

Research Methodology and IPR

Course Code	22AECCS56	Course type	AEC	Credits L-T-P	2-0-0
Hours/week: L-T-P	2-0-0			Total credits	2
Total Contact Hours	L = 30 Hrs; Total = 30 Hrs			CIE Marks	100
Flipped Classes content	05 Hours			SEE Marks	100

Course learning objectives	
1.	Understand the basic concepts of research and its methodologies
2.	Identify and select the appropriate research.
3.	Understand the basic concepts & types of hypothesis.
4.	Create the awareness about Intellectual Property Rights for the protection of inventions.

Required Knowledge of : --

Unit – I	Contact Hours = 5 Hours
Research Methodology: Introduction Meaning, Objectives, types, Research Approaches. Significance of Research, Research Methods versus Methodology, Research and scientific method, research Process, Criteria of good research, Problems encountered by researchers.	

Unit – II	Contact Hours = 6 Hours
Research Problem: Defining a research problem, selecting a research problem, necessity and techniques involved in defining the research problem. Data Collection Methods: Collection of Primary Data, Observation Method, Interview Method, Questionnaires, Schedules, Collection of Secondary Data, Case study method.	

Unit – III	Contact Hours = 9 Hours
Processing and Analysis of Data: Processing operations, Elements/ types of analysis, Statistics in research- measures of central tendency or statistical averages, measures of dispersion, measures of asymmetry (skewness), measures of relationship. Testing of hypothesis 1: Definition, basic concepts, procedure, flow diagram, measuring the power of hypothesis tests, tests of hypothesis. Chi-square test: Chi-square as a test for comparing variance, steps involved in applying chi-square test.	

Unit – IV	Contact Hours = 5 Hours
Intellectual Property Rights – IPR- Invention and Creativity- Intellectual Property-Importance and Protection of Intellectual Property Rights (IPRs)- A brief summary of: Patents, Copyrights, Trademarks, Industrial Designs- Integrated Circuits-Geographical Indications-Establishment of WIPO-Application and Procedures. Research ethics, Plagiarism, Prior art search.	

Unit – V	Contact Hours = 5 Hours
Interpretation and Report Writing: Meaning of interpretation, Why interpretation, Technique of interpretation, Precaution in interpretation, Significance of report writing, Different steps in writing report, Layout of the research report, Types of reports, Mechanics of writing research report.	

Flipped Classroom Details

Unit No.	I	II	III	IV	V
No. for Flipped Classroom Sessions	01	01	01	01	01

Unit No.	Self-Study Topics [Mention if applicable else NIL]
I	Significance of Research Methodology.
II	Limitations of test of hypothesis.
III	Other measures-Index numbers, Time series analysis.

Books	
Text Books:	
1.	C R. Kothari, “ Research Methodology ”, New Age International Publishers, 2 nd edition, 2007.
2.	Dr. B.L. Wadhera, “ Intellectual Property Rights ”, Universal Law Publishing Co. Ltd. 2002
Reference Books:	
1.	Panneer Selvam, “ Research Methodology ”, PHI Learning Pvt. Ltd., 2007.
E-resources (NPTEL/SWAYAM. Any Other)-	
1.	https://onlinecourses.swayam2.ac.in/cec20_ge37

Course delivery methods		Assessment methods	
1.	Chalk and Talk	1.	IA tests
2.	PPT and Videos	2.	Open Assignments (OA)
3.	Flipped Classes	3.	Case studies
4.		4.	Semester End Examination

Course Outcome (COs)				
Learning Levels: Re - Remember ; Un - Understand ; Ap - Apply ; An - Analysis ; Ev - Evaluate ; Cr - Create				
At the end of the course, the student will be able to		Learning Level	PO(s)	PSO(s)
1.	Identify and select an appropriate methodology for research.	Un	1,2,9,10	1
2.	Analyze and interpret data collected	Ap	1,2,9,10	1
3.	Analyze the significance of hypothesis testing	An	1,2,9,10	1
4.	Discuss the significance of Intellectual Property Rights & report writing	Ap	1,2,3,9,10,12	1,2,3

Scheme of Continuous Internal Evaluation (CIE):

Components	Addition of two IA tests	Two Assignments – (Open /Industry/Certification)	Course project (CP)/ Case study etc	Total Marks
Marks	30+30 = 60	10 + 10 = 20	20 marks (with report & presentation)	100
<p>-Certification earned by passing the standard Online MOOCs course (1 course of atleast 8 hours defined by BOS) can be considered as a Course activity and awarded maximum of 10 marks.</p> <p>-Student should score minimum 40% of 60 marks (i.e. 24 marks) in IA tests.</p> <p>-Lack of minimum score in IA test will make the student Not Eligible for SEE</p> <p>-Minimum score in CIE to be eligible for SEE: 40 OUT OF 100.</p>				

Scheme of Semester End Examination (SEE):

- | | |
|----|--|
| 1. | It will be conducted for 100 marks of 3 hours duration. |
| 2. | Minimum marks required in SEE to pass: Score should be $\geq 35\%$, however overall score of CIE + SEE should be $\geq 40\%$. |
| 3. | <p>Question paper contains three parts A,B and C. Students have to answer</p> <ol style="list-style-type: none"> 1. From Part A answer any 5 out of 7 questions, each Question Carries 6 Marks. 2. From Part B answer 5 out of 10 questions choosing any one full question from each unit, each Question Carries 10 Marks. 3. From Part C answer 1 out of 2 questions, each Question Carries 20 Marks. |

CO-PO Mapping (Planned)													CO-PSO Mapping (Planned)		
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PSO1	PSO2	PSO3
1	✓	✓							✓	✓			✓		
2	✓	✓							✓	✓			✓		
3	✓	✓							✓	✓			✓		
4	✓	✓	✓						✓	✓		✓	✓	✓	✓
Tick mark the CO, PO and PSO mapping															