نموذج وصف البرنامج الأكاديمي

اسم الجامعة: تكريت

الكلية: الهندسة

القسم العلمي: هندسة الطاقة المستدامة

اسم البرنامج الأكاديمي أو المهني: بكالوريوس هندسة الطاقة المستدامة

اسم الشهادة النهائية: بكالوريوس علوم في هندسة الطاقة المستدامة

النظام الدراسي: فصول دراسية

تاريخ اعداد الوصف: 2025/9/1

تاريخ ملئ الملف: 2025/9/1

التوقيع

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التاريخ: ١٣ / ١٠ / ٢٠٢٥

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التاريخ: ١٣/١٠/٢٠٢٥

دقق الملف من قبل

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التاريخ: ١٣/١٠/٢٠٢٥

التوقيع:

١٢/١٠/٢٠٢٥

مصادقة السيد العميد

الاستاذ المساعد الدكتور

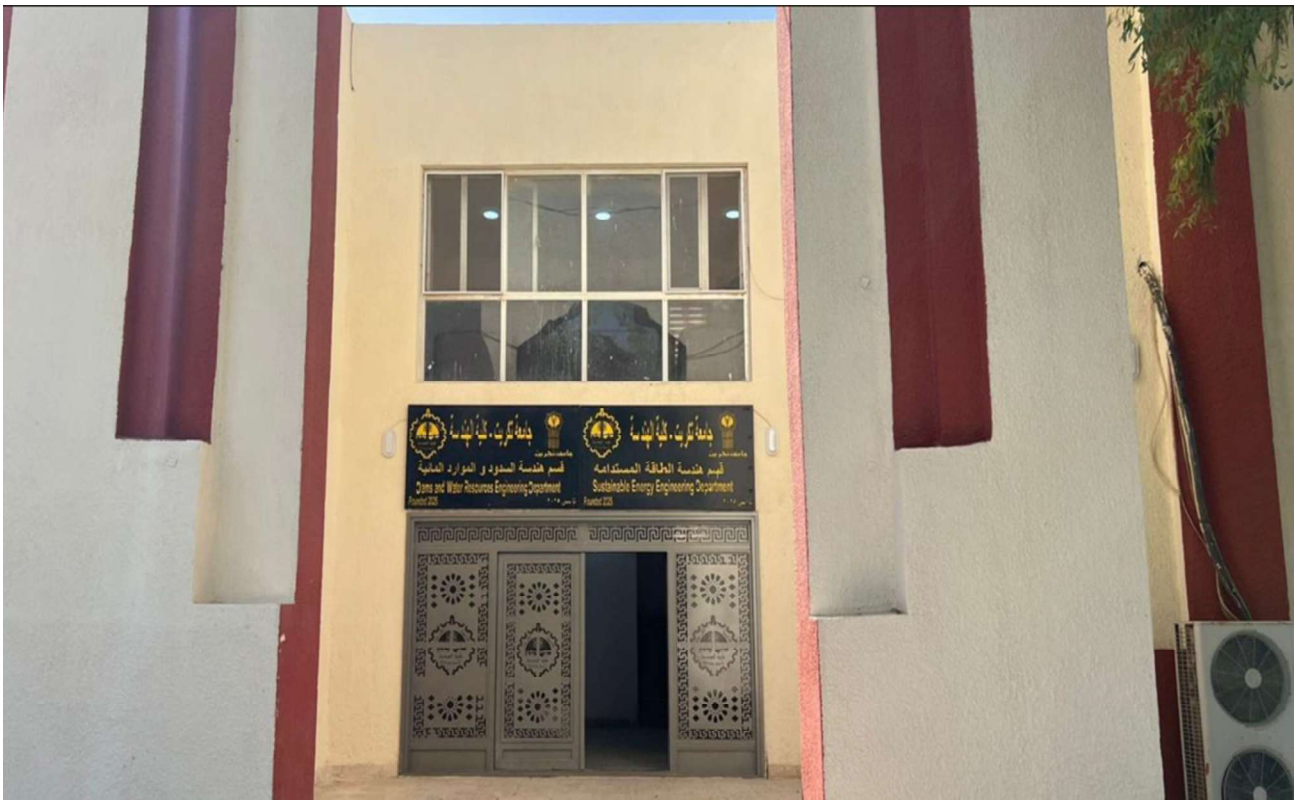
سعد رمضان احمد

عميد كلية الهندسة

Undergraduate Degree Program Catalogue | 2025-2026|

قِسْمُ هَنْدَسَةِ الطَّاقَةِ الْمُسْتَدَامَةِ
كُلِّيَّةُ الْهَنْدَسَةِ – جَامِعَةُ تِكْرِيتَ

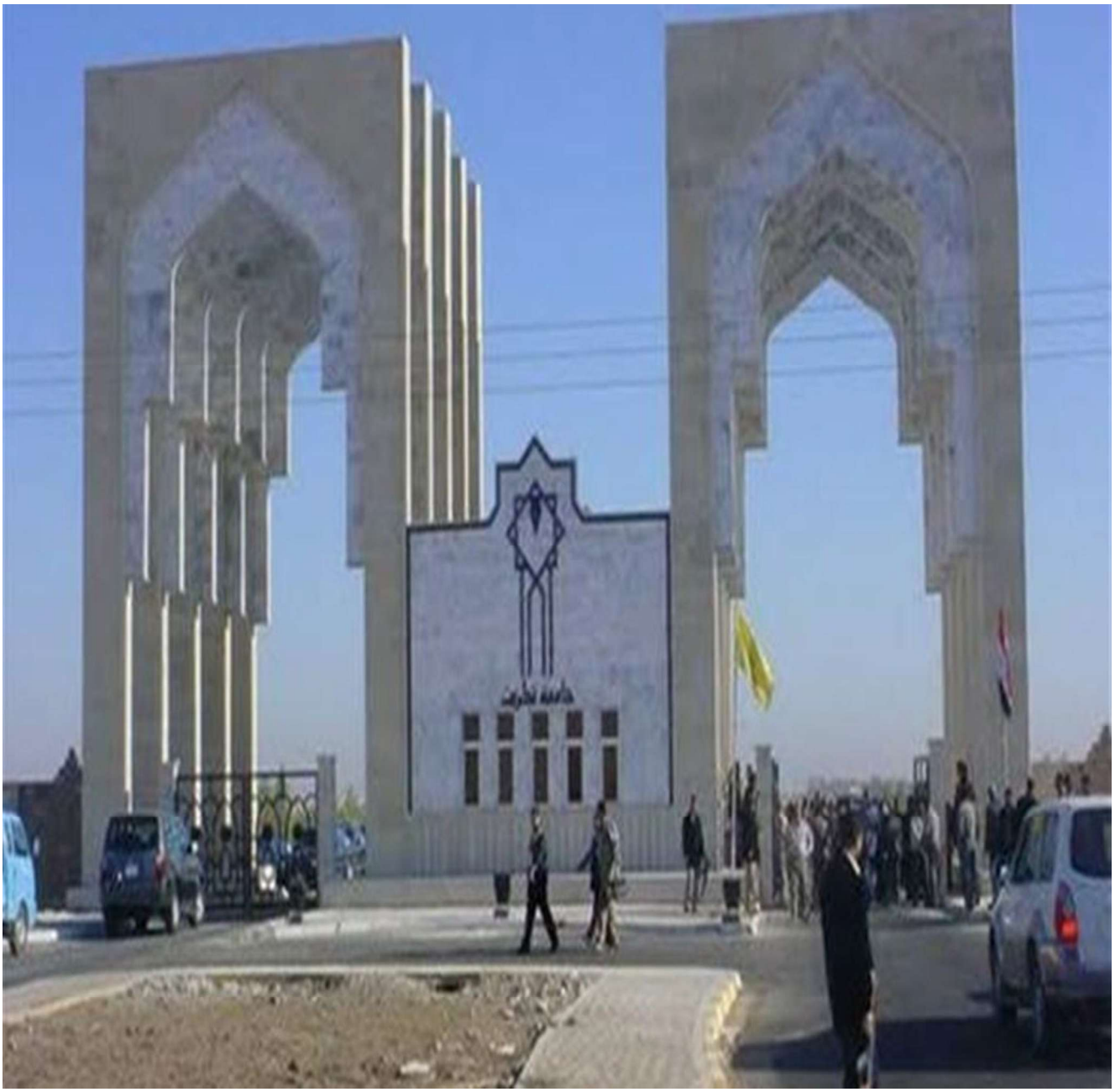
Sustainable Energy Engineering Department



bologna process 2025 - 2026

UNIVERSITY 0F TIKRIT

Bachelor of Science in Sustainable Energy Engineering



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1. Mission & Vision Statement

Vision Statement

The Department of Sustainable Energy Engineering strives to become a local and regional pioneer in engineering education and scientific research in the field of clean and renewable energy, a trusted consulting source for state institutions and the private sector on energy issues, and a key partner in developing innovative and sustainable solutions to environmental challenges. This will contribute to achieving sustainable development and enhancing the reputation of the College of Engineering both locally and globally.

Mission Statement

1. Instilling a culture of excellence in teaching and learning in the field of clean and renewable energy, to graduate engineers with scientific competence and practical skills.
2. To be the preferred choice for students seeking to study energy engineering in Iraq, through a stimulating academic environment and modern educational programs.
3. Attracting and encouraging the admission of international students to enrich academic diversity and enhance the regional and global standing of the department.
4. Activating applied scientific research in the field of sustainable energy, and supporting innovative ideas to create researchers and leaders who contribute to finding solutions to energy and environmental challenges.
5. Developing curricula and linking them to the latest global advancements to build students' character and enhance their leadership and innovative skills.
6. Establishing an effective network of graduates, employers, and governmental and industrial institutions, to serve as a support for the department and the college in achieving their academic and societal goals.

2. Program Specification

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

The Sustainable Energy Engineering Program at Tikrit University is designed to prepare highly qualified engineers with a global vision in the field of sustainable energy. It provides students with a solid academic foundation and the technical competencies required to address global challenges in sustainable energy development. The program emphasizes professionalism in engineering practice, integrating engineering principles with energy and sustainability sciences to foster innovation and leadership in engineering, technology, and sustainable development. The curriculum combines theoretical and practical aspects of renewable energy, energy efficiency, and environmental impact reduction. Students gain hands-on experience in designing, implementing, operating, and managing sustainable energy systems. The first and second levels cover the fundamentals and core subjects, preparing students for advanced research and specialization in the third and fourth levels of the program.

3. Program Objectives

The sustainable energy engineering program aims are:

1. Graduating competent engineers equipped with specialized scientific and practical skills in the fields of renewable and clean energy, and capable of competing in the local, regional, and global labor market.
2. Conducting academic and applied research in the fields of sustainable energy, energy efficiency, and storage and conversion technologies, in a way that contributes to providing practical solutions to environmental and energy challenges.
3. Contributing to the design, supervision, and consultancy of renewable energy projects and resource efficiency, in support of sustainable development in Iraq.
4. Maintaining continuous communication with government institutions and the private sector to identify energy-related problems and work on providing innovative solutions that integrate both theoretical and practical aspects.

5. Enhance the department's academic reputation through participation in global rankings and achieving academic accreditation for engineering programs in sustainable energy, while embedding a culture of total quality and continuous improvement.
6. Continuous development of curricula and postgraduate programs in line with scientific and technological advancements in clean energy, while promoting project-based learning and innovation.
7. Establishing research and academic partnerships with leading international universities and centers in the field of sustainable energy, to enhance the scientific and research level of the department.

Objectives of the educational program (Bachelor's) for the Department of Sustainable Energy Engineering - Tikrit University

1. Preparing competent engineers with the knowledge and technical and personal skills that enable them to work efficiently and effectively in the fields of sustainable and renewable energy.
2. Promoting social and ethical responsibility through participation in professional projects and practices that serve the community and protect the environment, while adhering to integrity and professional ethics.
3. Empowering graduates for continuous professional development through pursuing postgraduate studies or engaging in advanced research and career paths, with a commitment to lifelong learning to keep pace with scientific and technological advancements.

4. Student Learning Outcomes

The program strives to provide a personalized, inclusive, and world-class educational experience in alignment with the mission of Tikrit University. It equips graduates with the knowledge, skills, and values necessary to excel professionally, personally, and socially in the field of sustainable energy. The program prepares graduates to address complex global challenges, such as environmental pollution and emissions, through the application of sustainable energy principles and renewable clean energy technologies acquired during their academic journey at Tikrit University. Graduates are encouraged to actively engage in lifelong learning and continuous self-development by acquiring new skills in sustainable energy, pursuing advanced degrees, and participating in professional development opportunities that enrich both their personal and career paths. They also contribute to society and industry through collaboration, innovation, and sustainable progress that promotes global well-being.

Outcome 1

An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

Outcome 2

An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

Outcome 3

An ability to communicate effectively with a range of audiences oral and written.

Outcome 4

An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

Outcome 5

An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

Outcome 6

An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

Outcome 7

An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Tikrit University 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 student workloads, 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	100 - 90	Outstanding Performance
	B - Very Good	جدا جدا	80 - 89	Above average with some errors
	C – Good	جيد	79 - 70	Sound works 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	مقبول بقرار	(45 - 49)	More work required but credit awarded
	F – Fail	راسب	(0 – 44)	Considerable amount of work required

Note:

-NB 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 Grade Point Average (GPA)

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

GPA of 4-year B.Sc. degrees:

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

7. Curriculum/Modules

Semester 1 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
SE-ENG-101	**introduction to Sustainable Energy Engineering**	**87**	**63**	**6.00**	**C**	
MATH-101	**Calculus I**	**87**	**63**	**6.00**	**B**	
SE-ENG-102	**Physics**	**87**	**63**	**6.00**	**B**	
UOT003	**Computer Sciences**	**45**	**30**	**3.00**	**S**	
ENG-106	**Engineering Workshops**	**73**	**52**	**5.00**	**B**	
UOT002	**English Language I**	**31**	**19**	**2.00**	**S**	
UOT004	**Democracy and Human Rights**	**31**	**19**	**2.00**	**S**	

Semester 2 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MATH-102	**Calculus II**	**87**	**63**	**6.00**	**B**	**MATH-101**
ENG-102	**Engineering Mechanics**	**59**	**41**	**4.00**	**C**	
SE-ENG-103	**Basics of Electricity**	**73**	**52**	**5.00**	**C**	
SE-ENG-104	**Environment Pollution**	**73**	**52**	**5.00**	**C**	
ENG-101	**Engineering Drawing**	**45**	**30**	**3.00**	**C**	
SE-ENG-105	**Chemistry**	**73**	**52**	**5.00**	**B**	

UOT001	**Arabic Language I**	**31**	**19**	**2.00**	**S**	

Semester 3 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
SE-ENG-201	**Fluid Mechanics**	**73**	**52**	**5.00**	**C**	**MATH-101, MATH-102**
SE-ENG-202	**Thermodynamics I**	**73**	**52**	**5.00**	**C**	
SE-ENG-203	**Heat Transfer I**	**73**	**52**	**5.00**	**C**	
MATH-201	**Engineering Analysis I**	**87**	**63**	**6.00**	**B**	**MATH-101, MATH-102**
SE-ENG-204	**Engineering Materials**	**59**	**41**	**4.00**	**C**	
ENG-105	**Computer Programing**	**45**	**30**	**3.00**	**S**	
UOT0011	**Arabic Language II**	**31**	**19**	**2.00**	**S**	

Semester 4 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
SE-ENG-205	**Thermodynamic II**	**87**	**63**	**6.00**	**C**	**SE-ENG-202**
SE-ENG-206	**Strength of Materials**	**73**	**52**	**5.00**	**C**	**SE-ENG-102**
SE-ENG-207	**Economic Energy Management and Ethics**	**59**	**41**	**4.00**	**C**	
SE-ENG-208	**Heat Transfer II**	**73**	**52**	**5.00**	**C**	**SE-ENG-202 SE-ENG-210 SE-ENG-207**
MATH-202	**Engineering Analysis II**	**87**	**63**	**6.00**	**B**	**MATH-101 MATH-102 MATH-201**
UOT-021	**English Language II**	**31**	**19**	**2.00**	**S**	
UOT-109	**Crimes of Al Bath Regime**	**31**	**19**	**2.00**	**S**	

Semester 5 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
SE-ENG-301	**Thermal Solar Energy Systems**	**87**	**63**	**6.00**	**C**	**SE-ENG-210, SE-ENG-317**
MATH-301	**Numerical Methods**	**59**	**41**	**4.00**	**C**	**MATH-202**
SE-ENG-302	**Photovoltaic Energy Systems**	**73**	**52**	**5.00**	**C**	
SE-ENG-303	**Power Plant**	**59**	**41**	**4.00**	**C**	
SE-ENG-304	**Applied Electronics**	**87**	**63**	**6.00**	**C**	
SE-ENG-305	**Electric Machines**	**73**	**52**	**5.00**	**B**	

Semester 6 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
SE-ENG-306	**Turbomachinery**	**87**	**63**	**6.00**	**C**	
SE-ENG-307	**Principles of Combustion and Emissions**	**87**	**63**	**6.00**	**C**	
SE-ENG-308	**Energy Storage Systems**	**73**	**52**	**5.00**	**C**	
SE-ENG-309	**Computer Engineering Design**	**59**	**41**	**4.00**	**C**	
SE-ENG-310	**Geothermal Energy**	**73**	**52**	**5.00**	**C**	
MATH-302	**Engineering Statistics**	**59**	**41**	**4.00**	**B**	

Semester 7 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
SE-ENG-401	**Optimization**	**59**	**41**	**4.00**	**C**	
SE-ENG-402	**Principle of Fuel Cell Technology**	**87**	**63**	**6.00**	**C**	
SE-ENG-403	**Design of Sustainable Energy Systems**	**73**	**52**	**5.00**	**C**	

SE-ENG-404	**Mechanical Vibration**	**87**	**63**	**6.00**	**C**	
SE-ENG-405	**Automatic Control Systems**	**87**	**63**	**6.00**	**C**	**MATH-201 MATH-202**
ENG-401	**Graduation Project I**	**44**	**31**	**3.00**	**C**	

Semester 8 | 30 ECTS

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
SE-ENG-406	**Sustainable Building Design**	**59**	**41**	**4.00**	**C**	
SE-ENG-407	**Wind Energy Systems**	**87**	**63**	**6.00**	**C**	**SE-ENG-301**
SE-ENG-408	**Biomass Energy Systems**	**87**	**63**	**6.00**	**C**	
SE-ENG-409	**Intelligent Network Systems**	**87**	**63**	**6.00**	**C**	
SE-ENG-410	**Principles of Air Conditioning and Refrigeration**	**59**	**41**	**4.00**	**C**	
ENG-402	**Graduation Project II**	**44**	**56**	**4.00**	**C**	

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