

Module: Programming Principles 161

Module name:	Programming Principles 161
Code:	PRP161
NQF level:	5
Type:	Core – Diploma in Information Technology (all stream)
Contact time:	34 hours
Structured time:	6 hours
Self-directed time:	40 hours
Notional hours:	80 hours
Credits:	8
Prerequisites:	Problem Solving 161

Purpose

The purpose of this module is to understand how the program has helped people to solve problems. The student will learn several general concepts that will allow them to formulate an understanding of a problem and develop an algorithm to support the solution.

Outcomes

Upon successful completion of this module, the student will be able to:

- Demonstrate a fundamental understanding of problem-solving using algorithms.
- Select and apply standard programming techniques to plan and manage an implementation process applied to problem-solving.
- Demonstrate the ability to apply solutions based on relevant evidence and procedures or other forms of explanation appropriate to the field, discipline or practice, demonstrating an understanding of the consequences.
- Identify, evaluate and solve defined arithmetic problems, apply solutions based on relevant evidence and understand the consequences if an algorithm is poorly designed.
- Operate in a range of familiar problem domains, demonstrating an understanding of different kinds of problems to be solved, their constituent parts and the relationships between these parts, and to understand how algorithms in one area impact other areas within the same domain.

Assessment

- Continuous evaluation of theoretical work through two written assignments, one formative test, and one summative test.
- Continuous evaluation through tracking of progress, offering support, guidance and provision of constant stream of opportunities to prove mastery of subject material and pursuing more challenging work as they master the basics.
- Final assessment through an examination.
- The assignments or projects collectively will count 20% of your class mark.
- All tests will collectively account for 80% of your class mark.

- Your class mark contributes 30% towards your final mark for the subject, while the final assessment accounts for 70% of your final mark.

Teaching and Learning

Learning materials

- 📖 **A., B. (2016) Problem Solving and Computer Programming Using C. New Delhi: Laxmi Publications Pvt Ltd.**
- 📖 **Tripathi, A. K. and Tripathi, M. (2015) Computer System and Programming in 'C'. New Delhi, India: Laxmi Publications Pvt Ltd.**
- 📖 **Srivastava, A. K. (2020) A Practical Approach to Data Structure and Algorithm with Programming in C. Oakville, ON: Arcler Press.**

Learning activities

Learning will be facilitated by the lecturer with student centred activities that involve problem-based learning where pupils are presented with challenges that replicate the situation in the real-world environment. This will be achieved through a combination between presentation of theoretical concepts, guided exercises, group work and discussions during the module.

Notional learning hours

Activity	Units	Contact Time	Structured Time	Self-Directed Time
Lecture		27.0		19.0
Formative feedback		7.0		
Project				
Assignment	2			6.0
Test	2		4.0	8.0
Exam	1		2.0	7.0
		34.0	6.0	40.0

Syllabus

- Introduction to Programming
- Programming Techniques
- Variables and Expressions
- Decision and Loop Control Statements
- Logic Representation
 - Pseudocode
 - Algorithm
 - Flowchart