

**3IT04: ADVANCED PROGRAMMING PRACTICES**  
**CREDITS – 2 (LTP: 0,0,2)**

**Course Objective:**

To learn the advance programming languages for implementation of real world application.

**Teaching and Assessment Scheme:**

Teaching Scheme (Hours per Week)			Credits	Assessment Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE	CE	ESE	CE		
0	0	4	2	-	-	40	60	100

**Course Contents:**

Unit No.	Topics	Teaching Hours
1	<b>R Programming:</b> Introduction, Language Constructs, Data Interface (CSV, XML, Json, Web Data, Database), R Statistics.	20
2	<b>Kotlin Programming:</b> Introduction, Control Flow, Function, Array, String, Exception Handling, Null Safety, Collections, Annotations, Reflection, Kotlin Oops, Ranges, Regular Expression.	20
3	<b>Julia Programming:</b> Introduction to Julia scientific programming, Installing Julia on Linux and Windows, Arithmetic and Logical Expressions, Arrays and Abstract types, Data and Loops in Julia, Plots in Julia, Collections and Functions.	20
<b>Total</b>		<b>60</b>

**List of References:**

1. Dr. Mark Gardener, “*Beginning R: The statistical Programming Language*”, Wiley.
2. John Chambers, “*Software for Data Analysis, Programming with R*”, Springer.
3. Milos Vasic, “*Fundamental Kotlin*”, 2nd Edition, ISBN: 9788692030710.
4. Erik Engheim , “*Getting Started with Julia*” published by Packt Publishing: March 31, 2017, ISBN: 9781786462978.
5. Anshul Joshi, Rahul Lakhanpal, “*Learning Julia*” published on November 2017; ISBN: 9781785883279.

**Course Outcomes (COs):**

At the end of this course students will be able to ...

1. Understand R Programming for applications development.
2. Apply statistical API of R Language for engineering problems.
3. Understand the concepts of the Kotlin language and how it integrates neatly with Java.
4. Create professional applications using Kotlin.
5. Programme using the Julia language from scratch.
6. Use various Julia packages such as Plots, DataFrames and Stats.