NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF COMPUTER APPLICATIONS

COURSE PLAN – PART I			
Name of the programme and specialization	MCA		
Course Title	Resource Management Techniques		
Course Code	CA718	No. of Credits	3
Course Code of Pre-requisite subject(s)	CA713		
Session	January 2019	Section (if, applicable)	A
Name of Faculty	Dr. R. Eswari	Department	Computer Applications
Official Email	eswari@nitt.edu	Telephone No.	0431-2503744
Name of Course Coordinator(s) (if, applicable)	Dr. P. J. A. Alphonse		
Official E-mail	alphonse@nitt.edu	Telephone No.	0431-2503742
Course Type (please tick appropriately)	✓ Core course	☐ Elective course	

Syllabus (approved in BoS)

Linear programming problems: Formulation – Simplex method – Big M method – Two Phase method – Revised Simplex method-Primal Dual problems- Dual Simplex method.

Network Programming models: Transportation problem – Assignment problem -Dynamic programming: Multi-stage graph formulation– Stage coach problem- Resource allocation problem – Inventory problem

Non-linear Programming: One dimensional unconstrained optimization – Fibonacci method – Golden section method – Quadratic approximation method – constrained optimization with Lagrangian multipliers.

Integer Programming: All integer programming problem –- Mixed integer programming-Gomory Cutting plane method- Branch and Bound method- Zero-one integer programming problem-Balas-additive algorithm.

Queuing theory - notation and assumptions – characteristics of queue – Poisson input process – exponential service times – Queuing models – M/M/1 – M/M/C – M/M/1/N – M/M/C/N

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

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3. S.R.Yadav, A.K.Malik, "Operations Research", Oxford University Press, 1st Edition, 2014

COURSE OBJECTIVES

To learn different resource management techniques

MAPPING OF COs with POs

Course Outcomes	Programme Outcomes (PO) (Enter Numbers only)
1. Formulate and solve LP /NLP /DP Problems	1,2,3
2. Identify appropriate model for given inventory problems and solve the problems	1,3,4,5
3. Solve queuing problems using queuing models	1,2,3,4

COURSE PLAN – PART II

COURSE OVERVIEW

This course introduces the fundamentals of operations research models including linear programming, non-linear programming, network programming, integer programming and queuing models and applications. It provides students an understanding of problem solving methods based on model formulation, solution procedure and anlysis. On successful completion of this course studetns will be able to define and formulate problems and solve them using appropriate operations research techniques.

COURSE TEACHING AND LEARNING ACTIVITIES			(Add more rows)
S.No.	Week	Topic	Mode of Delivery
1	1	Linear programming problems: Formulation – Simplex method	Chalk and Talk , Power Point Presentation
2	2	Big M method – Two Phase method	-do-
3	3	Revised Simplex method-Primal Dual problems- Dual Simplex method	-do-
4	4	Network Programming models: Transportation problem – Assignment problem	-do-
5	5	Dynamic programming: Multi-stage graph formulation	-do-
6	6	Stage coach problem- Resource allocation problem – Inventory problem	-do-

7	7	Non-linear Programming: One dimensional unconstrained optimization – Fibonacci method – Golden section method	-do-
8	8	Quadratic approximation method – constrained optimization with Lagrangian multipliers.	-do-
9	9	Integer Programming: All integer programming problem –- Mixed integer programming	-do-
10	10	Gomory Cutting plane method- Branch and Bound method- Zero-one integer programming problem-Balas-additive algorithm	-do-
11	11	Queuing theory - notation and assumptions – characteristics of queue – Poisson input process	-do-
12	12	Queuing models – M/M/1 – M/M/C – M/M/1/N – M/M/C/N	-do-

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle test1	**Week 7**	**1 Hr**	20
2	Cycle test2	**Week 11**	**1 Hr**	20
3	Problem solving	**Week 4, Week7, Week 11**		10
CPA	Compensation Assessment	**Week 12**	**1 Hr**	20
4	Final Assessment	**At the end of course**	**3 hrs**	50

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

- The students through the class representative may give their feedback at any time to the course faculty which will be duly addressed.
- The students may also give their feedback during Class Committee meeting

COURSE POLICY (including compensation assessment to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)
The students can get the availability of faculty member over phone and email. They can get their doubts clarified at any time with their faculty member with prior appointment.

COMPENSATION ASSESSMENT

One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.

- A maximum of 10% shall be allowed under On Duty (OD) category.

- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.

- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.

- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

- The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION, IF ANY

FOR APPROVAL

Course Faculty _____ (R. ESWARI)   CC- Chairperson _____ (B. JANET)   HOD _____