

**M.V.MUTHIAH GOVT. ARTS COLLEGE (W), DINDIGUL**  
**PG AND RESEARCH DEPARTMENT OF MATHEMATICS**  
**LESSON PLAN 2022**

**SUBJECT:CALCULUS OF VARIATIONS AND INTEGRAL EQUATIONS**

**CLASS:II M.Sc,Mathematics**

**CODE:P21MTT35**

**FACULTY:Dr.T.RAMACHANDRAN**

**SEMESTER:III**

WEEK	TOPIC	ASS/SEM	SIGN
1	Variation and its properties-Euler's equation-Functionals of the form		<i>PL</i>
2	Functionals dependent on higher order derivatives- Functionals dependent on the functions of several independent variables		<i>PL</i>
3	Variational problems in parametric form-Some applications	ASSIGNMENT	<i>PL</i>
4	Field of extremals-The function $E(x,y,p,y')$	SEMINAR	<i>PL</i>
5	<b>TEST I</b>		<i>PL</i>
6	Transforming the Euler equations to the canonical form.		<i>PL</i>
7	Direct methods-Euler's finite difference method-The Ritz method-Kantorovich's method.	SEMINAR	<i>PL</i>
8	Definition, Regularity conditions-Special kind of kernels- Eigen values and eigen functions-Convolution Integral-The Inner and scalar product of two functions		<i>PL</i>
9	Notation-Reduction to a system of Algebraic equations- Examples-Fredholm alternative-Examples-An approximate method.	SEMINAR	<i>PL</i>
10	<b>TEST II</b>		
11	Iterative scheme-examples-Volterra Integral equation-examples		<i>PL</i>
12	Some results about the resolvent kernel. Classical Fredholm Theory: the method of solution of Fredholm	SEMINAR	<i>PL</i>
13	Fredholm's first theorem	SEMINAR	<i>PL</i>
14	Fredholm's second theorem-third theorem		<i>PL</i>
15	<b>TEST III</b>		<i>PL</i>

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**LESSON PLAN 2023**

**SUBJECT:AUTOMATA THEORY**

**CODE:P21MTE412**

**CLASS:II M.Sc,Mathematics**

**SEMESTER:IV**

**FACULTY:Dr.T.RAMACHANDRAN**

WEEK	TOPIC	ASS/SEM	SIGN
1	Finite Automata and Regular Expressions introduction- Definitions and examples Additional forms of proof		<i>PJ</i>
2	Inductive Proofs - Deterministic and Non deterministic finite automata		<i>PJ</i>
3	Finite Automata with- moves- Finite Automata with Epsilon Transitions	ASSIGNMENT	<i>PJ</i>
4	Context Free Grammar introduction- Regular expressions and their relationship with automata	SEMINAR	<i>PJ</i>
5	<b>TEST I</b>		<i>PJ</i>
6	Proving Languages not to be regular - Closure Properties of Regular Languages- Equivalence and Minimization of Automata		<i>PJ</i>
7	Grammar- Ambiguous and unambiguous grammars- Derivation trees- Chomsky Normal form	SEMINAR	<i>PJ</i>
8	Pushdown Automata introduction- Parse Trees- Ambiguity in Grammars and Language		<i>PJ</i>
9	Pushdown Automaton- Definition and examples- Relation with Context free languages	SEMINAR	<i>PJ</i>
10	<b>TEST II</b>		
11	Equivalence of Pushdown Automata and CFG, Deterministic Pushdown Automata		<i>PJ</i>
12	Finite Automata and Lexical Analysis introduction: Role of a lexical analyzer- Minimizing the number of states of a DFA	SEMINAR	<i>PJ</i>
13	Implementation of a lexical analyzer. Basic Parsing Techniques: Parsers introduction- Bottom up Parsers	SEMINAR	<i>PJ</i>
14	Shift reduces- operator precedences- Top down Parsers- Recursive descent- Predictive parsers		<i>PJ</i>
15	<b>TEST III</b>		<i>PJ</i>

M.V.MUTHIAH GOVT. ARTS COLLEGE (W), DINDIGUL

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LESSON PLAN- 2022

SUBJECT NAME:FUNCTIONAL ANALYSIS

CLASS:II M.S.c,Mathematics

FACULTY:Dr.T.RAMACHANDRAN

CODE:P21MTT36

SEMESTER:III

WEEK	TOPIC	ASS/SEM	SIGN
1	Banach spaces: The definitions and some examples- continuous linear transformations		<i>P.L</i>
2	The Hahn- Banach theorem- The Natural imbedding of N in $N^{**}$		<i>P.L</i>
3	The Open mapping theorem- The conjugate of an operator.	ASSIGNMENT	<i>P.L</i>
4	Hilbert spaces: The definitons and some simple properties- Orthogonal complements- Orthonormal sets	SEMINAR	<i>P.L</i>
5	TEST I		<i>P.L</i>
6	The conjugate spaces $H^*$ - The adjoint of an operator- self-adjoint operator - Normal and unitary operators.		<i>P.L</i>
7	Finite- Dimensional spectral Theory: Matrices- Determinants and the Spectrum of the operator		<i>P.L</i>
8	The Spectral Theorem -A Survey of the situation.		<i>P.L</i>
9	General Preliminaries on Banach Algebras: The defintion and some examples- Regular and singular elements	ASSIGNMENT	<i>P.L</i>
10	Topological divisors of zero- The Spectrum	SEMINAR	<i>P.L</i>
	TEST II		<i>P.L</i>
11	The Formula for the Spectrum radius- The Radical and Semi-Simplicity.		<i>P.L</i>
12	The Structue of Commutative Banach Algebras: The Gelfand mapping		<i>P.L</i>
13	Applications of formular $r(X)=\lim \ X^n\ ^{1/n}$	ASSIGNMENT	<i>P.L</i>
14	Involutions in Banach Algebras- The Gelfand- Neumark Theorem	SEMINAR	<i>P.L</i>
15	TEST III		<i>P.L</i>

*P. Lakshmi*

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 PG AND RESEARCH DEPARTMENT OF MATHEMATICS  
 LESSON PLAN 2023

SUBJECT: OPTIMIZATION TECHNIQUES.

CODE: P21MTT25  
 SEMESTER: II

CLASS: I M.S.c, Mathematics

FACULTY: Dr.T.RAMACHANDREN

WEEK	TOPICS	ASS/SEM	SIGN
1	Integer programming: Introduction - Integer programming formulations - The cuttings		<i>P.L</i>
2	Plane Algorithm - Branch and Bound Technique - Zero one implicit enumeration algorithm		<i>P.L</i>
3	Inventory control: Introduction - Models of Inventory - Operation of inventory system	ASSIGNMENT	<i>P.L</i>
4	Quantity discount - Implementation of purchase Inventory Model	SEMINAR	<i>P.L</i>
5	TEST-I		<i>P.L</i>
6	Dynamic Programming: Introduction - Application of dynamic programming - Capital Budgetting problem		<i>P.L</i>
7	Reliability Improvement problem - Stage Coach problem - Cargo leading problem		<i>P.L</i>
8	Minimizing Total Tardiness in single Machine Scheduling problem - Optimal subdividing problem - Solution of linear programming problem through Dynamic programming	ASSIGNMENT	<i>P.L</i>
9	Queueing Theory: Introduction - Terminologies of queueing system	SEMINAR	<i>P.L</i>
10	TEST-II		<i>P.L</i>
11	Empirical queueing models - Stimulation		<i>P.L</i>
12	Non linear programming : Introduction - Lagrangean method - Kuhn - Tucker method		<i>P.L</i>
13	Quadratic programming - Separable programming	ASSIGNMENT	<i>P.L</i>
14	Chance - Constrained programming or stochastic programming	SEMINAR	<i>P.L</i>
15	TEST-III		<i>P.L</i>

*P.L*  
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