

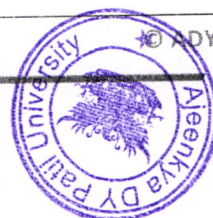


# **Program Academic Information ADYPU Doctoral Program (Ph.D) Course Work**



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**Section 1: Program General Information**

**Name** ADPYU Doctoral Program (Ph.D)

**Level**

**Section 2: Program Educational Objectives**

Broad goals that address institutional and program mission statements and are responsive to the expressed interests of various groups of program stakeholders.

**Knowledge and Comprehension**

- 1
- a) The candidate who has completed the Ph.D. program in ADYPU will have broad overview of the subject field in general and also deep knowledge in his/her specific research area.
  - b) The candidate will have experience in, and be able to formulate research's issues; he/she will be able to develop a theoretical foundation and framework for the research and use relevant methods of research within the field. For the research design the candidate will have substantially good general knowledge about relevant scientific theories within the subject area.
  - c) According to the content of the research project which is the basis for the doctoral thesis, the candidate will have knowledge about and be able to apply and choose between different methods, both qualitative and quantitative, which are state-of-the-art in the discipline, and are relevant for the research project.
  - d) The goal is to enable a candidate to contribute in producing new knowledge and ideas, new theories, methods and finding new solution within the subject's area.
  - e) The candidate with completed Ph.D. degree is expected to work at the national and international scientific forefront in his/ her subject's area and to be able to evaluate limitations in the current knowledge situation in subject area.

**Skills and Proficiency**

- 2
- a) A candidate, who has completed Ph.D. program in ADYPU, will be able to formulate relevant scientific tasks and issues and carry out the professional development in the field.
  - b) The candidate will be able to carry out internationally relevant research at a higher academic level. In addition to any core field, this program includes theories and research methods used in science and technology, social sciences and humanities.





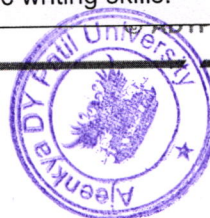
**Programs Academic Information, 2021-2022**

	<p>c) A candidate with a completed Ph.D. degree in ADYPU will be able to solve and process complex tasks related to social challenges within the subject area.</p> <p>d) The understanding of the interdisciplinary nature of problem setting and solutions will be central to the research.</p>
<b>3</b>	<p><b>General competences</b></p> <p>a) A completed doctoral education in ADYPU provides theoretical knowledge and practical training within scientific work and methodology.</p> <p>b) The candidate is both nationally and internationally oriented.</p> <p>c) ADYPU Ph.D. education creates a basis for being a successful leader in management, planning, education and research, in addition to the specialization to the core field.</p> <p>d) The candidate will be able to carry out his/her research with professional independence.</p>
<b>4</b>	<p><b>Application</b></p> <p>a) The candidate should be able to consider the scope and limitations of current knowledge level and take the initiative to drive innovative applications.</p>
<b>5</b>	<p><b>Synthesis and Creativity</b></p> <p>a) Considering the current domain of application of the topic explored the candidate should take the initiatives to synthesize and create engagement in service and outreach that enhances scholarship and its public impact.</p>

**Section 3: Program outcomes**

The program must then formulate a set of program outcomes (knowledge, skills, and attitudes the program graduates should have) that directly address the educational objectives and encompass certain specified outcomes.

<b>1</b>	Students should have a thorough knowledge of the literature and a comprehensive understanding of scientific methods and techniques applicable to their own research;
<b>2</b>	Students should be able to demonstrate originality in the application of knowledge, together with a practical understanding of how research and enquiry are used to create and interpret knowledge in their field;
<b>3</b>	Students should have developed the ability to critically evaluate current research and research techniques and methodologies;
<b>4</b>	Students should have self-direction and originality in tackling and solving problems;
<b>5</b>	Students should be able to act autonomously in the planning and implementation of research; and
<b>6</b>	Students should have gained oral presentation and scientific writing skills.



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**Programs Academic Information, 2021-2022**

Ph.D Course Work							
Part A: Research Methodology							
S.No	Module Title	Module Type	Credits	Contact Hours			Total
				CL	ST	TU	
1	Research Methodology	CC	4	60	40	20	120
2	Qualitative & Quantitative Analysis	CC	4	60	40	20	120
3	Technical Writing	CC	2	30	15	15	60
4	Research & Publication Ethics	CC	2	30	15	15	60
Part B--Core Electives (Four Credits for each discipline)							
ENGINEERING							
S.No	Module Title	Module Type	Credits	Contact Hours			Total
				CL	ST	TU	
	Electrical Engineering	DE	4	60	40	20	120
	Biotechnology	DE	4	60	40	20	120
	Computer Science Engineering	DE	4	60	40	20	120
	Bioinformatics	DE	4				
MANAGEMENT							
	Financial Marketing	DE	4	60	40	20	120
	Marketing Management	DE	4	60	40	20	120
	Human Resource Management	DE	4	60	40	20	120
LAW							
	Fundamental Perspectives in Law	DE	2	30	20	10	60
	Legal Research & Methods	DE	2	30	20	10	60



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**Individual course information (To be prepared for all courses)**

**First Year  
(Part A)  
Research & Publication Ethics**

1	Course Title	Research & Publication Ethics
2	Level	Basic
3	Credits	2
4	Course Prerequisite	Master's degree in any discipline

**Learning objectives**

- 1) The candidate will gain knowledge of the ethical principles in general or in application of specialized knowledge, results of research, creative expression, or in design processes.
- 2) The candidate will gain knowledge about the publication ethics and publication misconducts.

**Learning outcomes:**

At the end of the course students will be able to

- 1) understand ethical issue in the subject matter of the relevant field
- 2) explain the different ethical issues in real-world situation or practice
- 3) assess their own ethical values and the social context of problems
- 4) analyse ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects
- 5) demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work
- 6) integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research





**Unit One: Philosophy & Ethics**

1. Introduction to Philosophy: Definition, Nature and Scope, Concept, Branches
2. Ethics: Definition, Moral Philosophy, Nature of Moral Judgements and Reactions

**Unit Two: Scientific Conduct**

1. Ethics with respect to Science and Research
2. Intellectual Honesty and Research Integrity
3. Scientific Misconducts: Falsification, Fabrication, and Plagiarism (FFP)
4. Redundant Publications, Duplicate and Overlapping Publications, Salami Slicing
5. Selective Reporting and Misrepresentation of Data

**Unit three: Publication Ethics: Definition, Introduction and Importance**

1. Best Practices / Standards setting Initiatives and Guidelines: COPE, WAME, etc.
2. Conflicts of Interest
3. Publication Misconduct: Definition, Concept, Problems that lead to Unethical Behaviour and Vice Versa, Types
4. Violation of Publication Ethics, Authorship and Contributorship
5. Identification of Publication Misconduct, Complaint and Appeals 7. Predatory Publishers and Journals

**Unit four: Open Access Publishing**

1. Open Access Publishing and Initiatives
2. SHERP / RoMEO Online Resource to check Publisher Copyright & Self-archiving Policies
3. Software Tool to Identify Predatory Publications developed by SPPU
4. Journal Finder / Journal Suggestion Tools, viz., Elsevier Journal Finder, Springer Journal Suggester, etc.

**Text & Reference books**

Sr. No	Name of the book	Author	Edition / volume



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Programs Academic Information, 2021-2022

1	Philosophy of Science, Routledge	Bird, A.	2006
2	A Short History of Rthics. London	MacIntyre & Alasdair	1967
3	Ethics in Competitive Research: Do not Get Scoped; Do not get	Chaddah, P	2018
4	On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition. National Academies	National Academy of Sciences, National Academy of Engineering	2009
5	What is Ethics in Research & Why is it Important. National Institute of Environmental Health Sciences, 1-10, Retrieved from <a href="https://www.niehs.nih.gov/research/r">https://www.niehs.nih.gov/research/r</a>	Resnik, D. B.	2011
6	Predatory Publishers are Corrupting Open Access. Nature, 489(7415), 179 <a href="https://doi.org/10.1038/489179a">https://doi.org/10.1038/489179a</a>	Beall, J.	2012
7	Ethics in Science Education, Research and Governance	Edited by Kambadur Muralidhar Amit Ghosh Ashok Kumar Singhvi	2019



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**Introduction to Physical Science**

1	Course Title	Research Methodology
2	Level	PhD
3	Credits	03
4.	Course Prerequisite	Post graduate

**Outcome related course learning objectives:**

1	Enhance the knowledge of students using fundamental concepts of research technique.
2	Introduce areas of knowledge where research area is opening rapidly
3	<b>To understand the role of research methodology in Engineering/Science.</b>
4	<b>To understand literature review process and formulation of a research problem</b>
5	<b>To understand data collection methods and basic instrumentation</b>
6	<b>To learn various statistical tools for data analysis</b>
7	<b>To learn technical writing and communication skills required for research</b>
8	<b>To create awareness about intellectual property rights and patents</b>

**Course Outcome:**

1	Understand research methods, identify type of research and feasibility of research
2	The ability to apply knowledge of research methodology to engineering practices using analytical and experimental methods.
3	Research scholar will demonstrate the ability to design a system, component, product, and/or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4	Research scholar will demonstrate an ability to develop good proposal for his research
5	Research scholar is to be made capable to develop and implement technological modifications and contributions and propose systems and applications in their respective field. field



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**Syllabus details**

Unit	Details
1	<p>Unit I: Introduction to Research (06 Hours.)</p> <p>1. Research Methodology: An Introduction 1 Meaning of Research, Objectives of Research, Motivation in Research Types of Research, Research Approaches, Significance of Research Research Methods versus Methodology Research and Scientific Method Importance of Knowing How Research is Done, Research Process Criteria of Good Research Problems, Encountered by Researchers in India</p>
2	<p><b>Unit 2 Research design</b></p> <p>Defining Research Problem Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem Meaning of Research Design ,Need for Research Design, Features of a Good Design, Important Concepts Relating to Research Design Different Research Designs Basic Principles of Experimental Designs Developing a Research Plan ,Census and Sample Survey Implications of a Sample Design Steps in Sampling Design Criteria of Selecting a Sampling Procedure</p>
3	<p><b>Unit III: Data collection (06 Hours.)</b></p> <p>Collection of Primary Data , various methods of data collection Collection of Secondary Data Difference between Survey and Experiment Processing Operations Some Problems in Processing Elements/Types of Analysis Statistics in Research Measures of Central Tendency Measures of Dispersion Measures of Asymmetry (Skewness) Measures of Relationship Simple Regression Analysis Multiple Correlation and Regression Partial Correlation Association in Case of Attributes</p>
	<p><b>Unit 4 Design of experiment (6 hr)</b></p> <p>Strategy of Experimentation, Typical applications of research experimental design, Guidelines for Designing Experiments, Linear Regression Models Estimation of the Parameters in Linear Regression Models, Hypothesis Testing in Multiple Regression, Confidence Intervals in Multiple Regression Prediction of new response Regression model diagnostics Testing for lack of fit</p>



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<b>5</b>	<p><b>Unit V: The Computer: Its Role in Research and Research Ethics, IPR and Publishing (06 Hours.)</b></p> <p>Introduction The Computer and Computer Technology The Computer System Important Characteristics The Binary Number System Computer Applications Computers and Researcher</p> <p>Ethics: Ethical issues. PR: intellectual property rights and patent law, techniques of writing a Patent, filing procedure, technology transfer, copy right, royalty, trade related aspects of intellectual property rights, Publishing: design of research paper, citation and acknowledgement, plagiarism tools, Reproducibility and accountability.</p>
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**Text books**

Sr. No	Name of the book	Author	Edition / volume
1	Practical research methods	Dawson	UBS Publishers New Delhi 2002,
2	Research Methodology methods and techniques	Kothari C.R	Wiley eastern limited, New Delhi
3	Research methodology step by step guide for beginners	Kumar, Ranjit	2005, Singapur 2 <sup>nd</sup> edition Pearson education

**Reference books**

Sr. No	Name of the book	Author	Edition / volume
1.	The craft of research	Wayne .C.Booth	3
2.	Practical research	Paul leedy	2nd

**Course evaluation matrix**

Sr. No	Outcome related Course learning Objective	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
1	Enhance the knowledge of students using fundamental concepts of research technique.	3	2	2	1	2	1	1
2	Introduce areas of knowledge where research area is opening rapidly	3	3	3	2	2	1	1

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**Programs Academic Information, 2016-17**

3	To understand the role of research methodology in Engineering/Science.	2	3	2	2	2	2	2
4	To understand literature review process and formulation of a research problem	2	3	2	2	3	1	2
5	To understand data collection methods and basic instrumentation	2	2	3	2	1	2	2
6	To learn various statistical tools for data analysis							
7	To learn technical writing and communication skills required for research							
8	To create awareness about intellectual property rights and patents							

1 = Objective addressed slightly

2= moderately

3= substantive

PO : Program outcome





### Business Research Methods

Course Code	MG511M	Course Title	Business Research Methods
Course Type	CC	Sessions in TT per week	04
No. of Credits	04	Continuous Assessment Marks	40
Credit Pattern(LTP)	2-1-1	End Semester Assessment Marks	60

#### Course Outcomes:

Sr. No.	Particulars
CO1	To have an understanding of various kinds of research, objectives of doing research, research process research designs and sampling
CO2	To be able to formulate research problem and develop a sufficiently coherent research design.
CO3	To have basic knowledge on qualitative, quantitative as well as measurement & scaling techniques
CO4	To have a basic awareness of data analysis, including descriptive & inferential measures.
CO5	Ability to write & develop independent thinking for critically analyzing research reports.

#### Course Syllabus:

Unit. & Sub Unit	Syllabus	Tentative Number of Sessions
1	<b>Introduction to Business Research:</b> Scope of Business Research - Basic Research and Applied Research - Role of Business Research in Decision-Making: Problem/ Opportunity Identification, Problem/ Opportunity Prioritization and Selection, Problem/opportunity Resolution, Implementing the Course of Action – Factors Affecting Business Research, Globalization and Business Research	7
2	<b>Business Research Process:</b> Steps in the Research Process- Identifying and defining the Problem/Opportunity, Statement of research objectives, developing the hypotheses. Planning the Research Design, Selecting the Research Method - Surveys, Experiments, Secondary data studies, Observation, techniques, Analyzing research designs, Selecting the Sampling Procedure, Data Collection, Evaluating the Data. Analysis, Preparing and Presenting the Research Report	7



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3	<b>Business Research Design and Implementation:</b> The Meaning of Business Research Design - Need For Research Design - Characteristics of a Good Research Design - Research Design Concepts: Dependent and Independent variables, Extraneous variable, Control, Confounded relationship, Research hypothesis, Experimental and non experimental hypothesis testing research, Experimental and control groups, Classification of Research Designs, Benefits of Research Designs	7
4	<b>Experimentation:</b> Experimental Validity: Internal Validity, External Validity - Experimental Environment: Laboratory Environment, Field Environment - Types of Experimental Designs: Pre-Experimental Designs, True Experimental Designs, Quasi-experimental Designs	7
5	<b>Questionnaire Design:</b> Preliminary Decisions: Required Information, Target Respondents, Interviewing Technique Formal Questionnaire designing and layouts- Question Content - Effect of External Events – Response Format and Close-ended Questions – Question frame out Questionnaire Sequence: Lead-in Questions, Qualifying Questions, Warm-up Questions, Specific Questions, Demographic Questions - Questionnaire Pretesting, Revision and Final Draft.	8
6	<b>Measurement Concepts in Business Research:</b> Identifying and Deciding on the Variables to be Measured - Development of Measurement Scales Types of Measurement Scales: Nominal Scale, Ordinal Scale, Interval Scale, Ratio Scale - Criteria For Good Measurement: Reliability, Test-retest reliability, Equivalent form reliability, Internal consistency, Validity and Relevance. Definition of Scale and Scaling, Types of Scales	8
7	<b>Business Research Reports:</b> Types of Research Reports: Short Reports, Long Reports - Components of Research Reports: Prefatory information, Introduction, Methodology, Findings, Conclusions and Recommendations, Appendices, Bibliography - Written Presentation: Prewriting Concerns, Writing the Draft, Presentation of the Research Report - Oral Presentations	8
8	<b>Survey Research:</b> Nature of Surveys - Classifying Survey Research Methods – Questionnaire Design, Cross-Sectional and Longitudinal Studies - Survey Methods, <b>Multivariate Analysis:</b> <b>Report Writing-</b> Different Steps in Writing Report, Layout of the Research Report Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing Research Reports, Conclusions	8



*M. S. G.*



**Learning Resources:**

Sr. No	Name of the book	Author	dition / volume / Publisher
1	Business Research Methods, 7e	William G Zikmund/ Thomson	South- Western, Singapore 2003
2	Business Research Methods	Donald R Cooper and Ramela S. Schindler/	Tata McGraw Hill Publishing Company Ltd, New Delhi, (2000)
3	Marketing Research	G C Beri	Tata McGraw Hill, New Delhi, 2000
4	Research Methodology	K R Sharma	National Publishing House, New Delhi, 2002
5	Statistics for Management	Richard I Levin and David S Rubin	PHI



*Melita*