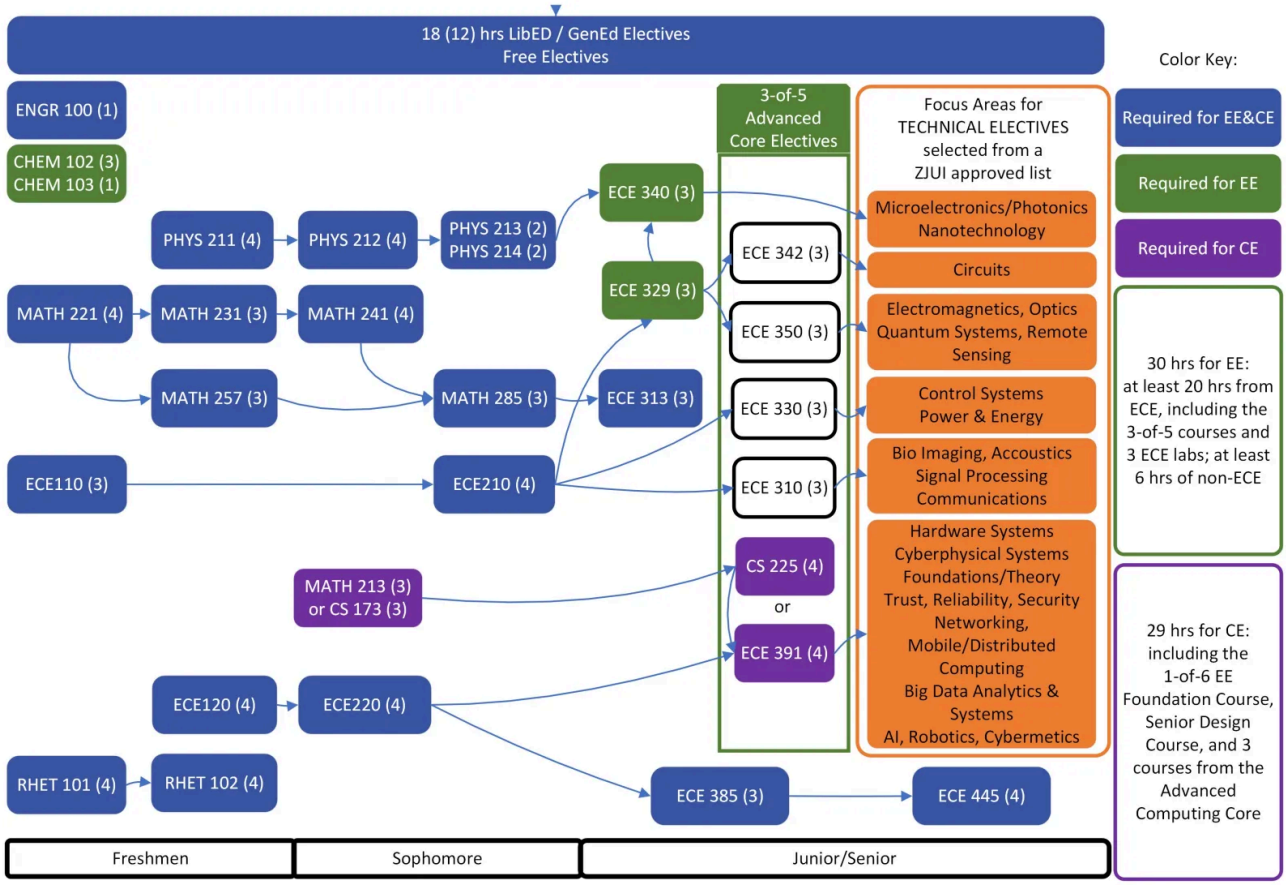
6.8 Fourth Year- Second (Spring) Semester

No	Course Code	Course Name	Credit Hours
1	ECE 445	Senior Design Project Lab	4
2	Tech Elec	Technical Elective	3
3	Tech Elec	Technical Elective	3
4	Free Elec	Free Elective	3
5	Free Elec	Free Elective	3
		Total	16

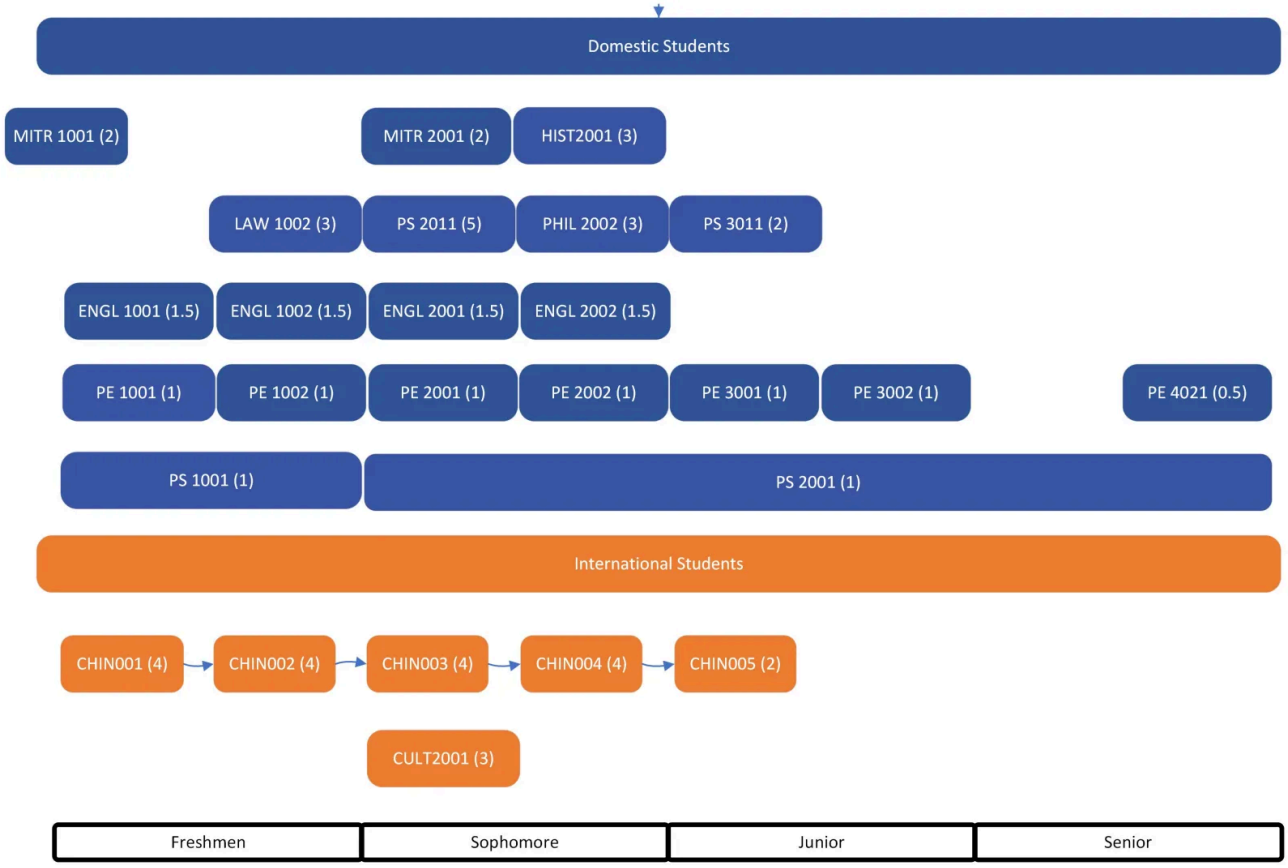
No	Course Code	Course Name	Credit Hours
1	*PE4021*	*Physical Education VII--Fitness test and exercise*	*3*
2	*PS2001*	*Situation and Policy II*	*1*

7. Curriculum Flow Map

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



ZJU Required Liberal Education Course


Domestic Students
MITR 1001 (2)
MITR 2001 (2)
HIST2001 (3)
LAW 1002 (3)
PS 2011 (5)
PHIL 2002 (3)
PS 3011 (2)
ENGL 1001 (1.5)
ENGL 1002 (1.5)
ENGL 2001 (1.5)
ENGL 2002 (1.5)
PE 1001 (1)
PE 1002 (1)
PE 2001 (1)
PE 2002 (1)
PE 3001 (1)
PE 3002 (1)
PE 4021 (0.5)
PS 1001 (1)
PS 2001 (1)
International Students
CHIN001 (4)
CHIN002 (4)
CHIN003 (4)
CHIN004 (4)
CHIN005 (2)
CULT2001 (3)
Freshmen
Sophomore
Junior
Senior