Academic Program Description Form

University Name: Tikrit University
Faculty/Institute: ....
Scientific Department: ....
Academic or Professional Program Name: ....
Final Certificate Name: ....
Academic System: ....
Description Preparation Date:
File Completion Date:

Signature:	**Signature:**
Head of Department Name:	**Scientific Associate Name:**
Date:	**Date:**

The file is checked by:
Department of Quality Assurance and University Performance
Director of the Quality Assurance and University Performance Department:
Date:
Signature:

Approval of the Dean

1. Program Vision

Program vision is written here as stated in the university's catalogue and website.

2. Program Mission

Program mission is written here as stated in the university's catalogue and website.

3. Program Objectives

General statements describing what the program or institution intends to achieve.

4. Program Accreditation

Does the program have program accreditation? And from which agency?

5. Other external influences

Is there a sponsor for the program?

6 Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•
Institution Requirements				
College Requirements				

Department Requirements	**3**	**3**	**%100**	basic
Summer Training				
Other				

This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
2023/2024		Compiler1	30	30

8. Expected learning outcomes of the program

Knowledge

Learning Outcomes 1	Learning Outcomes Statement 1

Skills

Learning Outcomes 2	**Learning Outcomes Statement 2**
Learning Outcomes 3	**Learning Outcomes Statement 3**

Ethics

Learning Outcomes 4	**Learning Outcomes Statement 4**
Learning Outcomes 5	**Learning Outcomes Statement 5**

9. Teaching and Learning Strategies

Teaching and learning strategies and methods adopted in the implementation of the program in general.

10. Evaluation methods

Implemented at all stages of the program in general.

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	**Lecturer**

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full—time, and part—time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion

(Setting regulations related to enrollment in the college or institute, whether central admission or others)

13. The most important sources of information about the program

State briefly the sources of information about the program.

14. Program Development Plan

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
2023 – 2024		Compiler1	Basic	*	*	*	*	*	*	*	*	*	*	*	*

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name: Compiler1

2. Course Code:

3. Semester / Year: 2023 – 2024 First Semester

4. Description Preparation Date: **2024 / 9 / 10**

5. Available Attendance Forms: In attendance lectures

6. Number of Credit Hours (Total) / Number of Units (Total) : 60 / 3

7. Course administrator's name (mention all, if more than one name)

Name: Lecturer. Mohanad Dawood Salman
Email: mohanaddawoodalroomi@tu.edu.iq

Name: **Assistant Lecturer: Luay Ibrahim lalif**
Email: luay.i.khalaf@tu.edu.iq

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8. Course Objectives

Course Objectives	• **Student be able to Identify principles, techniques and tools for compilers of programming languages.** • **Student be able to design a compiler for a (simplified) (programming) language.** • **Student know how to use compiler construction tools, such as generators of scanners and parsing.** • **Student be familiar with assembly code and virtual machines.** • **Student be familiar with compiler analysis and optimization techniques.**

9. Teaching and Learning Strategies

Strategy	• **Using active learning: This type of learning includes engaging learners in active and interactive learning processes, such as discussions, practical experiments, educational games, and knowing the students' scientific level by evaluating their test results.** • **Technology-based learning: includes the use of technology in learning and teaching processes, such as the use of multimedia, educational applications, and**

	online educational platforms. Technology can help improve access to knowledge and enhance interaction and engagement.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	2 hours theoretical	Learn about programming languages. Learn about an introduction to compilers.	▪ Programing languages. ▪ Introduction to compiler.	• Presentation. • Discussion. • Brainstorming.	• Quiz. • H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to understand String characters in C++ and related functions.	▪ Array characters in C++ and related functions.	• Presentation. • Discussion.	• Testing students through practical performance. • H.W: assignments through electronic classroom.
2.	2 hours theoretical	Knowledge of Language-processing system and The Structure of Compiler The phases of compiler design.	▪ Language-processing system (Compilation). ▪ The Structure of Compiler ▪ The phases of compiler design.	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to understand String characters in C++ and related functions.	▪ String characters in C++ and related functions.	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
3.	2 hours theoretical	▪ Knowledge of Lexical analysis phase. And type of errors for Lexical analysis phase	▪ Lexical analysis phase. ▪ Type of errors for Lexical analysis phase	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write program for reading, copying and printing the	▪ The program for reading, copying and printing the	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments

		source program.	source program.		through electronic classroom.
4.	2 hours theoretical	▪ Knowledge of Syntax definition and context free grammar.	▪ Syntax definition. ▪ Context free grammar.	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write Program for deleting comments from the source program.	▪ Program for deleting comments from the source program.	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
5.	2 hours theoretical	Knowledge of Parsing tree & Leftmost and Rightmost derivations.	▪ Parsing tree & Leftmost and Rightmost derivations.	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write program to compress consecutive whitespace codes.	▪ A program to compress consecutive whitespace codes.	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
6.	2 hours theoretical	Knowledge of how to draw Transition diagram	▪ Transition diagram	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write The program for Transition diagram.	▪ The program for Transition diagram	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
7.	2 hours theoretical	Knowledge of syntax analysis phase.	▪ syntax analysis phase.	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write The program for cutting the source program into lexemes.	▪ The program for cutting the source program into lexemes.	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
8.	2 hours theoretical		▪ Theoretical exam(1)		
	2 hours Lap		▪ Practical exam(1)		

9.	2 hours theoretical	▪ Description of problems of compiler for syntax analysis phase. And regular expression and Regular Definitions	▪ Problems of compiler for syntax analysis phase. ▪ regular expression and Regular Definitions	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	▪ Students ability to write Program checks keywords.	▪ Program checks keywords. ▪	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
10.	2 hours theoretical	Knowledge of Top –down parsing how to method.	▪ Top –down parsing	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write Program checks identifiers.	▪ Program checks identifiers.	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
11.	2 hours theoretical	Knowledge of bottom up parsing how to method.	▪ bottom up parsing	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write Program check the number	▪ Program check the number	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
12.	2 hours theoretical	Identify the Ambiguous Grammars	▪ Ambiguous Grammars	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write Program checks mathematical operations.	▪ Program checks mathematical operations.	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
13.	2 hours theoretical	Identify the Ambiguous Grammars.	▪ Parser generators	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.

	2 hours Lap	▪ Students ability to write Program checks punctuation codes.	▪ Program checks punctuation codes. ▪	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
14.	2 hours theoretical	Knowledge of Semantic analysis phase how to method. And Identify the Type of errors for semantic analysis.	▪ Semantic analysis phase. ▪ Type of errors for semantic analysis.	• Presentation. • Discussion. • Brainstorming.	• Quiz. H.W: assignments through electronic classroom.
	2 hours Lap	Students ability to write program checks literal.	▪ program checks literal.	• Presentation. • Discussion.	• Testing students through practical performance. H.W: assignments through electronic classroom.
15.	2 hours theoretical		▪ Theoretical exam(2)		
	2 hours Lap		▪ Practical exam(2)		

11. Course Evaluation

Theoretical exam(1) **10%**	**Practical exam(1)** **5%**	**Theoretical exam(2)** **10%**	**Practical exam(2)** **5%**	H.W. and Quiz **10%**	Final exam 60%	The final grade%100
10	**5**	**10**	**5**	**10**	**60**	**100**

12. Learning and teaching resources

Required textbooks	
Main references (sources)	**Compilers: Principles, Techniques, and Tools" by Aho, Sethi, and Ullman, 2nd edition. (2006).**
Recommended books and references (scientific journal and reports)	1. **Waite, W. M., & Goos, G. (2012). Compiler construction. Springer Science & Business Media.** 2. **Mogensen, T. Æ. (2009). Basics of compiler design. Torben Ægidius Mogensen.** **من البداية إلى البرمجة الكيانية ، الدكتور المهندس. نضال خضير العبادي ، C++ .(2011)**
Electronic references, websites	https://www.youtube.com/watch?v=SMkQcn1ihLw&list=PL9fwy3NUQKwZe1P-Tr_n9TWAgawgGkpm5