



UNIVERSITY OF
ARKANSAS

COLLEGE OF
ENGINEERING

Electrical Engineering Program

2014-2015 Undergraduate Student Handbook

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Electronic copies available <http://www.eleg.uark.edu/1828.php>

Welcome Note from the Department Head

On behalf of the faculty and staff, welcome to Fayetteville, the University of Arkansas and the Department of Electrical Engineering. This department is one of eight in the College of Engineering (www.engr.uark.edu).

We appreciate the fact that you have chosen to pursue your degree in our department where the faculty and staff strives to offer you a high-quality undergraduate educational program. The Department of Electrical Engineering has been offering the Bachelor of Science degree since its establishment in 1897, and continuously accredited by Accreditation Board for Engineering and Technology (ABET) since 1936.

The department is staffed by professional and qualified educators and staff who are dedicated to providing you with a enjoyable experience while pursuing a quality education. It is our goal to provide you with rewarding educational and undergraduate research experiences in order that you are properly prepared to begin your career as a practicing engineer who can compete with electrical engineering graduates from any other university in the world as well as become leaders in the society.

The University of Arkansas, College of Engineering, and Department of Electrical Engineering offer numerous scholarships for qualified candidates. Outstanding students with excellent academic records and GRE scores could be considered for many prestigious fellowships, which offer competitive stipend and tuition. For those students seeking advanced degrees, the department also offers two master's degrees (M.S.E.E. and M.S.E.) and the Doctor of Philosophy (Ph.D.) degree. Students continuing into graduate studies can apply for teaching or research assistantships.

Best wishes for success in achieving your academic and career goals. The faculty and staff are available to provide assistance during your tenure with the department, and if I can be of help in any way, please do not hesitate to visit with me.

Sincerest regards,

Juan Carlos Balda

Department Head
University Professor

What is Electrical Engineering?

Electrical engineering is a professional engineering discipline that in its broader sense covers the study and application of electricity, electronics, and electromagnetism. Electrical engineers are in charge of designing and utilizing electrical components, integrated circuits, integrated chips, computer chips, and electronic assemblies to benefit mankind. Fields of electrical engineering include analog and mixed-signal circuit design/test, biomedical, communications, computer hardware and digital circuit design, control systems, electronic packaging, embedded systems design, microwave and radar engineering, nanophotonics, nanotechnology/microelectronics/optoelectronics, pattern recognition and artificial intelligence, power electronics, and renewable energy and power.

The electrical engineering graduate is at the forefront of technologies leading to the dramatic increase in accelerated use of electric power, applications of real time embedded control systems for smart highways, the dominating influence of the computer on modern society, global communications, the miniaturization of electronics, smart vehicles and smart gadgets, the use of wireless chemical and biological nano-sensors for hazard detection, and a host of other developments. The increased use of electronic equipment for communication, control, measurement, and networking has spread into such diverse areas as agricultural production, automotives, computer networks and hardware, health care, information technology, manufacturing, marketing, recreation, renewable energy, transportation, underwater and space explorations, and many others. This widespread and expanding use of electrical and electronic equipment in virtually all fields has made electrical engineering the largest of all scientific disciplines and assures a continuing demand for electrical engineering graduates throughout business and government. Information regarding the average salary of an electrical engineer is available on the Electrical Engineering website (www.eleg.uark.edu).

Electrical Engineering Emphasis Areas

Analog and Mixed-Signal Circuit Design/Test deals with modeling, designing, and testing integrated circuits and electronic systems that interface the digital world with the real world, including several forms of signal processing.

The **Biomedical** area applies electrical engineering to the field of medicine, including the design of medical equipment (e.g., MRI), implantable medical devices (e.g., pacemaker), neural interfaces (e.g., cochlear implants for the deaf), and electrical therapies (e.g., electrical brain stimulus to minimize shaking effects of Parkinson's).

Communications deals with developing algorithms, protocols, hardware, software, and performance evaluation techniques, for wireless and wired communications networks and systems.

Computer Hardware and Digital Circuit Design deals with designing digital integrated circuits (i.e., computer chips) that are pervasively integrated into today's technological society, including computers, cell phones, MP3 players, DVRs, video games, etc.

The **Control Systems** area deals with developing algorithms and associated hardware to regulate complex systems, including robotics, factory automation, flight control, automobile stability, camera focusing and image stability, etc.

Electronic Packaging deals with interfacing integrated circuit die to connectors such that they can be soldered on printed circuit boards. Packaging objectives include decreasing size, increasing performance, and decreasing electrical interference.

Embedded Systems Design combines digital and analog integrated circuit chips along with software to develop complex systems, such as cell phones, MP3 players, digital cameras, etc.

Microwave and Radar Engineering exploits the relationship between electricity, magnetism, and waves for applications such as medical imaging, radar systems, wireless communications, antenna design, and defense applications.

Nanophotonics exploits the special properties of metals and dielectrics at THz, optical, UV, and IR frequencies for the development of plasmonic solar cells, plasmonic biosensors, and a variety of optical devices.

Nanotechnology/Microelectronics/Optoelectronics deals with the study of materials used to fabricate electronic devices as well as the actual fabrication of miniaturized electronic devices, including sensors, MEMs (Micro Electro Mechanical devices), and optical devices, such as LAZERS.

Power Electronics design deals with the modeling, design and test of discrete higher power circuitry from fractional horsepower to very large systems.

Renewable Energy and Power deals with designing motors, generators, and the circuitry to control high-power devices, as well as designing power generation and distribution systems, which include green technology, such as solar energy, wind turbines, and hydroelectric power

Mission of the Electrical Engineering Department

The University of Arkansas, the state land grant university, is a nationally competitive, student-centered, teaching and research university serving Arkansas and the world. As part of the University of Arkansas, The Electrical Engineering Department will provide the education necessary to establish the best foundation for electrical engineers at all degree levels, and prepare them to be nationally competitive leaders, skillful at undertaking the current and future challenges facing our world. (www.uark.edu).

Undergraduate Commitment

The electrical engineering department is committed to producing graduates with a Bachelor of Science in Electrical Engineering who:

1. Are recruited in a competitive market and valued as reliable and competent employees by a wide variety of industries, in particular electrical engineering industries;
2. Succeed, if pursued, in graduate studies such as, engineering, science, law, medicine, business, and other professions;
3. Understand the need for life-long learning and continued professional development for a successful and rewarding career; and
4. Accept responsibility for leadership roles, in their profession, in their communities, and in the global society.

In addition to the above program educational objectives, the department is also committed to challenging gifted undergraduate students to participate in the honors program (<http://honorscollege.uark.edu>). The honors program gives a structure for a students to work closely with faculty members and other students in a team environment. As a result the honors student gains a more in-depth academic insight along with a quality research experience.

The graduate program enables qualified undergraduate students access to research laboratories with state-of-the-art equipment and software, and the opportunity for undergraduate research

experiences. Topics covered in graduate courses migrate into senior undergraduate elective courses and eventually into required undergraduate courses. See the Appendix of this handbook (which is in the full version available in the website) for research opportunities for undergraduate students.

Graduate Commitment

The graduate program offers a Master of Science degree in Electrical Engineering (M.S.E.E.), a Master of Science Degree in Engineering (M.S.E.), and a Doctor of Philosophy degree in Engineering (Ph.D). The Electrical Engineering Department is committed to providing additional instruction to graduate students as well as the research environment necessary for the graduate to succeed. This program will enable the graduate to:

1. Accomplish research that will address new and critical issues;
2. Assume leadership roles in research and development teams;
3. Advance quickly to management positions in research and development; and
4. Confidently take the leadership role where ever they chose their professional career.

Research Commitment

The Electrical Engineering Department's research commitment is conducted mainly through the graduate program. Internal and external funded research projects serve to:

1. Discover new knowledge, address technical problems, and develop new electrical/electronic technologies;
2. Provide the tools and resources that keep our faculty at the cutting edge of electrical engineering; Advance quickly to management positions in research and development; and
3. Provide financial support for graduate students and gifted undergraduate students; and
4. Improve the quality of life for the citizens of Arkansas and the world.

Faculty, students, administrators, and staff conduct the service mission of the department. The electrical engineering program, including faculty, students, staff, and facilities, is a major resource of the state, region, and nation. Faculty members are encouraged to provide services to both the community and the profession. Thus, our faculty members are active in local, state, national, and international professional and service organizations, as well as public and private schools involving grades K-12. A full listing of the faculty, their areas of interest, and email addresses are shown in the Appendix (which is in the website).

In summary, the Electrical Engineering program is designed to offer a high-quality path of instruction involving classroom, laboratory, and extracurricular activities that results in graduates who will be nationally competitive leaders, skillful at undertaking the current and future challenges facing our world.

The Electrical Engineering Undergraduate Curriculum

The electrical engineering undergraduate curriculum is designed to provide students with knowledge of scientific principles and methods of engineering analysis to form a solid foundation for a career in design, research and development, manufacturing and processing, measurement and characterization, or management. The outcomes of the electrical engineering undergraduate curriculum are the following:

- a) an ability to apply knowledge of mathematics, science, and engineering;
- b) an ability to design and conduct experiments, as well as to analyze and interpret data;
- c) an ability to design a system, component, or process to meet desired needs;
- d) an ability to function on multi-disciplinary teams;
- e) an ability to identify, formulate, and solve engineering problems;
- f) an understanding of professional and ethical responsibility;
- g) an ability to communicate effectively;
- h) the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- i) a recognition of the need for, and an ability to engage in life-long learning;
- j) a knowledge of contemporary issues;
- k) an ability to use the techniques, skills, and modern engineering tools (this specifically includes PSPICE and MATLAB) necessary for engineering practice.

The electrical engineering undergraduate curriculum is divided into three phases; the first year, the second and third years, and the senior year. The first year concentrates on developing a sound understanding of basic sciences and mathematics, and introduces general engineering concepts. The College of Engineering has adopted a common freshman year for all new freshmen. For more information about the freshman year, please refer to the electrical engineering undergraduate curriculum in this handbook and also <http://freshmanengineering.uark.edu/>.

Following the freshman year, students enter the heart of the EE undergraduate curriculum. The sophomore year provides a transition into electric circuits and digital systems, and largely completes the required mathematics. This leads to the junior year containing the majority of the *required* technical courses within electrical engineering. The senior year is composed primarily of technical electives, both within and outside electrical engineering, where students can explore several areas of interest. At this time, the student in conjunction with *his or her adviser* may select technical electives to concentrate in one or more of the technical specializations within electrical engineering, namely, analog and mixed-signal circuit design/test, biomedical, communications, computer hardware and digital circuit design, control systems, electronic packaging, embedded systems design, microwave and radar engineering, nanophotonics, nanotechnology/microelectronics/optoelectronics, pattern recognition and artificial intelligence, power electronics, and renewable energy and power. This final year permits the student to tailor a program suited to his or her individual career objectives. Students progressively build their design experience throughout the curriculum and demonstrate this ability in Electrical Engineering Design I and II, where they conceptualize a project, design the system, and build a working prototype, over the course of two semesters.

For those students enrolled in the Honors program, their design experience culminates in the Honors Electrical Engineering Design I and II, and the senior honors thesis. In addition, Honors

sections of several electrical engineering courses provide further information on special issues in the electrical engineering discipline.

Lastly, the curriculum also introduces students to subjects in the humanities, social sciences, and professional success and ethics so they may better understand the interaction of technology and society.

The graduation requirement in electrical engineering is 125 semester hours. A full listing, flowchart, and specific details of the present curriculum are given below.

Though faculty advisors are quite knowledgeable about the technical aspects of an engineering education, other students are a good resource when it comes to charting a path through the curriculum. Students are advised to inquire in order to be well informed about various curriculum issues.

Please be aware that, in all cases, the curriculum requirements set forth in the University Catalog of Studies supersedes the requirements set forth in this Handbook.

**ELECTRICAL ENGINEERING CURRICULUM
2014 – 2015**

Freshman Year

1	GNEG 1111	Intro to Engineering I		1	GNEG 1121	Introduction to Engineering II
4	MATH 2554	Calculus I		4	MATH 2564	Calculus II
3	CHEM 1113	Chemistry for Engineers		3	HIST 2003, HIST 2013, or PLSC 2003	
4	PHYS 2054	University Physics I		4	Freshman Science Elective ¹	
<u>3</u>	ENGL 1013	Composition I		<u>3</u>	ENGL 1023	Composition II
15	semester hours			15	semester hours	

Sophomore Year

4	ELEG 2104	Electric Circuits I (with lab)		4	CSCE 2004	Programming Foundations I
4	ELEG 2904	Digital Design (with lab)		4	ELEG 2114	Electric Circuits II (with lab)
4	MATH 2584	Differential Equations		4	MATH 2574	Calculus III
<u>4</u>	Sophomore Science Elective ²			<u>3</u>	Humanities Elective (from University/State Core list)	
16	semester hours			15	semester hours	

Junior Year

4	ELEG 3124	System and Signal Analysis (with lab)		3	Math/Science/Technical Elective ³	
4	ELEG 3214	Electronics I (with lab)		4	ELEG 3224	Electronics II (with lab)
4	ELEG 3704	Applied Electromagnetics (with lab)		4	ELEG 3304	Energy Systems (with lab)
4	ELEG 3924	Microprocessor System Design (with lab)		3	ELEG 3143	Probability & Stochastic Processes
				<u>3</u>	Social Science Elective (from University/State Core list)	
16	semester hours			17	semester hours	

Senior Year

1	ELEG 4061	Electrical Engineering Design I		3	ELEG 4073	Electrical Engineering Design II
3	ELEG Technical Elective ⁵			3	ELEG Technical Elective ⁵	
3	ELEG Technical Elective ⁵			3	Technical Elective	
3	Engineering Science/Technical Elective ⁴			3	Technical Elective	
3	ECON 2013, ECON 2023, or ECON 2143			3	Social Science Elective (from University/State Core list)	
<u>3</u>	Fine Arts Elective (from University/State Core list)			<u>3</u>		
16	semester hours			15	semester hours	

TOTAL: 125 semester hours

¹ Freshman Science Elective – CHEM 1133/1131L Chemistry for Engineers II or PHYS 2074 University Physics II

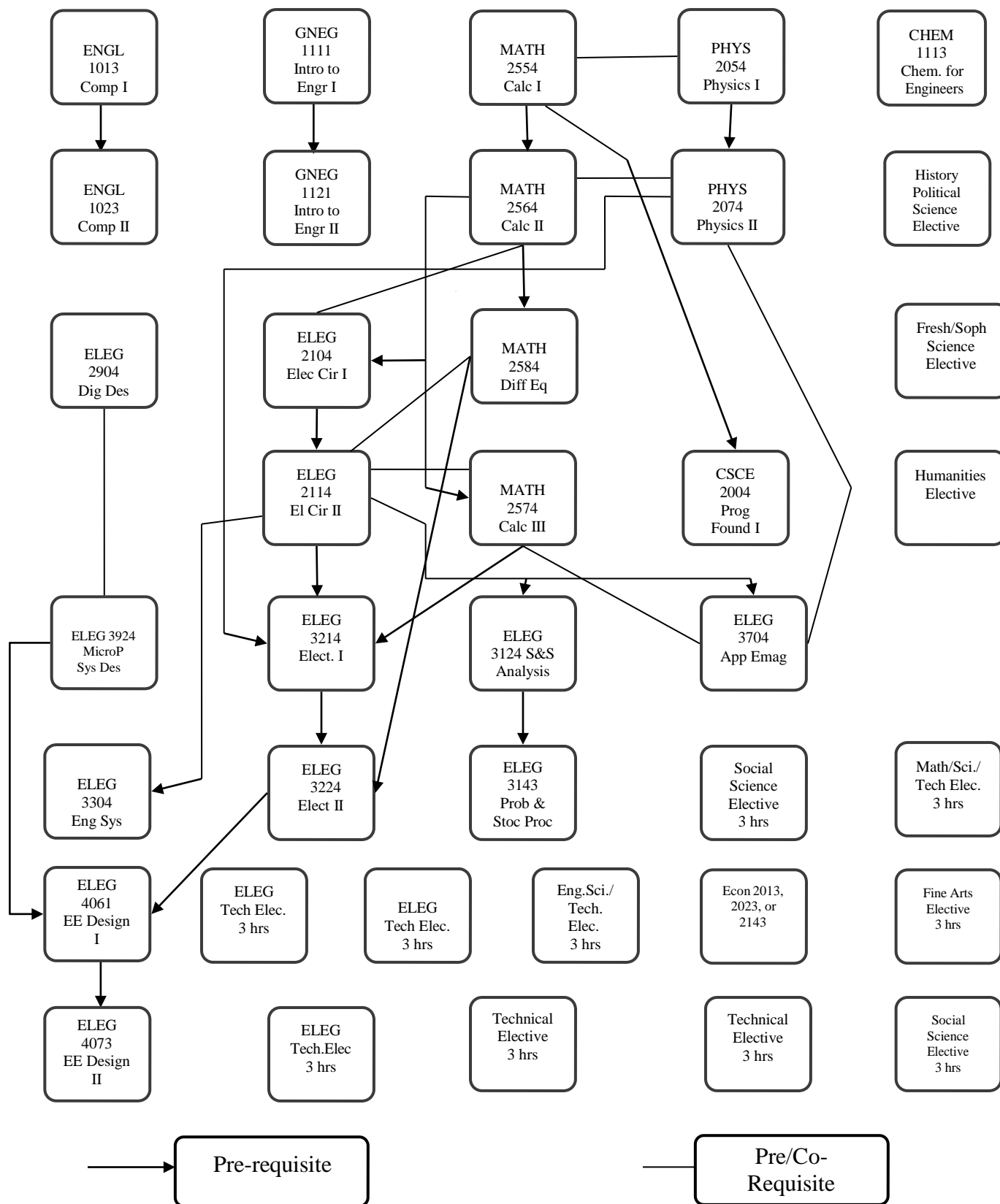
² Sophomore Science Elective – If CHEM 1133/1131L Chemistry for Engineers II was taken for Freshman Science Elective, then PHYS 2074 University Physics II; otherwise, if PHYS 2074 University Physics II was taken for Freshman Science Elective, then CHEM 1133/1131L Chemistry for Engineers II, BIOL 1543/1541L Principles of Biology, or BIOL 2213/2211L Human Physiology, PHYS 2094 University Physics III

³ Math/Science/Technical Elective: Approved Math/Science Elective or another Technical Elective

⁴ Engineering Science/Technical Elective: May include MEEG 2023 – Introductory Mechanics, MEEG 2303 – Introduction to Materials, MEEG 2403 – Thermodynamics, or another Technical Elective, CHEG 2313 -- Thermodynamics of Single-Component Systems

⁵ CSCE 4114, CSCE 4613, CSCE 4233 are approved ELEG Technical Electives for students pursuing a dual ELEG/CSCE dual undergraduate degrees

ELECTRICAL ENGINEERING 2014-2015 CURRICULUM FLOW CHART



2014 – 2015 Curriculum – List of Required Courses with Pre- and Co-Requisites for ELEG

Year/Semester	Number	Course Title	Pre-Requisites	Co-Requisites
Freshman Year				
Freshman 1	GNEG 1111	introduction to Engineering 1	First Yr Engineering	
Freshman 1	MATH 2554	Calculus I	As Indicated in Catalog	
Freshman 1	CHEM 1113	Chemistry for Engineers	As Indicated in Catalog	CHEM 1101L
Freshman 1	PHYS 2054	University Physics 1		MATH 2554, Lab Component
Freshman 1	ENGL 1013	Comp I	As Indicated in Catalog	
Freshman 2	GNEG 1121	Introduction to Engineering II	GNEG 1111	
Freshman 2	MATH 2564	Calculus II	MATH 2554 (C or Better)	
Freshman 2	XXXX XXX4	Freshman Science Elective ¹	As Indicated in Catalog	
Freshman 2	XXXX XXX3	History/Government Elective	As Indicated in Catalog	
Freshman 2	ENGL 1023	Technical Composition II	As Indicated in Catalog	
Sophomore Year				
Sophomore 1	ELEG 2104	Electric Circuits I w/ Lab	MATH 2564	ELEG 2104L, MATH 2564
Sophomore 1	ELEG 2904	Digital Design w/ Lab	Engineering Major	ELEG 2904L
Sophomore 1	MATH 2584	Differential Equations	MATH 2564 (C or Better)	MATH 2564 (C or Better)
Sophomore 1	XXXX XXX4	Sophomore Science Elective ²	As Indicated in Catalog	
Sophomore 2	CSCE 2004	Programming Foundations I	MATH 2554 or CSCE 2013	Lab Component
Sophomore 2	ELEG 2114	Electric Circuits II w/ Lab	ELEG 2104L, MATH 2584	ELEG 2114L, MATH 2584
Sophomore 2	MATH 2574	Calculus III	MATH 2564 (C or Better)	
Sophomore 2	XXXX XXX3	Humanities Elective (From Univ/State Core List)	As Indicated in Catalog	
Junior Year				
Junior 1	ELEG 3124	System and Signal Analysis w/ Lab	ELEG 2114	ELEG 3124L
Junior 1	ELEG 3214	Electronics I w/ Lab	ELEG 2114, PHYS 2074, MATH 2574	ELEG 3214L
Junior 1	ELEG 3704	Applied Electromagnetics w/ Lab	ELEG 2114, PHYS 2074, MATH 2574	ELEG 3704L, PHYS 2074, MATH 2574
Junior 1	ELEG 3924	Microprocessor System Design w/ Lab		ELEG 2904, ELEG 3924L
Junior 2	ELEG 3224	Electronics II w/ Lab	ELEG 3214, MATH 2584	ELEG 3224L
Junior 2	ELEG 3304	Energy Systems w/ Lab	ELEG 2114	ELEG 3304L
Junior 2	ELEG 3143	Probability and Stochastic Processes	ELEG 3124	
Junior 2	XXXX XXX3	Social Science Elective (From Univ/State Core List)	As Indicated in Catalog	
Junior 2	XXXX XXX3	Math/Science/Technical Elective ³	As Indicated in Catalog	
Senior Year				
Senior 1	ELEG 4061	EE Design I	ELEG 3224, 3924	
Senior 1	ELEG XXX3	ELEG Technical Elective ⁵	As Indicated in Catalog	
Senior 1	ELEG XXX3	ELEG Technical Elective ⁵	As Indicated in Catalog	
Senior 1	XXXX XXX3	Engineering Science/Technical Elective ⁴	As Indicated in Catalog	
Senior 1	ECON XXX3	ECON 2013, ECON 2023, or ECON 2143	As Indicated in Catalog	
Senior 1	XXXX XXX3	Fine Arts Elective (From Univ/State Core List)	As Indicated in Catalog	
Senior 2	ELEG 4073	EE Design II	ELEG 4061	
Senior 2	ELEG XXX3	ELEG Technical Elective ⁵	As Indicated in Catalog	
Senior 2	XXXX XXX3	Technical Elective	As Indicated in Catalog	
Senior 2	XXXX XXX3	Technical Elective	As Indicated in Catalog	
Senior 2	XXXX XXX3	Social Science Elective (From Univ/State Core List)	As Indicated in Catalog	

¹ Freshman Science Elective – CHEM 1133/1131L Chemistry for Engineers II or PHYS 2074 University Physics II

² Sophomore Science Elective – If CHEM 1133/1131L Chemistry for Engineers II was taken for Freshman Science Elective, then PHYS 2074 University Physics II; otherwise, if PHYS 2074 University Physics II was taken for Freshman Science Elective, then CHEM 1133/1131L Chemistry for Engineers II, BIOL 1543/1541L Principles of Biology, or BIOL 2213/2211L Human Physiology, PHYS 2094 University Physics III

³ Math/Science/Technical Elective: Approved Math/Science Elective or another Technical Elective

⁴ Engineering Science/Technical Elective: May include MEEG 2023 – Introductory Mechanics, MEEG 2303 – Introduction to Materials, MEEG 2403 – Thermodynamics, or another Technical Elective, CHEG 2313 -- Thermodynamics of Single-Component Systems

⁵ For students pursuing a dual degree in CSCE and ELEG CSCE 4114, CSCE 4613, CSCE 4233 4233 are approved ELEG Technical Electives: MEEG 2303

Advising Form

NAME	STUDENT ID NUMBER
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FRESHMAN YEAR											
Pre-Req	Co-Req	Fall Semester	15	Sem	GR	Pre-Req	Co-Req	Spring Semester	15	Sem	GR
		GNEG 1111 Intro to Engineering I	1			GNEG 1111		GNEG 1121 Intro to Engineering II	1		
	PHYS 2054	MATH 2554 Calculus I	4			MATH 2554	PHYS 2074 ELEG 2104	MATH 2564 Calculus II	4		
		CHEM 1113 Chemistry for Engineers	3					History/Political Science Elective	3		
	MATH 2554	PHYS 2054 University Physics I	4			PHYS 2054	MATH 2564	PHYS 2074 University Physics II	3		
		ENGL 1013 Composition I	3			ENGL 1013		ENGL 1023 Composition II	1		

SOPHOMORE YEAR											
Pre-Req	Co-Req	Fall Semester	16	Sem	GR	Pre-Req	Co-Req	Spring Semester	15	Sem	GR
	MATH 2564	ELEG 2104 Electric Circuits (With Lab)	4			MATH 2554		CSCE 2004 Programming Foundations I	4		
		ELEG 2904 Digital Design (With Lab)	4			ELEG 2104	MATH 2574 MATH 2584	ELEG 2114 Electric Circuits II (With Lab)	4		
MATH 2564	ELEG 2114	MATH 2584 Differential Equations	4			MATH 2564	ELEG 2114	MATH 2574 Calculus III	4		
		Sophomore Science Elective Class	3					Lower Level Humanities Elective	3		
		Sophomore Science Elective Lab	1								

JUNIOR YEAR											
Pre-Req	Co-Req	Fall Semester	16	Sem	GR	Pre-Req	Co-Req	Spring Semester	17	Sem	GR
ELEG 2114		ELEG 3124 System & Signal Analysis (With Lab)	4					Math/Science/Technical Elective	3		
PHYS 2074 ELEG 2114 MATH 2574		ELEG 3214 Electronics I (With Lab)	4			ELEG 3214 MATH 2584		ELEG 3224 Electronics II (With Lab)	4		
	PHYS 2074 MATH 2574	ELEG 3704 Applied Electromagnetics (With Lab)	4			ELEG 2114		ELEG 3304 Energy Systems (With Lab)	4		
ELEG 2904		ELEG 3924 Microprocessor System Design (With Lab)	4			ELEG 3124		ELEG 3143 Probability & Stochastic Processes	3		
								Lower Level Social Science Elective	3		

SENIOR YEAR											
Pre-Req	Co-Req	Fall Semester	16	Sem	GR	Pre-Req	Co-Req	Spring Semester	15	Sem	GR
ELEG 3224 ELEG 3924		ELEG 4061 Electrical Engineering Design I	1			ELEG 4061		ELEG 4073 Electrical Engineering Design II	3		
		ELEG Technical Elective	3					ELEG Technical Elective	3		
		ELEG Technical Elective	3					Technical Elective*	3		
		Engineering Science/Technical Elective	3					Technical Elective*	3		
		Economics Elective	3					Lower Level Social Science Elective	3		
		Lower Level Fine Arts Elective	3								

NOTES

Faculty Signature: _____ Date: _____

Student Signature: _____ Date: _____

The above form is designed so that students and advisors can keep record of the courses they have taken, the grades received, and whether the pre- and co-requisites have been met. An interactive version is available at the Electrical Engineering web site, by visiting www.eleg.uark.edu, and then by clicking on "Current Students" on the left side of the page. It is listed as an Excel spreadsheet. Or, the student can simply visit <http://www.eleg.uark.edu/1828.php>.

NOTES FOR 2014-2015 ELECTRICAL ENGINEERING UNDERGRADUATE CURRICULUM

GPA REQUIREMENTS

All students must have at least a 2.0 grade-point average on: (i) all courses in Electrical Engineering, (ii) all engineering courses and (iii) all work presented for the degree. No more than 8 hours the **coursework taken at UA-Fayetteville** and presented for the degree can be “D” grades.

TECHNICAL COMPOSITION

ENGL 1023, Composition II, has some sections addressing **technical** composition. Therefore, the EE faculty highly recommends all EE students, including transfer students, to enroll in the “technical” sections, if possible.

COMMON FRESHMAN YEAR

Please refer to <http://freshmanengineering.uark.edu/> for a description of the common freshman year. Students are encouraged to take both PHYS 2054 – University Physics I and PHYS 2074 – University Physics II in their freshman year, if possible.

SOPHOMORE SCIENCE ELECTIVE

PHYS 2074 – University Physics II if not taken as a Freshman Science Elective, otherwise, one of the following courses:

CHEM 1133 and CHEM 1131L, University Chemistry for Engineers II
BIOL 1543 and 1541L, Principles of Biology
BIOL 2213 and 2211L, Human Physiology
PHYS 2094, University Physics III

ELEG TECHNICAL ELECTIVES

- * ELEG 4000 or ELEG 5000 level courses
- * Not more than 6 hours may be ELEG 488V or ELEG 489V courses
- * For students pursuing a dual degree in CSCE and ELEG CSCE 4114, CSCE 4613, CSCE 4233 are approved ELEG Technical Electives.

TECHNICAL ELECTIVES

- * 3000 or above level courses in Math, Engineering, or the sciences after the approval of an ELEG advisor; history courses in the Math and the sciences (e.g., MATH 3133) are not eligible for technical elective credit.
- * CSCE 2014, Programming 2, and CSCE 2214, Computer Organization, are allowable non-ELEG technical electives.
- * Students who have (1) Talked to the departmental co-op coordinator, Dr. Randy Brown, about the intention of taking three GNEG 3811 courses for 3 hours of non-ELEG technical electives, and (2) the grades in these courses were A or B, may get credit for three hours of non-ELEG technical electives. Please consult the department regarding this if you have any further questions.
- * Students cannot use ELEG 3903, ELEG 3913, or ELEG 3933 to meet this requirement.

MATH/SCIENCE/ TECHNICAL ELECTIVES

BIOL 1543 & 1541L, Principles of Biology
 BIOL 2213 & 2211L, Human Physiology
 CHEM 1133 & 1131L, University Chem for Engineers II
 CHEM 3504, Physical Chemistry I
 CHEM 3603, Organic Chemistry I
 MATH 3083, Linear Algebra
 Component MATH 3423, Advanced Applied Math
 MATH 4443, Complex Variable for Appl.
 PHYS 3133, Analytical Mechanics
 PHYS 3544, Optics
 PHYS 3614, Modern Physics
 STAT 4003 Statistical Methods

ENGINEERING SCIENCE/ TECHNICAL ELECTIVES

MEEG 2703, Computer Methods in ME
 MEEG 2023 Introduction to Mechanics
 MEEG 2303 Introduction to Materials
 MEEG 2403 Thermodynamics
 CHEG 2313 -- Thermodynamics of Single-Systems

ELEG HUMANITIES/ SOCIAL SCIENCE ELECTIVES

Select **one course** from U.S. history, fine arts, humanities and economics for a total of 12 credit hours. Select **two courses** from the social sciences for a total of 6 credit hours. You must select from two different fields of study.

SELECT ONE	SELECT ONE	SELECT ONE	SELECT ONE	SELECT TWO
<u>U.S. HISTORY</u>	<u>FINE ARTS</u>	<u>HUMANITIES</u>	<u>ECONOMICS</u>	<u>SOCIAL SCIENCES</u>
HIST 2003 HIST 2013 PLSC 2003	ARCH 1003 ARHS 1003 COMM 1003 DANC 1003 DRAM 1003 LARC 1003 MLIT 1003 MLIT 1013	ANY INTERMEDIATE FOREIGN LANGUAGE* ARCH 1013 CLST 1003 CLST 1013 COMM 1233 HUMN 1124H HUMN 2003 HUMN 2124H PHIL 2003 PHIL 2103 PHIL 2203 PHIL 3103 WLIT 1113 WLIT 1123	ECON 2013 ECON 2023 ECON 2143	AGEC 1103 AGEC 2103 ANTH 1023 ECON 2013 ECON 2023 ECON 2143 GEOG 1123 GEOG 2003 HESC 1403 HESC 2413 HIST 1113 HIST 1123 HIST 2003 HIST 2013 HUMN 1114H HUMN 2114H PLSC 2003 PLSC 2013 PLSC 2203 PSYC 2003 RESM 2853 RSOC 2603 SOC 2013 SOC 2033

*Any 2003 Language Course

ELECTRICAL ENGINEERING HONORS PROGRAM

To graduate with Honors in Electrical Engineering, a student must be a member of the Honors College, have a minimum cumulative GPA of 3.50, and complete a **minimum of 12 hours of honors credit** of which at least **6 hours must be Electrical Engineering** courses which include the following courses:

ELEG 4061H – Honors Electrical Engineering Design I
ELEG 4073H – Honors Electrical Engineering Design II
ELEG 400VH – Senior Thesis

Electrical Engineering Honors Courses

ELEG 3XX3H: Honors section of ELEG required junior courses.

ELEG 4061H: Electrical Engineering Design I

Design and application in electrical engineering.

ELEG 4073H: Electrical Engineering Design II

Design and application in electrical engineering.

ELEG 400VH: Honors Senior Thesis ELEG 488VH: Honors Special Problem

Individual study and research on a topic mutually agreeable to the student and a faculty member.

ELEG 4XX3H: ELEG technical elective (Honors section)

Several ELEG technical electives have an Honors section. Please check the offering of these Honors Sections for a particular semester.

ELEG 5XXX: Any graduate level course

ELEG 3083H: Honors Colloquium

Special topics and issues in Electrical Engineering

ELEG 388VH: Special Problems

Individual study and research on a topic mutually agreeable to the student and faculty member.

See <http://www.eleg.uark.edu/4797.php> for more information.

The EE Curriculum and Medical School

This section provides some general guidelines for those students interested in continuing into Medical School.

Different medical schools have different requirements. Most of UA CoE graduates apply to UAMS in Little Rock whose catalog is found at: <http://www.uams.edu/com/comcat/2009-2010-COMCAT-PDF-FILES/2009-2010u0-med-app.pdf> where their pre-matriculation requirements are listed. In general, it is required to have:

- 2 semesters of Calculus: EE curriculum has 4 semesters of MATH courses
- 2 semesters of Physics: EE curriculum has 2 semesters of PHYS courses
- 2 semesters of Chemistry: EE curriculum requires CHEM 1103/1101L plus CHEM 1123/1121L can be taken as a Sophomore Science Elective or Math/Science Elective
- 2 semesters of Organic Chemistry: CHEM 3603 and CHEM 3613 can be taken as non-EE Technical Electives
- 2 semesters of Biological Sciences: BIOL 1543/1541L taken as a Sophomore Science Elective or Math/Science Elective plus BIOL 3xxx taken as Engineering Science/Technical Elective
- 2 semesters of English: EE requires 3 semesters; however, note that UAMS will accept regular credit (taking the class on campus) or AP-- but not CLEP, exemptions, correspondence courses, etc. This restriction can cause trouble with students who exempt ENGL comp due to high ACT. They will need to make sure to have 2 courses from ENGL on their transcript.

Additional (advanced) courses are suggested but not required. Additional biology often helps the student with their MCAT tests which weigh heavily on med school admissions decisions. Students should try to take 1 or 2 of these courses when they can (maybe summer), hopefully prior to the last part of their junior year when the MCAT is taken. Recommended courses include anatomy, physiology, microbiology, and/or cell biology, which are basic biology courses that would help students prepare.

FERPA HOLD

The purpose of this section is to make you aware of an unwanted effect of the FERPA (Family Educational Rights and Privacy Act of 1974) hold. FERPA relates to privacy and some of you have "clicked" on the FERPA box in ISIS so we cannot release information about you. By doing this, you get the following unwanted effects:

- Your name cannot be listed in the Dean's list. You get a letter stating that you are part of the Dean's list, but your name is now shown in any publication of the list.
- Upon graduation, your name cannot be included in the "Senior Walk." So if you come back to campus and your name is not there, one potential reason is that you have a FERPA hold.
- Your name cannot be listed in the Commencement Programs.
- Other unwanted effects that we may not have yet identified.

Therefore, if you want your name in the Senior Walk and printed in the Commencement programs, please, remove your FERPA hold during your last semester.

We want to let you know independently of whether you have a FERPA hold or not, the department does not release any information to third parties without your consent. This is normally done when we have an employer seeking graduates.

NOTE: The hardcopy of the Undergraduate Handbook finishes here. Please, refer to the website www.eleg.uark.edu, and click on “Current Students” and “Research” for additional information on:

- Humanities/Social Science/Economics/Fine Arts Electives
- Departmental Facilities
- Advising
- Registration
- Tutoring Services
- Activities and Organizations
- Career Services
- Electrical Engineering Faculty Research Specialty Areas
- Scholarships