



## Department of Computer Applications National Institute of Technology Tiruchirappalli

1.Course Outline					
Course Title	Resource Management Techniques				
Course Code	CA718				
Department	CA	Class	I M.C.A, 'A & B' Sec	No. of Credits	3
Pre-requisites Course Code	NIL			Faculty Name	Dr.S.Domnic Dr.U.Srinivasalu Reddy
CC Chairman	Dr.P.J.A.Aplphonse				
E-mail	domnic@nitt.edu			Telephone No.	+91-431-2503745
Course Type	Core Course				

2. Course Overview
<p>Operations Research is the study of optimization techniques. It is applied decision theory. O.R is useful for solving resource allocation problems, marketing management problems, finance management problems production, planning and control problems, etc. This course provides an introduction to mathematical modelling i.e O.R models and O.R techniques. This course covers five O.R models and techniques to solve these models. This course offers LPP model, NLPP model, DPP model, Inventory models and Queueing models. It also offers different techniques to solve these models. As such, the course is appropriate for mathematically inclined students who wish to learn hands-on computational techniques for solving various real time problems</p>
3. Course Objectives
<ul style="list-style-type: none"> <li>• To learn how to model the problem mathematically.</li> <li>• To learn how to use LPP, NLPP and DPP models and optimization techniques to solve different real time problems.</li> <li>• To explore different inventory models and inventory problems.</li> <li>• To learn different queueing models and its applications to solve different queueing problems.</li> </ul>
4. Course Outcomes (CO)
<p>Student will be able to:</p> <ul style="list-style-type: none"> <li>• Formulate and solve LP/NLP/DP problems</li> <li>• Identify appropriate model for given inventory problems and solve the problems</li> <li>• Solve queueing problems using queueing models</li> </ul>

5. Course Outcome (CO)	Aligned Programme Outcome (PO)											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
Formulate and solve LP/NLP/DP problems		H	H		M							
Identify appropriate model for given inventory problems and solve the problems	M	H		L	M							
Solve queueing problems using queueing models		H			M							

L-Low      M-Medium      H-High

6. Course Teaching and Learning Activities									
Week	No. of Classes	Topic Covered	Mode of Delivery						
1	Class-I	Introduction to mathematical model	Chalk & Talk						
	Class-II	Introduction to O.R							
	Class-III	LPP formulation and intro to Lpp techniques							
2	Class-I	Simplex method		Chalk & Talk					
	Class-II	Solving problems using simplex							
	Class-III	Big-M method and examples							
3	Class-I	Two-Phase simplex method			Chalk & Talk				
	Class-II	Problems discussion							
	Class-III	Duality and Dual Simplex method							
4	Class-I	Assignment problem				Chalk & Talk			
	Class-II	Transportation problem							
	Class-III	Introduction to inventory models							
5	Class-I	Deterministic inventory models without shortage cost					Chalk & Talk		
	Class-II	Deterministic inventory models with shortage cost							
	Class-III	Problems discussion-I							
6	Class-I	Problems discussion-II						Chalk & Talk	
	Class-II	Inventory models with price breaks							
	Class-III	Problems discussion							
7	Class-I	Multi-Item Inventory models and stochastic model							Chalk & Talk
	Class-II	Introduction to Queuing theory							
	Class-III	Queuing models							
8	Class-I	Problems discussion-I	Chalk & Talk						
	Class-II	Problems discussion-II							
	Class-III	Introduction to NLPP							
9	Class-I	Fibonacci method		Chalk & Talk					
	Class-II	Golden Section method							

	Class-III	Constrained optimization with lagrangian multipliers	
10	Class-I	Introduction to DPP	
	Class-II	Stage coach problem, investment problem	
	Class-III	Reliability and resource allocation problems	

7. Course Assessment Methods – Theoriey				
Sl. No.	Mode of Assessment	Week/Date	Duration	Weightage(%)
1.	Cycle Test –1	6 <sup>th</sup> /7 <sup>th</sup> week	60 mins	20
2.	Cycle Test –2	12 <sup>th</sup> /13 <sup>th</sup> week	60 mins	20
3.	Assignment Test	7 <sup>th</sup> and 10 <sup>th</sup> week	7 days	10
4.	End Semester Exam	-	180 mins	50
Total				100

### 8. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

#### REFERENCES:

1. H.A Taha, "Operations Research: An Inroduction", 8th Edition, Pearson Education, 2008.
2. Swarup.K, Gupta and P.K Man Mohan, Opeartions Research", 14th Edition, Sultan Chand & Sons, 2009.

### 9. Course Exit Survey (mention the ways by which the feedback about the course is assessed and indicate the attainment level)

1. The students through the class rep may give their feedback at any time to the course co-ordinator which will be duly addressed.
2. The students may also give their feedback during Class Committee meeting.
3. 'Course Outcome Survey' form will be distributed on the last working day to all the students and the feedback on various rubrics will be analyzed.
4. The COs will be computed after arriving at the final marks.

### 10. Course Policy (including plagiarism, academic honesty, attendance, etc.)

- **Plagiarism**

The students are expected to come out with their original code for problems given assignments during the class work, and tests/examinations. If found to copy from internet/other students, zero marks will be assigned and action will be taken.

- **Attendance**

100% is a must. However, relaxation will be given for leave on emergency requirements (medical, death, etc.) and representing institute events. Minimum 75% is required.

- **Academic Honesty**

- i. Possession of any electronic device, if any, found during the test or exam, the

student will be debarred for 3 years from appearing for the exam and this will be printed in the Grade statement/Transcript.

- ii. Tampering of MIS records, if any, found, then the results of the student will be with held and the student will not be allowed to appear for the Placement interviews conducted by the Office of Training & Placement, besides (i).

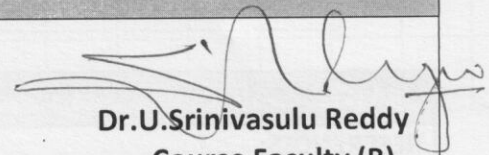
#### 11. Additional Course Information

- The students can get their doubts clarified at any time with their faculty member with prior appointment.

#### For Senate's Consideration



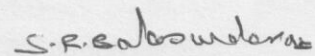
**Dr.S. Dominic**  
Course Faculty (A)



**Dr.U.Srinivasulu Reddy**  
Course Faculty (B)



**Dr.P.J.A.Alphonse**  
Class Committee Chairperson



**Dr. S.R.Balasundaram**  
HOD