	Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Computer Science Department	

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Programming Fundamentals			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	COMP1101				
ECTS Credits	11				
SWL (hr/sem)	275				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Computer Science		**College**	Science	
Module Leader	Dr. Hasnaa Imad Abdulsalam		**e-mail**	hasnaimad@nahrainuniv.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Israa Hussain		**e-mail**		
Module Lab Instructor(s)	Dr. Hasnaa Imad Abdulsalam Dr. Suhad A. Yousif Dr. Tiba Zaki Abdulhameed Dr. Israa Hussain Najwan Abid Hanaa Mohammed Mushgil Fatin Ali Abid Reem Hussain Ali Al-Zahraa Adel		**email(s)**	hasnaimad@nahrainuniv.edu.iq suhad.a.yousif@nahrainuniv.edu.iq tiba.zaki@nahrainuniv.edu.iq esraa.hussien@nahrainuniv.edu.iq najwan.abedhassan@nahrainuniv.edu.iq hanaa.mohammed@ced.nahrainuniv.edu.iq fatin.Ali@nahrainuniv.edu.iq reem.msco23@ced.nahrainuniv.edu.iq	
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Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Think like a programmer. 2. Algorithmic thinking: being able to formulate the problem into steps using specific instruction. 3. Learn Java syntax to translate the algorithm steps to java program. 4. learn how to write, compile, test, fix errors, and run programs in java 5. Seeking new information.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	● **Identify the main structure of java programs** ● **Write simple programs:**This includes being able to write programs that solve specific problems. ● **Debug programs:**This includes being able to find and fix errors in programs. ● **Test programs:**This includes being able to write tests to ensure that programs work correctly. ● **Document programs:**This includes being able to write clear and concise documentation for programs. ● state the steps needed to solve a simple ● **Translate the algorithm steps to a java code.Problem-solving skills** Programming requires students to be able to break down complex problems into smaller, more manageable steps. ● **Critical thinking skills** Programming requires students to be able to think logically and to come up with creative solutions to problems. ● **Creativity** Programming can be a creative outlet for students to express themselves and to

	solve problems in new and innovative ways. ● **Communication skills** Programmers need to be able to communicate their ideas clearly and concisely to both technical and non-technical audiences. ● **Teamwork skills** Programming is often a team sport, and students need to be able to work effectively with others to achieve common goals.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. ● Introduction to programming languages ● Data types and variables ● Operators and expressions ● Control flow statement ● Methods (Functions)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main way this module will be taught is by encouraging students to participate in exercises, while also improving and expanding their critical thinking skills. This will be accomplished through lectures, interactive tutorials, and simple experiments that are interesting to the students. Here is a more detailed explanation of each point: ● **Encouraging student participation in exercises:** This will help students learn by doing and apply the concepts they are learning in a practical setting. ● **Improving and expanding critical thinking skills:** This will help students learn to think more deeply about the material and to come up with their own solutions to problems. ● **Lectures:** Lectures will provide students with the foundation they need to understand the material.

	• **Interactive tutorials:** Interactive tutorials and discussions will allow students to practice the concepts they are learning in a safe environment. • **Simple experiments:** Simple experiments will allow students to see the concepts they are learning in action.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) خلال الفصل للطالب الحمل الدراسي المنتظم	153	**Structured SWL (h/w)** للطالب أسبوعيا الحمل الدراسي المنتظم	10.2
Unstructured SWL (h/sem) خلال الفصل الحمل الدراسي غير المنتظم للطالب	122	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	8.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	275		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		All
	Assignments (Totrial)	3	10% (10)		All
	Projects / Lab.	4	15% (15)	Continuous	All
	Report (2 حضور + 3 مشاركات)	0	5		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		All
	Final Exam	3hr	50% (50)		All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Ch1: What is a computer, what is Programming, the hello world program, compiling java program. Displaying two messages
Week 2	Ch1:Formatting source code, using escape sequence, what is computer science?, Debugging programs,
Week 3	Ch2: Declaring Variables, Assigning Variables, Memory Diagrams, Printing Variables, and Arithmetic Operators
Week 4	Ch2: Floating-Point Numbers , Rounding Errors , Operators for Strings , Compiler Error Messages , and Other Types of Errors HW 2.12 Exercises .
Week 5	Ch3:The System Class, The Scanner Class , Language Elements, Literals and Constants, Formatting Output, Reading Error Messages
Week 6	Ch3:Type Cast Operators, Remainder Operator, Putting It All Together, The Scanner Bug HW 3.12 Exercises
Week 7	Mid Term Exam #1
Week 8	Defining New Methods, Flow of Execution, Parameters and Arguments, Multiple Parameters , Stack Diagrams, Math Methods, and Composition
Week 9	Ch4: Return Values , Incremental Development HW 4.11 Exercises
Week 10	Ch5: Conditionals and Logic Relational Operators , The if-else Statement , Chaining and Nesting , The switch Statement , Logical Operators , and De Morgan's Laws
Week 11	Ch5:Boolean Variables, Boolean Methods , Validating Input, Example Program HW 5.12 Exercises
Week 12	Mid Exam #2
Week 13	Ch6 Loops and Strings The while Statement, Increment and Decrement , and The for Statement .
Week 14	Ch6: Nested Loops
Week 15	**review**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introducing IDE Netbeans through “Hello world program like” Drow christmas tree using stars (print and println) https://www.edureka.co/blog/netbeans-tutorial/amp/
Week 2	Lab 2: compute simple calculations using constants (define length and width and calculate area)
Week 3	Lab 3: (Learning Reinforcement). compute simple calculations using constants (convert temperature from celsius to fahrenheit)
Week 4	Lab 4: Write Java code that computes the total cost and the number of tiles needed for a room of size 4.5x5 m, knowing that each tile is 60 x 60 cm, and the price of a meter square is 12$.
Week 5	Lab 5: try codes with errors. Read, understand, and fix the errors. print numbers in a formatted style (Write an application Powers.java that prints, in a table like style, the square root, square and cube of the numbers between 2 and 9)
Week 6	Lab 6: practice div , mod (convert 24 hour system to 12 (am,pm) system)
Week 7	Lab 7: Mid-term Exam
Week 8	Lab 8: method practice (void methods)Flow of Execution, Parameters and Arguments, Multiple Parameters .Method that calls another method.
Week 9	Lab 9: methods (calculator) Write a program to calculate the area and perimeter of a triangle. Your program should include areaCalculation and perimeterCalculation methods. The areaCalculation method has 2 parameters, which are the height and the base of the triangle and must return the area of a triangle. The perimeterCalculation method has 3 parameters
Week 10	Lab 10: The if-else Statement , Chaining and Nesting , The switch Statement.(salesman commission assignment)
Week 11	Lab 11: using boolean flag. validating input.
Week 12	Lab 12: Mid-term Exam
Week 13	Lab 13: while loop, for, (printing multiplication table of n)(validating input with loop)
Week 14	Lab 14: nested loop (math series)
Week 15	Lab 15: review

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Think Java: How to Think Like a Computer Scientist, 2 nd Edition, Version 7.1.0 Allen B. Downey and Chris Mayfield	free online
Recommended Texts	Introduction to Java Programming, Comprehensive Version, 10th Edition, by Y. Daniel Liang Head First Programming Head First Java	free online
Websites	Book's Website: https://books.trinket.io/thinkjava2/index.html https://codingbat.com/java https://www.codejava.net/java-se/file-io/how-to-read-and-write-text-file-in-java	

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: Marks 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.