Department of Electrical and Computer Engineering
Electrical Engineering Program of Study 2021-2022

A student wishing to use courses not on this list must secure advance approval from the Department by means of a petition.

The approved Directed Electives generally include: courses required for entry into other engineering majors; required and technical elective courses in other engineering majors; pre-med courses; business or entrepreneurship courses; math, statistics, physics and chemistry courses at higher level than required in the ECE core; and other physical science or biological science courses. For physical science or biological science courses a maximum of 7 hours numbered below 2000 may be counted as Directed Electives.

Individual studies or undergraduate research courses in other engineering disciplines, math, statistics, and physical or biological sciences typically may also be used as directed electives. There are limits on the total number of hours of such courses that may count toward the BSECE degree. Students should consult with their advisor to verify that such courses in a particular discipline will count, prior to taking the course.

If two classes have exclusion clauses in the OSU course catalog then only one of them may be used.

Directed Electives are not required in the Electrical Engineering or Computer Engineering programs. ECE majors are encouraged to use ECE technical electives to complete their elective requirements. Some of the listed courses may be laboratories or include laboratories. Directed Elective laboratory courses do not count toward the ECE Technical Elective laboratory requirement.

The Approved Directed Electives for the Electrical Engineering and Computer Engineering programs of study are different. If you are in the Computer Engineering program of study this is not the correct list for you.

Special Cases	
Anatomy	Only one of the following courses may count: ANATOMY 2220, ANATOMY 2300, ANATOMY 3300, or EEOB 2510†
Discrete Math	A petition may be submitted to use one of CSE 2321† or Math 366†
Engineering Service Learning	• A maximum of three hours of ENGR 4692.01S or 4692.02S or FABENG 3200S may be counted as Directed Elective. • A maximum of three hours from the following set may be counted as Directed Elective: ENGR 2797.11, 5797.11S, 5797.14, 5797.16S, 5797.17S, or 5797.23
Leadership	Only one of the following courses may count: ENGR 5680 or MECHENG 4194 Class Nbr 24098 in May term 2015
Music	The following electronic music synthesis and recording classes may count: MUSIC 5636.01, 5636.02, 5638, and 5639
Product Design	Only one of the following courses may count: MECHENG 5682, 5682.01, or 5682.02; or ISE 5682, 5682.01, or 5560; or BUSADM 3520
Public Affairs	PUBAFRS 5620 may count as a directed elective.
Theatre	Theatre 5899 may count as a directed elective.
Thermodynamics	Only one of the following courses may count: AEROENG 2405, CHBE 3508, FABENG 2120, FABENG 3120, MATSCEN 2251, MECHENG 3500, or MECHENG 3501
Cross-listed courses	Only one course from each of the following sets may count: • CSE 1221 or ENGR 1221 • CHBE 5769 or BIOMEDE 5661 • CIVILEN 5168, MATH 5168, or MECHENG 5168 • ENVENG 5600 or PUBAFRS 5600

† also counts toward the 32 hour Math and Basic Science requirement

THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Approved Directed Electives

Department of Electrical and Computer Engineering

Electrical Engineering Program of Study 2021-2022

Page 2 of 4

Other Engineering Disciplines[1]	
Aeronautical & Astronautical[2]	AEROENG 2200, 2201, and 3581
Aviation	AVIATN 2000, 2100, 2101, 2102, 2300, and 3000
Biomedical[2]	• BIOMEDE 2000, 2700, 5186, 5001, 5210, 5310, 5352, 5353, 5359, 5421, 5663, 5771 • BIOMED 4901 may count as directed elective for students doing an approved multidisciplinary capstone design in Biomedical Engineering, but may not substitute for ECE 3090 or 4900
Chemical & Biomolecular[2]	CHBE 2200, 2420, and 2523
Civil Engineering*	CIVILEN 2060, 3130, 3310, 3510, and 5441
Computer Science and Engineering[2]	• CSE 1224 • One of CSE 2122 or 2123 • CSE 2221, 2231, 2331, 2431, and 2451 • One of CSE 2112 or 3241 may be used • CSE 3231, 3232, 3321, 3341, 3421, 3461, 3521, 3541, 3901, 3902, and 3903 • CSE 4221, 4251, 4252, 4253, 4254, 4255, and 4471 • CSE 4256 but does not fulfill lab requirement • One of CSE 4521 or 5052 • CSE 5234, 5235, 5236, 5242, 5243, 5245, 5343, 5351, 5361, 5432, 5433, 5434, 5441, 5462, 5472, 5473, 5522, 5523, 5524, 5525, 5526, 5531, 5542, 5543, 5544, and 5545 • CSE 5911, 5912, 5913, 5914, and 5915 may count as directed electives, but may not substitute for ECE 4900 • CSE 5194.01 Legal Topics 4 Computer Engineers Spring 2020, sections 34863 or 34864 only • Please note that CSE 1110, 1111, 1112, 1113, 1114, 1211, 1212, 1223, and 3430 do <u>not</u> count as directed electives in this program of study.
Engineering[2]	• ENGR 5901.01 may count as directed elective, but may not substitute for ECE 3090 or 4900 • One of ENGR 4410.01 or FABENG 3171. • ENGR 4375 or ENGR 4891 (Inclusive Leadership) • ENGR 4410.02, 4850, 5168, 5050, and 5710. • ENGR 4692.01S. A maximum of three hours of this repeatable course may be counted as Directed Elective. • ENGR 4891.01 and 5695. These S/U graded course count against the cap on hours of S/U electives toward the degree. Only one instance of each of these repeatable courses count as Directed Elective. • ENGR 4891.02. Only one instance of this repeatable course counts as Directed Elective. • ENGR 4910. This S/U graded course counts against the cap on hours of S/U electives toward the degree. • Please note that ENGR 2167 does <u>not</u> count as directed elective.
Environmental	ENVENG 2100, 3200, and 3210

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[1] Many courses in other engineering disciplines require admission to that major. The presence of such courses in this list does not imply that the major requisite is waived. Such courses are pre-approved to count as directed electives for students who switch to the ECE major after having already taken those courses.

[2] Also see the special cases table on the first page.

THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Approved Directed Electives

Page 3 of 4

Department of Electrical and Computer Engineering
Electrical Engineering Program of Study 2021-2022

Other Engineering Disciplines[1]	
Food, Agricultural & Biological[2]	• FABENG 2110, 2710, 2720, and 5200 • One of FABEENG 3171 or ENGR 4410.01.
Industrial & Systems[2]	ISE 2400, ISE 2500, ISE 3230, ISE 3400, 3800
Materials Science & Engineering[2]	• MATSCEN 2010, 2241, 2331, 2321, and 5572 • MATSCEN 5971 may not be used
Mechanical[2]	• MECHENG 2010 and 2020, or 2040. If 2040 is used then 2010 and 2020 may not be used. • MECHENG 2030, 2850, 2900, 5665 and 5666. • Up to 3 hr combined total of MECHENG 2651 and 2652 may be used.
Nuclear	• Any 4000-level or 5000-level NUCLREN course
Welding	WELDENG 2001 (3001) and 2601 (3601)

Math, Statistics, and Physical and Biological Sciences Unless otherwise noted, the Directed Elective courses in this table also count toward the 32 hour Math and Basic Science requirement	
Animal Sciences	ANIMSCI 3140
Anthropology	ANTHROP 2200
Astronomy	ASTRON 2291, 2292, and 3350
Atmospheric Sciences or Geography	• One of ATMOSSC 2940 or GEOG 1900 may be used • ATMOSSC 5950 • GEOG 3900
Biochemistry	BIOCHEM 4511
Biology	BIOLOGY 1113, 1114, 2100

Chemistry	• CHEM 2520, 2540, and 2550
	• One of CHEM 2310 or 2510
	• One of CHEM 1210, 1610 or 1910H may be used if Chem 1220 is taken.
	  CHEM 1220, 1620 or 1920H will count toward if Chem 1210 is taken.
	  Chem 1250 is not a directed elective
	• Should a student with AP credit for CHEM 1210 obtain permission to take CHEM 1250 instead of continuing into 1220, only 2 hr of CHEM 1210 may be used as Directed Elective.

Earth Science	EARTHSC 1121, 1122, and 1151
Entomology	• One of ENTMLGY 3330 or 4440H • ENTMLGY 4600 and 2400H
Environment and Natural Resources	ENR 2100, 3000, and 3001
Evolution, Ecology, & Organismal Biology*	• EEOB 2520 • One of EEOB 3310 or 3310H • EEOB 3494 [does not count toward 32 hour Math and Basic Science requirement]
Food Science & Technology	FDSCTE 2200

THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Approved Directed Electives
Department of Electrical and Computer Engineering
Electrical Engineering Program of Study 2021-2022

Page 4 of 4

Math, Statistics, and Physical and Biological Sciences	
Unless otherwise noted, the Directed Elective courses in this table also count toward the 32 hour Math and Basic Science requirement	
Horticulture & Crop Science or **Molecular Genetics**	• One of HCS 2201 or MOLGEN 3300 • HCS 2202
Mathematics*	• MATH 2566, 3345, 3350, 3607, 4350, 4507, 4547, 4548, 4551, 4552, 4573, 4575, 4578, 5101, 5102, 5451, 5522H, 5590H, 5591H, and 5603 • One of MATH 4512 or 4557
Microbiology	MICRBIO 4000
Neuroscience	NEUROSC 3000, 3010
Physics	• PHYSICS 2300, 2301, 3470, 3700, 5300, 5500 or 5500H, 5501H, 5600, 5740 • PHYSICS 3201H does not count as a directed elective. It may count as a GE VPA course.
Psychology	PSYCH 3313 *Psych 3325H counts as a directed elective but does **NOT** count as Basic Math and Science
Statistics	STAT 3201, 3202, 3301, 3302, 3303, 4288, 4620

*also see special cases table above

Business, Entrepreneurship and Economics	
BUSADM	3531, 3532, 3533, 3640, 3641 and 4510
BUSFIN	• One of 3120 or 3220 may be used • 3290, 3500, and 4510
BUSMGT	• One of 3130 or 3230 may be used • 3331, 3332, and 3333
BUSMHR	• 2000, 3541, 3542, 3665 and 5530 • One of 3510, 3510.01, or 3510.02 may be used. • One of 3100, 3200, or 3300 may be used • One of 3520 or 4520E may be used
BUSML	• 3241 and 3380 • One of 3150 or 3250 may be used
DESIGN	2700 may be used only if the course is actually taken - credit earned via EM testing cannot be used. (The same restriction that is in place for the Entrepreneurship and Innovation minor).
Economics	• One of ECON 4001.02 or 4001.03 may be used • One of ECON 4002.02 or 4002.03 may be used • One of ECON 4400 or 5410 may be used • ECON 4200, 4700, and 5001 • Please note that ECON 4001.01 and 4002.01 may not be used as directed electives