University of Baghdad

جامعة بغداد

First Cycle – Bachelor's degree (B.Sc.) – Electrical Engineering

بكالوريوس علوم - الهندسة الكهربائية

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1. Mission & Vision Statement

Vision Statement

Our vision is to be a top-notch Electrical Engineering program known for its excellent education, groundbreaking innovation, and positive impact on society. We aim to produce well-prepared graduates to tackle industry challenges and drive advancements that make a difference. By emphasizing academic excellence, research, and collaboration with industry, we strive to be leaders in technology and contribute to a better world

Mission Statement

Our Electrical Engineering program aims to provide students with a comprehensive education and prepare them for successful careers in the field. We prioritize teaching fundamental concepts and theories while emphasizing the development of practical skills and critical thinking abilities.

Through hands-on projects, laboratory experiences, and real-world applications, we foster the application of knowledge to solve complex engineering problems. We emphasize the importance of ethical behavior, professionalism, and effective communication skills, recognizing their significance in collaborating with others and contributing to society.

Our program promotes a culture of lifelong learning, ensuring students are prepared to adapt to emerging technologies and industry trends. We foster a continuous improvement mindset, enabling our graduates to remain at the forefront of the field and navigate future challenges.

Furthermore, we nurture leadership qualities and an entrepreneurial mindset among our students. We empower them to assume leadership roles, drive innovation, and make significant contributions to the field of electrical engineering.

Ultimately, our mission is to provide an enriching educational experience that imparts a solid foundation in electrical engineering, fosters personal and professional growth, and empowers graduates to make meaningful contributions to the field and society.

2.   Program Specification

Program code:	BSc-Elect.	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

The Bachelor of Science in Electrical Engineering program is designed to provide students with a comprehensive education in electrical engineering principles and applications. Through a combination of theoretical knowledge, practical skills, and hands-on experiences, students will develop the necessary expertise to design, analyze, and implement electrical systems in various industries.

Program Structure and Course Descriptions:

Semester 1:

- Mathematics I: Introduction to differential and integral calculus.
- Electronic Physics I: Fundamentals of semiconductor devices
- Fundamentals of Mechanical Eng.: Introduces the principles of Static, Dynamics, and Thermodynamics.
- Computer I: Introduction to office skills.
- English I: Development of English for international communication.
- AutoCad: Technical drawing using AutoCad software.
- Human Rights: Examine various human rights issues, such as civil liberties, social justice, and equality.

Semester 2:

- Fundamentals of Electrical Eng.: Fundamental principles for DC, AC, and Magnetic circuits.
- Arabic Language I: Introduces the fundamentals of Arabic language and aims to develop their reading and writing skills. The course covers pronunciation, vocabulary building, and basic grammar rules.
- Digital Techniques: Introduction to digital systems and logic gates.
- Electrical Eng. Labs. I: Covers experiments related to the fundamentals of the Electrical Engineering module
- Computer Programming: Programming languages and algorithmic problem solving.

Semester 3:

- Circuit Analysis: Fundamental principles and advanced techniques for analyzing electrical circuits.
- Mathematics II: Introduction to ordinary and partial differential equations.
- Electromagnetic fields: Study of electromagnetic fields and waves.
- Numerical Methods and Statistics: Introduction to numerical solutions to linear and nonlinear equations, integrals, and differential equations. Then the fundamentals of statistical analysis will be presented.
- Computer II: Introduction to office skills.
- Baath Party Crimes

Semester 4:

- Electronics I: Fundamentals of electronic devices and circuits.
- Electrical Machines I: Introduces the operation principles of DC machines, single-phase and three-phase transformers.
- Electrical Eng. Labs. II: Covers experiments related to the circuit analysis and Electronics I modules
- Microprocessor and Computer Interfacing: Introduces programming in assembly language, Matlab programming, and microcontroller interfacing
- English II: Development of English for international communication.
- Arabic Language II: Introduces the fundamentals of the Arabic language and aims to develop their reading and writing skills. The course covers pronunciation, vocabulary building, and basic grammar rules.

Semester 5:

- Engineering Analysis: presents analysis and processing of continuous and discrete-time signals.
- Electrical Machines II: Presents the principles of single-phase and three-phase induction motors and synchronous machines
- Advanced Microprocessor: Introduction to microprocessor-based systems and programming.
- Communication I: Principles and techniques of analog communication.
- Electrical Power I: Introduction to power generation, transmission, and distribution.
- Elective Course 1: Students can choose an elective course from various options.

Semester 6:

- Antenna and Wave Propagation: Introduces the principles of Antenna and Waveguides
- Electronics II: Advanced topics in electronic circuits and devices.
- Mathematical Modelling and Control Engineering I: Principles and methodologies for controlling dynamic systems based on classical control
- Electrical Eng. Labs. III: Covers experiments related to transformers and induction machines.
- Elective Course 2: Students can choose an elective course from various options.

Semester 7:

- Digital Signal Processing: Analysis and processing of digital signals.
- Engineering Project: Design and implementation of a comprehensive engineering project.
- Mathematical Modelling and Control Engineering II: Principles and methodologies for controlling dynamic systems based on modern control
- Power Electronics and Special Machines: Study of power electronic converters and specialized machines.
- Electrical Eng. Labs. IV: Covers experiments related to synchronous machines, advanced electronic circuits, engineering control, and power electronic converters.
- Elective Course 3: Students can choose an elective course from various options.

Semester 8:

- Communication II: Principles and techniques of digital communication.
- Engineering Project: Design and implementation of a comprehensive engineering project.
- Electrical Power II: Advanced topics in power systems analysis and design.
- Digital systems Design: Designing digital systems with advanced techniques
- Computer Networks: Introduces the principles of computer networking.
- Elective Course 3: Students can choose an elective course from various options.

Note: The elective courses may vary based on the specific curriculum and requirements of the educational institution offering the Electrical Engineering program.

3. Program Goals

1) Provide a comprehensive and well-rounded education in electrical engineering.
2) Foster innovation, research, and technological advancements in the field.
3) Develop graduates with strong ethical and professional conduct.
4) Cultivate adaptability and a mindset of lifelong learning.
5) Nurture leadership qualities and an entrepreneurial mindset.
6) Foster collaboration with industry for relevance and practicality.
7) Encourage graduates to make a positive societal impact.
8) Strive for academic excellence and continuous improvement.

4. Student Learning Outcomes

Student Learning Outcomes (SLOs) are the specific goals and expected achievements students strive for during their educational journey. In the Electrical Engineering program context, these outcomes reflect the knowledge, skills, and attributes that students are expected to develop as they progress through the curriculum. By focusing on these outcomes, we aim to ensure that

our students are well-prepared to succeed in electrical engineering and make meaningful contributions to society.

A. Master core electrical engineering concepts, theories, and principles.
B. Apply mathematical and scientific knowledge to analyze and solve complex engineering problems.
C. Design and implement electrical and electronic systems, circuits, and components.
D. Utilize advanced tools and techniques for modeling, simulation, and analysis of electrical systems.
E. Gain proficiency in utilizing laboratory equipment and conducting experiments to validate theoretical concepts.
F. Demonstrate ethical behavior and professionalism in engineering practice.
G. Effectively communicate technical information through oral presentations, written reports, and visual representations.
H. Collaborate productively in interdisciplinary teams to solve engineering problems.
I. Adapt to emerging technologies and engage in lifelong learning for professional development.
J. Exhibit leadership qualities, initiative, and an entrepreneurial mindset in engineering projects.
K. Conduct research, analyze data, and apply critical thinking skills to contribute to advancements in electrical engineering.
L. Consider social, environmental, and ethical implications in engineering design and decision-making processes.

5. Academic Staff

No.	Name	الأسم	General Specialty	Scientific Degree
1.	Saleem Mohammed Ridha Ali Taha	أ.د. سليم محمد رضا	Electronics	PhD., Prof.
2.	Tariq Zeyad Ismaail	أ.د. طارق زياد إسماعيل	Communications	PhD. Prof.
3.	Firas Mohammed Tuaimah	أ.د. فراس محمد طعيمة	Power	PhD. Prof.
4.	Ibraheem Kasim Ibraheem	أ.د. إبراهيم قاسم إبراهيم	Computer and Control	PhD. Assist. Prof.
5.	Nizar Hadi Abbas	أ.د. نزار هادي عباس	Computer and Control	PhD. Prof.
6.	Mohammed Nadhim Abbas	أ.د. محمد ناظم عباس	Electronics and Communications	PhD. Prof.
7.	Dheyaa Jasim Kadhim	أ.د. ضياء جاسم كاظم	Electronics and Communications	PhD. Prof.

8.	Muna Hadi Saleh	أ.م.د. منى هادي صالح	Computer and Control	PhD. Assist. Prof.
9.	Zainab Tawfeeq Baqer	أ.م.د. زينب توفيق باقر	Computer	PhD. Assist. Prof.
10.	Zainab Ibrahim Abbood	أ.م.د. زينب إبراهيم عبود	Electronics and Communications	M.Sc. Lecturer
11.	Hanan Mikhael D. Habbi	أ.م.د. حنان ميخائيل داود	Power and Machines	PhD. Assist Prof.
12.	Bassim. M. H. Jassim	أ.م.د. باسم محمد حسن جاسم	Power	PhD. Assist Prof.
13.	Saif Al deen Abdul Ameer	أ.م.د. سيف الدين عبد الامير	Electronics and Communications	M.Sc. Assist Prof.
14.	Rabab Hameed Shghedl Al-Darraji	م.د. رباب حميد شغيدل	English	PhD. Lecturer
15.	Taghreed M.Ali A.Awahhab Al-Rufaye	م. تغريد محمدعلي عبدالوهاب	Computer and Control	M.Sc. Lecturer
16.	Moretadha Jawad Kazim	م.د. مرتضى جواد كاظم	Electronics and Communications	PhD. Lecturer
17.	Ismael Shanan Desher	م.د. إسماعيل شنان دشر	Electronics and Communications	PhD. Lecturer
18.	Ali Tweij Shaheen	م. د. علي طويج شاهين	Electronics and Communications	PhD. Lecturer
19.	Aslan Sa. Jalal	م.د. اصلان صباح الدين	Machine Design	PhD. Lecturer
20.	Farooq Abdulghafoor Khaleel	م. د. فاروق عبدالغفور خليل	Laser Applications/ Electronics and	PhD. Lecturer
21.	Abdullah Mohammed Abdul-Hadi	م. د. عبدالله محمد عبد الهادي	Electrical and Computer Engineering	PhD. Lecturer
22.	Mohanad Azeez Joodi	م. مهند عزيز جودي	Computer and Control	M.Sc., Lecturer
23.	Ansam	م.د. انسام	Communications	PhD. Lecturer
24.	Rana Ali	م.د. رنا علي	Power System	PhD. Lecturer
25.	Nadia Qasim Mohammed	م. نادية قاسم محمد	Computer and Control	M.Sc. Lecturer
26.	Ahmed Muhsin Abdulmajeed	م. أحمد محسن عبدالمجيد	Power and Machines	M.Sc., Lecturer.
27.	Huda Manhee Abdulabbas	م. هدى منهي عبدالعباس	Power and Machines	M.Sc., Lecturer.
28.	Riyadh Kamil Chillab	م.م. رياض كامل جلاب	Power & Machine	M.Sc., Assist. Lect.

29.	Enas Hamd Ibraheem	م. م. إيناس حامد ابراهيم	Nuclear	M.Sc., Assist. Lect.
30.	Raed Fouad Abbas	م. م. رائد فؤاد عباس	Power and Machines	M.Sc., Assist. Lect.
31.	Farah Mahdi Ali	م. م. فرح مهدي علي	Computer and Control	M.Sc., Assist. Lect.
32.	Hafsa Amer Jassim	م.م. حفصة عامر جاسم	Electronics & Communications	M.Sc., Assist. Lect
33.	Ammar Falah Mahmood	م.م. عمار فلاح محمود	Power and Machines	M.Sc., Assist. Lect.
34.	Rawad Luay Khaleel	م.م. رواد لؤي خليل	Computer	M.Sc., Assist. Lect.
35.	Akram Noori Merzah	م.م. أكرم نوري مرزه	Power and Machines	M.Sc., Assist. Lect.
36.	Ahmed Abdul-Jabbar	م.م. احمد عبد الجبار	Control	M.Sc., Assist. Lect.
37.	Karrar Saad Faraj	م.م. كرار سعد فرج	Power System	M.Sc., Assist. Lect.
38.	Anmar Khawwam Ali	م.م. أنمار خوام علي	Power and Machines	M.Sc., Assist. Lect.
39.	Ali Abdulhussein Alsaadi	م.م. علي عبد الحسين	Power	M.Sc., Assist. Lect.
40.	Lubna	م.م. لبنى	Power	M.Sc., Assist. Lect.
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6.   Credits, Grading and GPA

Credits

University of Baghdad is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

   CGPA of a 4-year B.Sc. degree:

   CGPA = [(1st ᵐodule score x ECTS) + (2nd ᵐodule score x ECTS) + ……] / 240

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOB102	English language I	33	17	2	B	
EE108	Electronic Physics	108	92	8	C	
EE101	Mathematics I	108	67	7	S	
UOB103	Computer I	48	27	3	B	
EE104	Fundamentals of Mechanical Eng.	63	62	5	B	
UOB101	Democracy and Human Rights	33	17	2	B	
EE105	AutoCAD	48	27	3	S	
		441	309	30		

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
EE109	Digital Techniques	78	47	5	C	
EE107	Fundamentals of Electrical Eng.	123	102	9	C	
UOBE110	Arabic Language	33	17	2	B	
EE110	Computer Programing	63	37	4	S	
EE106	Electrical Eng. Labs. I	156	94	10	C	
		453	297	30		

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
EE207	Electrical Circuits	108	92	8	C	EE107
EE209	Mathematics II	108	67	7	S	EE101
EE204	Numerical Methods & Statistics	48	27	3	S	EE101
EE205	Electromagnetic Fields	93	82	7	C	EE101
UOB201	Computer II	48	27	3	C	UOB103
UOB202	Baath Party Crimes	33	17	2		
		438	312	30		

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
EE203	Electrical Machines I	78	72	6	C	EE207
EE206	Electronics I	78	72	6	C	EE108
UOB204	English language II	33	17	2	B	UOB102
EE201	Microprocessor and Computer Interfacing	63	62	5	C	EE110
EE208	Electrical Eng. Labs.II	174	51	9	C	EE106
UOBE203	Arabic Language II	33	17	2	B	UOB104
		459	291	30		

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
EE308	Advanced Microprocessor	78	47	5	C	EE201
EE305	Electrical Machines II	93	57	6	C	EE203
EE303	Engineering Analysis	78	47	5	C	EE209
EE304	Electrical Power I	78	47	5	C	EE207
EE306	Communications I	93	57	6	C	EE209
	Elective	33	42	3	E	
		453	297	30		

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
EE301	Antenna and Wave Propagation	93	57	6	C	EE205
EE302	Electronics II	93	57	6	C	EE206
EE309	Mathematical Modelling and Control Engineering I	63	37	4	C	EE209
EE307	Electrical Eng. Labs.III	186	114	12	C	EE208
	Elective	33	17	2	E	
		468	282	30		

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
EE408	Electrical Eng. Labs.IV	160	65	9	C	EE307
EE402	Engineering Project	51	24	3	C	
EE406	Power Electronics and Special Machines	78	72	6	C	EE305, EE302
EE409	Digital Signal Processing	48	27	3	C	EE303
EE401	Mathematical Modelling and Control Engineering II	78	72	6	C	EE309
	Elective	48	27	3	E	
		463	287	30		

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
	Elective	33	17	2	E	
EE402	Engineering Project	70.5	54.5	5	C	
EE404	Communications II	63	62	5	C	EE306
EE405	Electrical Power II	78	72	6	C	EE304
EE403	Digital systems Design	78	72	6	C	EE109
EE407	Computer Network	88.5	61.5	6	C	
		411	339	30		

8.   Contact

Program Manager:

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