

# Bachelor of Science in Electrical Engineering with Biomedical Engineering Focus

Required 128 credits (36 of which must be numbered 300 or above and 60 of which must be from a 4-year institution) including:

I. The University's Essential Studies Breadth of Knowledge, Social-Cultural Diversity, and Special Emphasis Requirements (refer to the online Academic Catalog for a listing of acceptable Essential Studies courses).

II. The Following Curriculum:

## Freshman Year

First Semester		Credits
BIOL 150	General Biology I	3
BIOL 150L	General Biology I Laboratory	1
CHEM 121	General Chemistry I	3
CHEM 121L	General Chemistry I Laboratory	1
EE 101	Introduction to Electrical Engineering <sup>1</sup>	1
ENGL 110	College Composition I	3
MATH 165	Calculus I	4
Credits		16

## Second Semester

BIOL 151	General Biology II	3
BIOL 151L	General Biology II Laboratory	1
EE 201	Introduction to Digital Electronics	2
EE 201L	Digital Electronics Laboratory	1
MATH 166	Calculus II	4
PHYS 251	University Physics I	4
Credits		15

## Sophomore Year

First Semester		Credits
EE 206	Circuit Analysis	3
EE 206L	Circuits Laboratory I	1
EE 304	Computer Aided Measurement and Controls	3
ENGL 130	Composition II: Writing for Public Audiences	3
MATH 265	Calculus III	4
PHYS 252	University Physics II	4
Credits		18

  

Second Semester		Credits
ANAT 204	Anatomy for Paramedical Personnel	3
EE 313	Linear Electric Circuits	3
EE 313L	Circuits Laboratory II	1
ENGR 460	Engineering Economy (SS) <sup>2</sup>	3
MATH 266	Elementary Differential Equations	3
PSYC 111 or SOC 110	Introduction to Psychology (Social Science (SS)) <sup>2</sup> , or Introduction to Sociology	3
Credits		16

## Junior Year

First Semester		Credits
EE 314	Signals and Systems	3
EE 314L	Signal and Systems Laboratory	1
EE 316	Electric and Magnetic Fields	3
EE 318	Engineering Data Analysis	3
EE 321	Electronics I	3
EE 321L	Electronics Laboratory I	1

PPT 301	Human Physiology	4
Credits		18

## Second Semester

EE 405	Control Systems I	3
EE 405L	Control Systems Laboratory	1
EE 409	Distributed Networks	3
EE 421	Electronics II	3
EE 421L	Electronics Lab II	1
EE 452	Embedded Systems	3
EE 452L	Embedded Systems Design Laboratory	1
Credits		15

## Senior Year

### First Semester

EE 480	Senior Design I <sup>5</sup>	3
Electrical Engineering Elective <sup>7</sup>		3
Electrical Engineering Elective <sup>7</sup>		3
Humanities (A&H) <sup>2,3</sup>		3
Fine Arts Elective (A&H) <sup>2,3</sup>		3
Credits		15

### Second Semester

EE 481	Senior Design II <sup>6</sup>	3
Electrical Engineering Elective <sup>7</sup>		3
Non-EE Elective <sup>4</sup>		3
Ethics Elective (A&H or SS) <sup>2,3,8</sup>		3
A&H or SS Elective <sup>2,3</sup>		3
Credits		15
Total Credits		128

## Additional Recommended Pre-Medical Courses

ANAT 204L	Anatomy for Paramedical Personnel Laboratory	2
BIOL 315	Genetics	3
BIOL 369 & 369L	Histology and Histology Lab	4
BIOL 420	Neuroscience	3
BMB 301	Biochemistry	3
CHEM 341	Organic Chemistry I	3
CHEM 341L	Organic Chemistry I Laboratory (Chem 341/341L required for UND Medical School)	1
CHEM 342	Organic Chemistry II	3
CHEM 342L	Organic Chemistry II Laboratory (Chem 342/342L required for UND Medical School)	1
MBO 302	General Microbiology Lecture	2
MBO 302L	General Microbiology Laboratory	2

<sup>1</sup> May be waived for transfer students (substitute science credit required).

<sup>2</sup> To meet the University's Essential Studies Breadth of Knowledge requirements, all students must complete 9 credits of Arts & Humanities Electives (minimum of 2 departments, including 3 Fine Arts credits and 3 Humanities credits) and 9 credits of Social Sciences Electives (minimum of 2 departments). Refer to the online Academic Catalog for a listing of acceptable Essential Studies courses.

<sup>3</sup> To meet the University's Essential Studies Social-Cultural Diversity requirements, all students must complete 3 credits of Global (G) Diversity Electives and 3 credits of United States (U) Diversity Electives. Refer to the online Academic Catalog for a listing of acceptable Essential Studies G and U Diversity Electives.

<sup>4</sup> Non-EE Elective choices: Engr 201 Statics, Engr 202 Dynamics, Engr 203 Mechanics of Materials, ME 301 Materials Science, ME/CE 306 Fluid Mechanics, and ME 341 Thermodynamics, Computer Science, Engineering (including EE), Math, and Physics courses approved by advisor, normally 300 level or higher. Math 308 History of Math and Math 321 Applied Statistical Methods do not meet the requirement for Non-EE elective. CSci 242 Algorithms and Data Structures, CSci 260 Advanced Programming Languages, and Math 208 Discrete Mathematics are permitted.

- <sup>5</sup> EE 480 Senior Design I, meets the Essential Studies Special Emphasis requirements for Advanced Communication (A) and Senior Capstone (C). EE 480 Prerequisites: EE 421 and EE 421L and two out of the four following classes: EE 401, EE 405, EE 409, EE 452.
- <sup>6</sup> EE 481 Senior Design II, meets the Essential Studies Special Emphasis requirement for Oral Communication (O).
- <sup>7</sup> Maximum of three credits of EE 490 Electrical Engineering Problems, are allowed as an independent study, applicable to both EE and non EE electives. Recommended EE Elective: EE 550 Biomedical Instrumentation. 2 credits of EE 397 Cooperative Education (40 hours/week) is equivalent to 3 credits of the EE Electives with S/U grading, maximum 4 credits of EE 397 is equivalent to maximum of 6 credits of EE Elective.
- <sup>8</sup> The Ethics Elective is a 3-credit course that meets Essential Studies requirements in either the Arts & Humanities or the Social Sciences. Ethics Elective choices: PHIL 250 Ethics in Engineering and Science (A&H, Humanities); PHIL 251 Ethics in Health Care (A&H, Humanities); and ME 370 Engineering Disasters and Ethics (SS).

III-Grade of "C" or better in all EE courses required for graduation.