Al-Balqa Applied University
Electrical Engineering Department

جامعة البلقاء التطبيقية
قسم الهندسة الكهربائية


Established 1997

# Curriculum For The Bachelor Degree In Electrical Engineering \ Communication and Software 2020

The curriculum for the B.S.c. degree in electrical engineering contains (**162**) credit hours distributed as follows:

| Course No. | Requirements | Credit Hours (Cr.H) |
|---|---|---|
| 1 | **University Requirements**<br>• Compulsory Requirements<br>• Elective Requirements | **24**<br>18<br>6 |
| 2 | **Faculty Requirements** | **32** |
| 3 | **Compulsory Department Requirements** | **47** |
| 4 | **Specialization Requirements**<br>• Compulsory Requirements<br>• Elective Requirements | **59**<br>50<br>9 |
| **Total** | | **162** |

**First**: University Requirement (**24 Cr .H.**)

**A**: Compulsory Requirements (**18 Cr.H.**):

| Course No. | Course | Cr. Hrs. | Weekly Hrs. | | Prerequisite |
|---|---|---|---|---|---|
| | | | Lec. | Lab. | |
| AAL101 | Applied Arabic Language | 3 | 3 | - | Arabic 99 OR passing Arabic Level Exam |
| AEL101 | Applied English Language (1) | 3 | 3 | - | English 99 OR passing English Level Exam |
| AEL102 | Applied English Language (2) | 3 | 3 | - | AEL101 |
| NE101 | National Education and University Behavior | 3 | 3 | - | - |
| 35001101 | Military Sciences | 3 | 3 | - | Passing 90 Cr. Hrs. |
| CS101 | Computer Skills and E-Learning | 1 | 1 | - | Computer Skills 99 OR passing Computer Skills Level Exam |
| IEC101 | Innovation, Entrepreneurship, and Creativity | 2 | 2 | - | - |
| **Total** | | **18** | **18** | **-** | |

**B:** Elective University Requirements: (**6 Cr.H.**)

The student is allowed to select (6 Cr.H.) from the university elective courses offered by faculties other than the faculty of college.

| Course No. | Course | Credit Hours |
|---|---|---|
| 36001101 | Communication Skills | 3 |
| 36002102 | Introduction to Psychology | 3 |
| 36003103 | Jordan Society | 3 |
| 36004104 | Sport for All | 3 |
| 36005105 | Islamic Culture | 3 |
| 36006110 | Modern Administrative Concepts and skills | 3 |
| 36009111 | Economic Concepts | 3 |
| 36007107 | Agriculture in Jordan | 3 |
| 36008108 | Environment and Society | 3 |
| 36012109 | History of the Rightly Guided Caliphs | 3 |
| 36009114 | Jerusalem (Palestinian issue) | 3 |
| 36009112 | Law, Media and Society | 3 |
| 36009109 | Islam and Life | 3 |
| 36009115 | Digital Community | 3 |

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|---|---|
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**Second**: Faculty Requirements: (**32 Cr .H.**)

| Course No. | Course Title | Cr.H. | Weekly Hours | | Prerequisite |
|---|---|---|---|---|---|
| | | | Lecture | Lab. | |
| 30202101 | Calculus 1 | 3 | 3 | – | -- |
| 30202102 | Calculus 2 | 3 | 3 | – | 30202101 |
| 30201101 | General Physics 1 | 3 | 3 | – | -- |
| 30201102 | General Physics 2 | 3 | 3 | – | 30201101 |
| 30201111 | General Physics 1 Lab. | 1 | – | 3 | *30201101 |
| 30206101 | General Chemistry 1 | 3 | 3 | - | -- |
| 30206102 | General Chemistry 1 Lab. | 1 | - | 3 | *30206101 |
| 30202203 | Ordinary Differential Equations (1) | 3 | 3 | - | 30202102 |
| BSE0201 | Programming for Engineers | 3 | 2 | 3 | CS101 |
| BSE0203 | Technical Writing & Professional Ethics | 3 | 3 | - | AEL102 |
| BSE0205 | Engineering Drawing | 2 | - | 6 | CS101 |
| BSE0102 | Engineering Workshop | 1 | - | 3 | -- |
| BSE0401 | Engineering Economy | 3 | 3 | - | 80 credit hrs. |
| **Total** | | **32** | **26** | **18** | |

* co-requisite

**Third**: Compulsory Department Requirements: (47 Cr .H.)

| Course No. | Course Title | Cr.H. | Weekly Hours | | Perquisites |
|---|---|---|---|---|---|
| | | | Lectures | Lab | |
| ELE 0211 | Electrical Circuits (1) | 3 | 3 | - | 30201102 |
| ELE 0212 | Electrical Circuits (2) | 3 | 3 | - | ELE 0211 |
| BSE 0202 | Statistics and Probabilities for Engineers | 3 | 3 | - | 30202101 |
| ELE 0213 | Digital Logic Design | 3 | 3 | - | BES 0201 |
| ELE 0214 | Electrical Circuits lab. | 1 | - | 3 | ELE 0212* |
| ELE 0205 | Linear algebra | 3 | 3 | - | 30202102 |
| ELE 0216 | Electronics (1) | 3 | 3 | - | ELE 0211 |
| ELE 0228 | Microprocessor Systems | 3 | 3 | - | ELE 0213 |
| ELE 0321 | Signals and Systems | 3 | 3 | - | BES 0211 |

| | | | | | |
|---|---|---|---|---|---|
| ELE 0322 | Communications and data transmission | 3 | 3 | - | ELE 0321+ ELE 0213+ ELE 0205 |
| ELE 0313 | Electronics (1) Lab. | 1 | - | 3 | ELE 0216 |
| ELE 0334 | Control Systems | 3 | 3 | - | ELE 0321 |
| ELE 0335 | Electrical Machines (1) | 3 | 3 | - | ELE 0212 |
| BES 0306 | Numerical Methods | 3 | 3 | - | 30202102 |
| ELE 0328 | Microprocessor systems Lab. | 1 | - | 3 | ELE 0228 |
| ELE 0431 | Control Systems Lab. | 1 | - | 3 | ELE 0334 |
| ELE 0442 | Training | 3 | - | 3 | Pass 115 Cr. Hrs** |
| ELE 0541 | Graduation Project (1) | 1 | - | 1 | Pass 120 Cr. Hrs |
| ELE 0542 | Graduation Project (2) | 3 | - | 3 | ELE 0541 |
| **Total** | | **47** | **36** | **19** | |

* co-requisite

** Field training after passing 115 credit hours of the plan, and the duration of field training is 280 practical hours, the student will be full-time for training in an institution related to the specialization, and the training period will be continuous.

Compulsory Specialization Requirements: (50 Cr .H.)

| Course No. | Course Title | Cr.H. | Weekly Hours | | Prerequisite |
|---|---|---|---|---|---|
| | | | Lecture | Lab. | |
| ELE 5251 | Object Oriented Programming | 3 | 2 | 3 | BSE 0201 |
| ELE 3272 | Data structure | 3 | 3 | - | ELE 5251 |
| ELE 5216 | Digital Logic Design lab. | 1 | - | 3 | ELE 0213 |
| ELE 3314 | General Electromagnetics | 3 | 3 | - | ELE 0205+ELE 0211 |
| ELE 4311 | Electronics (2) | 3 | 3 | - | ELE 0216 |
| ELE 4312 | Electronics lab. (2) | 1 | - | 3 | ELE 4311 |
| ELE 5361 | Computer Architecture and Organization | 3 | 3 | - | ELE 0228 |
| ELE 5362 | Operating systems | 3 | 3 | - | ELE 3272 |
| ELE 5354 | Data Base Systems | 3 | 3 | - | ELE 3272 |
| ELE 3427 | Communication and Data Transmission Lab. | 1 | - | 3 | ELE 0322 |
| ELE 4461 | Digital Communications | 3 | 3 | - | ELE 0322 |
| ELE 4462 | Digital Communications lab. | 1 | - | 3 | ELE 4461 |

| Course No. | Course Title | Cr.H. | Weekly Hours | | Prerequisite |
|---|---|---|---|---|---|
| | | | Lecture | Lab. | |
| ELE 4467 | Digital signal processing | 3 | 3 | - | ELE 4461* |
| ELE 5453 | Artificial Intelligence and Machine Learning | 3 | 3 | - | ELE 5251+BSE 0202 |
| ELE 6461 | Fundamentals of Computer Networks | 3 | 3 | - | ELE 4461* |
| ELE 6464 | Computer Networks Lab. | 1 | - | 3 | ELE 6461* |
| ELE 6466 | Network Protocols | 3 | 3 | - | ELE 6461 |
| ELE 3551 | Communication transmission systems and Optical communication | 3 | 3 | - | ELE 3314+ELE 0322 |
| ELE 6572 | Encryption and Network Security Systems | 3 | 3 | - | ELE 6461 |
| ELE 4567 | Communication circuits | 3 | 3 | - | ELE 4311+ELE 0322 |
| **Total** | | **50** | **44** | **18** | |

* co-requisite

Elective Specialization Requirements: (9 Cr.H.) to be selected from the following list:

| Course No. | Course Title | Cr.H. | Weekly Hours | | Prerequisite |
|---|---|---|---|---|---|
| | | | Lecture | Lab. | |
| ELE 3470 | Software Engineering | 3 | 3 | - | ELE 3272 |
| ELE 3471 | Programming in Electrical Engineering | 3 | 1 | 6 | ELE 0321 |
| ELE 3476 | Microcontrollers and Embedded Systems | 3 | 3 | - | ELE 5361+ELE 5362 |
| ELE 4454 | Optical Communications | 3 | 3 | - | ELE 4461* |
| ELE 3559 | Special Topics in Communication and Software Engineering | 3 | 3 | - | 90 Cr. Hrs. |
| ELE 4552 | Radar engineering | 3 | 3 | - | ELE 3314+ELE 0322 |
| ELE 4575 | Wireless and Mobile Communications | 3 | 3 | - | ELE 3314+ELE 4461 |
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