# Republic of Iraq

# Ministry of Higher Education & Scientific Research

## Supervision and Scientific Evaluation Directorate

**Quality Assurance and Academic Accreditation**

**Academic Program Specification Form for the Academic**

**University: Northern Technical University**

**College: Technical Engineering College - Kirkuk**

**Department: Electronics and Control Department**

**Date of Form Completion: 7/1/2024**

**Dean’s Name Dean’s Assistant for Head of Department**

**Date: / / Scientific Affairs Date: / /**

**Date: / / Signature**

**Signature Signature**

**Quality Assurance and University Performance Manager**

**Date: / /**

**Signature**

**TEMPLATE FOR PROGRAMME SPECIFICATION**

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| **HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW** |

**This program specification provides a concise summary of the main features of the program and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the program.**

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| Northern Technical University | 1. Teaching Institution
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| Technical Engineering College - Kirkuk | 1. University Department/Centre
 |
| Electronics and Control Engineering Department | 1. Program Title
 |
| BSc | 1. Title of Final Award
 |
| On site | 1. Modes of Attendance offered
 |
| ABET | 1. Accreditation
 |
| Insite visits | 1. Other external influences
 |
|  | 1. Date of production/revision of this specification
 |
| 1. Aims of the Program:
* Preparing and qualifying specialized engineers to meet the requirements of the labor market in the private and public sectors in electronic engineering and control through diversification in the methods of learning and teaching and training students to apply the acquired knowledge and skills to solve real problems.
* Providing distinguished academic programs in the field of electronic engineering and control engineering, both theoretical and practical, to comply with international standards of academic quality and meet the needs of the labor market.
* Encouraging and developing scientific research in the fields of electronic engineering and control in general and in the fields of artificial intelligence, robotics, digital control, computer networks, communications, and control.
* Preparing a stimulating environment for faculty members to develop their knowledge and educational and research skills.
* Building and developing partnership with the governmental and private sectors and the community with all its various institutions.
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| 10.Learning Outcomes, Teaching, Learning and Assessment Methods |
| A. Knowledge and Understanding • Clarifying the basic concepts of electronic and control systems and their applications in social and industrial fields. • Gaining the skill in handling problems and addressing them through electronic and control systems. • Acquisition of basic skills for the manufacture of electronic and control systems. • Gaining experience in computer industrial systems that are concerned with electronics and control. • Designing programmed home systems. • Manufacture of websites and databases for various engineering systems.  |
| B. Subject-specific skills• The ability to design simple and advanced programs in different programming languages and to control them or through them on electronic and control systems. • The ability to think and address issues according to their algorithms and methods of work. • Writing scientific reports, reading charts and analyzing digital data. |
|  Teaching and Learning Methods |
| • Explanation and clarification through lectures • The method of displaying scientific materials on projectors: data show, smart boards, plasma screens • Self-learning through homework and mini-projects within the lectures • laboratories • Graduation Projects • Scientific visits • Seminars held in the department • summer training |
|  Assessment methods  |
| • Quizzes• Homework - quarterly and final exams for theoretical and practical subjects • Small projects within the lesson • Interaction within the lecture-reports |
| C. Thinking Skills• Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. • Response: Follow up the student's interaction with the material displayed on the screen. • Attention: following up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to be presented. • Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion towards the presented topic and defend it. • Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so he has a stable level in the lesson and does not become lazy or fidgety. |
|  Teaching and Learning Methods |
| Active participation in the classroom is evidence of student commitment and responsibility. • On the date specified in submitting the assignments and research required of the student to submit them • The quarterly and final exams express commitment and cognitive and skill achievement |
|  Assessment methods  |
| • Homework. • Interaction within the lecture. Active participation in the classroom is evidence of student commitment and responsibility. Commitment On the date specified in submitting the assignments and research required of the student to submit them • The quarterly and final exams express commitment and cognitive and skill achievement |

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| D. General and Transferable Skills (other skills relevant to employability and personal development) • Develop the student's ability to deal with technical means • Develop the student's ability to deal with the Internet • Develop the student's ability to deal with multiple media • Develop the student's ability to dialogue and discussion. |
|  Teaching and Learning Methods |
| • Explanation and clarification through lectures • The method of displaying scientific materials on projectors: data show, smart boards, plasma screens • Self-learning through homework and mini-projects within the lectures • laboratories • Graduation Projects • Scientific visits. |
|  Assessment Methods  |
| • Short exams • Homework • Semester and final exams for theoretical and practical subjects • Small projects within the lesson • Interaction within the lecture • Reports |
| 1. Program Structure

First Stage

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| --- | --- | --- | --- | --- | --- |
| **Semester** | **No.** | **Module Code** | **Module Name in English** | **اسم المادة الدراسية** | **ECTS** |
|
| **One** | 1 | NTU100 | Human rights and democracy | حقوق الانسان والديمقراطية | 2 |
| 2 | NTU101 | English Language | اللغة الانكليزية | 2 |
| 3 | TECK101 | Differentiation and Integration  | التفاضل والتكامل | 6 |
| 4 | ECE100 | Principles of Electrical Circuits | مبادئ الدوائر الكهربائية | 10 |
| 5 | TECK102 | Engineering Drawing | الرسم الهندسي | 5 |
| 6 | ECE101 | Mechanical engineering | الميكانيك الهندسي | 5 |
|   |   |   |   | 30 |

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| **Semester** | **No.** | **Module Code** | **Module Name in English** | **اسم المادة الدراسية** | **ECTS** |
|
| **Two** | 1 | NTU102 | Computer Principles  | الحاسوب | 3 |
| 2 | ECE102 | Electronics | الالكترونيك | 8 |
| 3 | TECK103 | Workshops | الورش | 4 |
| 4 | TECK104 | Physics | الفيزياء | 5 |
| 5 | ECE103 | AC Electrical Circuits | دوائر التيار المتناوب | 8 |
| 6 | NTU103 | Arabic Language | اللغة العربية | 2 |
|   |   |   |   | 30 |

Second Stage

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| نوع المتطلب | اسم المقرر | عدد الساعات النظرية | عدد الساعات العملية | عدد الوحدات | الرمز |
| متطلبات الجامعة | باللغة العربية | باللغة الانكليزية |
| اخلاقيات المهنة | professional ethics | 2 |  | 2 | NTU201 |
| اللغة الإنكليزية 2 | English language 2 | 2 |  | 2 | NTU200 |
| متطلبات الكلية | الرياضيات 3 | Math 3 | 3 |  | 3 | TECK201 |
| الرياضيات 4 | Math 4 | 3 |  | 3 | TECK202 |
| الفيزياء | Physics | 2 |  | 2 | TECK203 |
| التدريب الصيفي 1 | Summer training 1 |  |  | 0 | TECK204 |
| متطلبات القسم | المجالات الكهرومغناطيسية1 | Electromagnetic fields 1 | 3 |  | 3 | ECE200 |
| الدوائر الالكترونية1 | Electronic circuits 1 | 2 | 2 | 3 | ECE201 |
| الالكترونيك الرقمي1 | Digital electronics 1 | 2 | 2 | 3 | ECE202 |
| منظومات القياس 1 | Measurement systems 1 | 2 | 2 | 3 | ECE203 |
| المجالات الكهرومغناطيسية2 | Electromagnetic fields 2 | 3 |  | 3 | ECE204 |
| الدوائر الالكترونية2 | Electronic circuits 2 | 2 | 2 | 3 | ECE205 |
| الالكترونيك الرقمي2 | Digital electronics 2 | 2 | 2 | 3 | ECE206 |
| منظومات القياس 2 | Measurement systems 2 | 2 | 2 | 3 | ECE207 |
| اختياري قسم | Dept. elective |  |  | 3 | ECE208 |
| لغة البرمجة  | programming language | 1 | 2 | 2 | ECE209 |
| المجموع | 29 | 14 | 41 |

Third Stage

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| نوع المتطلب | اسم المقرر | عدد الساعات النظرية | عدد الساعات العملية | عدد الوحدات | الرمز |
| باللغة العربية | باللغة الانكليزية |
| متطلبات الجامعة | اللغة الإنكليزية 3 | English language 3 | 2 |  | 2 | NTU300 |
| متطلبات الكلية | التحليلات الهندسية | Engineering analysis  | 3 |  | 3 | TECK300 |
| التحليلات العددية | Numerical Analysis | 2 | 2 | 3 | TECK301 |
| التدريب الصيفي 2 | Summer training 2 |  |  | 0 | TECK302 |
| متطلبات القسم | نظرية السيطرة 1 | Control theory 1 | 2 | 2 | 3 | ECE300 |
|  | معمارية الحاسوب | Computer architecture | 2 | 2 | 3 | ECE301 |
|  | الكترونيات القدرة 1 | Power electronics 1 | 2 | 2 | 3 | ECE302 |
|  | مبادئ الاتصالات | Communications principles | 2 | 2 | 3 | ECE303 |
|  | نظرية السيطرة 2 | Control theory 2 | 2 | 2 | 3 | ECE304 |
|  | المسيطرات الدقيقة | Microcontrollers | 2 | 2 | 3 | ECE305 |
|  | الكترونيات القدرة 2 | Power electronics 2 | 2 | 2 | 3 | ECE306 |
|  | اختياري قسم | Dept. elective |  |  | 3 | ECE307 |
|  | اختياري قسم | Dept. elective |  |  | 3 | ECE308 |
| المجموع | 22 | 14 | 35 |

Forth Stage

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| نوع المتطلب | اسم المادة | عدد الساعات النظرية | عدد الساعات العملية | عدد الوحدات | الرمز |
| باللغة العربية | باللغة الانكليزية |
| متطلبات الجامعة | منهجية البحث العلمي | Scientific Research Methodology | 2 |  | 2 | NTU410 |
| اللغة الإنكليزية 4 | English language 4 | 2 |  | 2 | NTU400 |
| متطلبات الكلية | مشروع التخرج 1 | Project 1 |  | 3 | 1 | TECK401 |
| مشروع التخرج 2 | Project 2 |  | 3 | 1 | TECK403 |
| ادارة المشاريع الهندسية | Eng. project management | 3 |  | 3 | TECK400 |
| الاقتصاد الهندسي | Engineering Economics | 2 |  | 2 | TECK402 |
| متطلبات القسم | شبكات الحاسوب | Computer networks | 2 | 2 | 3 | ECE400 |
| السيطرة الرقمية1 | Digital control 1 | 2 | 2 | 3 | ECE401 |
| السيطرة على منظومات القدرة1 | Control of power systems 1 | 2 | 2 | 3 | ECE402 |
| معالجة الاشارات الرقمية | Digital signal processing | 2 | 2 | 3 | ECE403 |
| السيطرة الرقمية2 | Digital control 2 | 2 | 2 | 3 | ECE404 |
| السيطرة على منظومات القدرة2 | Control of power systems 2 | 2 | 2 | 3 | ECE405 |
| نمذجة و محاكاة | Modeling and simulation | 2 | 2 | 3 | ECE406 |
| الاتمتة والروبوت | Robotics and Automations | 2 | 2 | 3 | ECE407 |
| اختياري قسم | Dept. elective |  |  | 3 | ECE408 |
| المجموع | 22 | 20 | 38 |

• Through academic lectures • Educational seminars at the department level • Educational seminars at the college level • The psychological counseling unit in the college • The Rehabilitation and Employment Unit at the College • Educational guidance in the department through professors who have a high ability to accommodate the student and his circumstances. |

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| 14. Admission criteria . |
| • Central Admission to Morning Studies • Direct application for evening studies according to the rate and competition |
| 15. Key sources of information about the program |
| • Websites of Iraqi and foreign universities • Workshops held by the Ministry of Higher Education  • The American Academic Accreditation Program ABETIEEE Computer Engineering Body of Knowledge  |