



MAJOR CHOSEN: ELECTRICAL ENGINEERING

I. A BRIEF DESCRIPTION OF THE MAJOR

The major in Electrical Engineering prepares students for a career in design and analysis of electrical devices, circuits, and systems. It encompasses a thorough study of electrical fundamentals, solid state devices, integrated circuits, microprocessors, and control system design. It prepares the student for an entry-level job in electrical engineering or for further graduate study. A full engineering degree, it includes 21 hours of math, 9 hours of physics, and a minimum of 44 hours of electrical engineering and related courses. Several courses include a design component and all students are involved in large individual and group design projects. Students are encouraged to pursue summer internships and research opportunities.

II. COURSE HIGHLIGHTS

Here are some of the courses you will especially enjoy:

Basic Circuit Analysis This is the foundational class in which you will study DC, AC, and transient circuit analysis using a full range of calculus based techniques including Laplace transforms. In addition to lectures, you will have a weekly laboratory session. You will also learn to use PSpice and Electronic Workbench, two standard circuit-analysis computer programs.

Digital Electronics From simple logic gates to complex programmable chips, this class is the foundation for everything digital.

Linear Integrated Circuits Everything seems to be going digital but the real world is still analog. This advanced analog class teaches you how to use op-amps, the building block for serious analog circuitry.

Linear Control Systems Use advanced mathematical methods to design control systems that are stable, predictable, and have optimum response.

Design Problems To finish off your degree, you must design and build a complex electronic device from start to finish, including manufacturing your own circuit board.



III. A TYPICAL YEARLY COURSE SEQUENCE

This is a suggested program of study for you. Other refinements to your program can be made when you consult your faculty advisor at the time of your enrollment.

You will notice that some courses are listed as electives. These electives give you the opportunity to tailor your program by selecting courses you would like to take for your own personal enjoyment.

Freshman

Orientation	1	Orientation	1
Engineering Graphics I	1	Digital Electronics.....	3
Transcendental Functions*	3	Calculus I	3
History of Civilization	3	History of Civilization.....	3
Old Testament Messages	1	New Testament Messages	1
General Psychology	3	Fundamentals of Speech.....	3
English Composition.....	3	English Composition.....	<u>3</u>
Social Studies Elective.....	<u>3</u>	Total	17
Total	18		

Sophomore

Basic Circuit Analysis I	3	Basic Circuit Analysis II	3
General Physics I	4	General Physics II	5
Calculus II.....	3	Calculus III	3
Sophomore Bible Elective.....	1	Sophomore Bible Elective	1
English Literature.....	3	Psychology Elective	<u>3</u>
Social Studies Elective.....	<u>1</u>	Total	15
Total	17		

Junior

Solid State Applications I	3	Linear Integrated Circuits	3
Energy Conversion.....	3	Microprocessor Interfacing	3
Calculus IV	3	Christian Family Forum	1
Computer Systems	3	Bible Doctrines	3
Bible Doctrines	<u>3</u>	Minor or Elective	<u>4</u>
Total	15	Total	14

Senior

Embedded Systems	3	Design Problems	1
Linear System Analysis	3	Linear Control Systems	3
Electricity & Magnetism I	3	Electricity & Magnetism II	3
Elementary Linear Algebra	3	Differential Equations	3
Upper-Level Bible Elective	2	Oral Communication for the Professions	3
Minor or Electives.....	<u>2</u>	Upper-Level Bible Elective	2
Total	16	Minor or Electives	<u>1</u>
		Total	16

* Students with a math ACT score below 26 will be required to take a math placement test and may be required to take remedial math classes. If you are interested in electronics but do not want so much math and science, you may want to consider the Electronics and Computer Technology major instead.



IV. FACILITIES, EQUIPMENT, AND OPPORTUNITIES

In addition to classroom instruction, you will receive "hands on" experience in our laboratories. These include:

General electronics labs--Our labs are well equipped with all of the standard instruments including analog and digital oscilloscopes, power supplies and function generators, multimeters, computers, logic analyzers, in-circuit emulators, PLCs, and much more.

Digital Electronics Lab--In this laboratory you practice textbook theory by designing and building various digital circuits.

Microprocessor Interfacing Lab—Learn how to interface memory chips, parallel and serial ports, analog I/O, timers, and much more in this foundational computer hardware lab.

Embedded Systems Lab—A large team design project, often involving robotics, tests your understanding and teaches you how to work as part of an engineering team.

Design Contests are a great way to compare your skills to those of students at other schools. In recent years our students have built a robot for the Intelligent Ground Vehicle Competition (www.igvc.org), and in 2006 we achieved a top-five finish in this event.

Completely equipped computer laboratories are available for your use. There are many academic computer labs conveniently located all over campus, including a power-user lab for Computer Science, Engineering, and Electronics students. This lab is equipped with dual-monitor 1 GHz Pentium multimedia machines running Windows XP, in addition to Macintosh and LINUX machines. All students receive an email address and have high-speed filtered Internet access.

Chapel is a central feature of Bob Jones University. This 35-minute service is held every morning, Monday through Thursday. These services are a source of great inspiration to students. Four days a week the Chapel message is brought by the President or by selected speakers. Each Friday the Chapel period is devoted to the meetings of various literary societies.

The annual spring Bible Conference is one of the outstanding features of the University and Academy year. Your regular academic work will be suspended for the Conference, during which you will hear messages from outstanding Bible teachers, pastors, and evangelists.

The productions of the *University Classic Players* and *Opera Association* will enable you in four years to see several Shakespearean plays and grand operas performed on campus. Every year there are also frequent recitals and student performances in theater, speech, and music.

All students have opportunity to participate in the University's athletic program. Through a well-integrated program of intramural athletic competition, a very high percentage of student participation is possible. You will have the opportunity to compete in a wide variety of both team and individual sports including soccer, speedball, basketball, softball, track, volleyball, tennis, swimming, badminton, judo, table tennis, racquetball, archery, wrestling, and indoor soccer.



Davis Field House, with over 87,000 square feet and seating for 3,000 people, contains 4 full-sized courts; auxiliary courts; indoor and outdoor tracks; swimming pool; café; and a fitness center with fully-equipped exercise room, aerobic room, sauna, and whirlpool.

The Mack Library, with 90,000 square feet of floor space and seating for over 1,300 students, gives you access to 294,000 volumes, 1,100 current periodical subscriptions, and more than 17,000 music, speech, and language recordings. Mack Library offers access to over 65 electronic databases on the library web site. An interlibrary loan program is available through OCLC, a national database, for books not held in our library. Other prominent features include the Jerusalem Chamber, a replica of the room in Westminster Abbey in London in which work was done on the 1611 King James Bible, and the University Archives Room which displays materials about the Founder and history of the University.

If you are planning to live on campus, you will be glad to know that all of our residence halls are air-conditioned, have wall-to-wall carpeting, and have a phone in each room. You will be able to make long-distance calls directly from your room and have them automatically placed on your school bill. Computer network connectivity is available in all residence halls, as well.

All of our classrooms are air-conditioned, and there are awnings over the sidewalks to keep you dry when it is raining. The Dining Common serves 8,500 delicious meals a day, and the Snack Shop and Bookstore in the Student Center carry just about anything you'll need.

You will find the finest Christian young people in the country are your fellow students, and without trying too hard, you may end up making a life-long friend!

V. ABOUT THE FACULTY

The professors in the electrical engineering department bring to the classroom a rich blend of thorough academic backgrounds, outstanding professional expertise, and extensive practical experience. Some have doctorates in electrical and computer engineering, while others have extensive industry background. As a student you will greatly benefit from this unique combination of theory, practice, and experience.

VI. CAREER OPPORTUNITIES AND PLACEMENT

Our Electrical Engineering program is designed to lead to entry level jobs or to further study in graduate school. Our students have been accepted at numerous graduate schools around the country. Many career paths are available within the umbrella of electrical engineering. Visit the IEEE web site at www.ieee.org for information about careers in electrical engineering.

Some engineers are required to obtain registration with their state government as registered professional engineers. For many electrical engineering jobs, particularly in electronics and the computer industry, this is not required, but for some jobs it is. Requirements vary from state to state, but in South Carolina our graduates can apply to take the standard engineering exam and begin the process to become a professional engineer. The requirements involve several years of work experience and then a second exam as well, so an engineering degree and the standard exam are just the beginning. Our students are well qualified to pursue this career track if they chose.



VII. BJU: AN AFFORDABLE EDUCATION

Enclosed is an expense sheet detailing the cost of attending Bob Jones University. When you compare our charges to those of other private colleges, we think you will be pleasantly surprised. We believe we offer a student more value for his dollar than anyone else in America. And to help you see how affordable "the Opportunity Place" can be for you, we have enclosed a financial aid brochure that you can use to evaluate your own situation. Your Admissions Counselor or the Director of Student Financial Aid would be happy to discuss this with you if you have any questions.

HOW TO TAKE THE NEXT STEP . . .

If you can see yourself in the career described in the profile, then a great opportunity awaits you at Bob Jones University. It is the opportunity for the premier Christian college experience in all the world. It is the opportunity for learning, for fun, and for developing new friendships. It is the opportunity to prepare for a lifetime of service for the Lord . . .

The Opportunity Place . . . God's Special Place for You.

For further information about all of the science and engineering options available at BJU, call your admissions counselor to arrange a phone call with one of the department's professors. Professors also welcome email questions. More information about the Physics and Engineering Department is also available on the department web page at www.bju.edu.