Pt. Ravishankar Shukla University

Raipur (C.G.), India 492010

CURRICULUM & Syllabus

(Based on CBCS & LOCF)

Pre. Ph. D. Course Work

Session: 2025-26

टीप:- सत्र 2024-25 के पाठयक्रम को सत्र 2025-26 के लिए यथावत प्रभावशील किया जाता है।

Approved by Board of Studies	: **Chemistry**
Dates	: **15.05.2025**
Name of chairman	: Prof. Kamlesh Kumar Shrivas
Name of Members	: Prof. Kallol K. Ghosh (Head, SoS in Chemistry & (CBS)
	: Prof. M. K. Deb (Head, SoS in Environmental Science)
	: Prof. N. K. Karade (External Members, RTM university) JOINED ONLINE
	: Prof. Shamsh Pervez
	: Prof. M. K. Rai
	: Dr. M. L. Satnami
	: Dr. Bhanushree Gupta
	: Dr. Ajita Dixit
	: Shree Hemant Deshmukh
	: Shree B. L. Yadav
	: Dr. Indrapal Karbhal
	: Dr. Shobhana Ramteke

	Online										
Prof. Kamlesh. K. Shrivas, Chairman	Prof. N. K. Karade (External member	Prof. Kallol K. Ghosh (member)	Prof. M. K. Deb (Member)	Prof. Shamsh Pervez (Member)	Dr. M. L. Satnami	Dr. Bhanushrre Gupta (Memebr)	Dr. Ajita Dixt (Member)	Shri H. Deshmukh (Member)	Shri B. L. Yadaw (Member)	Dr. Indrapal Karbhal (Member)	Dr. M. K. Rai SOS in chemistry

RE - Ph.D. COURSE

DURATION: SIX MONTHS **M.M.:** 200

COURSES		MARKS
COURSE I	1. PHILOSOPY AND ETHICS, SCIENTIFIC CONDUCT, IUPAC RULE OF NOMENCLATURE	20
	2. RESEARCH METHODOLOGY	20
	3. INSTRUMENTATION TECHNIQUES	20
	4. SAMPLING & MODELING	20
	5 STATISTICAL ANALYSIS	20
COURSE II	6. PROJECT BASED ON REVIEW OF RESEARCH WORK	50
	7. SEMINAR	50
	TOTAL	**200**

Prof. Kamlesh. K. Shrivas, Chairman	Online	Prof. Kallol K. Ghosh (member)	Prof. M. K. Deb (Member)	Prof. Shamsh Pervez (Member)	Dr. M. L. Satnami	Dr. Bhanushrre Gupta (Memebr)	Dr. Ajita Dixt (Member)	Shri H. Deshmukh (Member)	Shri B. L. Yadaw (Member)	Dr. Indrapal Karbhal (Member)	Dr. M. K. Rai SOS in chemistry
	Prof. N. K. Karade (External member										

PRE - Ph.D. COURSE

COURSE – 1

RESEARCH AND PUBLICATIONS ETHICS (RPE)

M.M. - 100

UNIT-I PHILOSOPY AND ETHICS, SCIENTIFIC CONDUCT:

Philosophy and Ethics:

- Introduction to philosophy: definition, nature and scope, concept, branches
- Ethics: Definition, moral philosophy, nature of moral judgement and reactions

Scientific Conduct:

- Ethics with respect to science and research
- Intellectual honesty and research integrity
- Scientific misconduct: Falsification, Fabrication and Plagiarism (FFP)
- Redundant Publications: duplicate and overlapping publications, salami slicing
- Selective reporting and misrepresentation

UNIT-II RESEARCH METHODOLOGY & COMPUTERS IN RESEARCH

Purpose of research; Research project Conceptualization, choice of methods; Elements of a research proposal, operationalization choices and illustrations. Research design: formulation, pre-testing of research instruments and procedures, units of analysis, time dimension. Experimental design and use of indicators in research.Survey Research: Guidelines for asking question and questionnaires construction, Self- administered questionnaires, Interview and other survey methods; their strength and weaknesses. Sampling: the logic of sampling, concepts and terminologies, population and Sampling frames, types of sampling design .Field studies : steps in the conducting field study ; evaluation research: how to carry out evaluation research .

Knowledge of Basic computers applications for research work and applications, knowledge of National and International Journals, Impact Factor, Citation-Index, h-Index, SCI Journal, Plagiarism.

Online

Prof. Kamlesh. K. Shrivas, Chairman	Prof. N. K. Karade (External member	Prof. Kallol K. Ghosh (member)	Prof. M. K. Deb (Member)	Prof. Shamsh Pervez (Member)	Dr. M. L. Satnami	Dr. Bhanushree Gupta (Memebr)	Dr. Ajita Dixt (Member)	Shri H. Deshmukh (Member)	Shri B. L. Yadaw (Member)	Dr. Indrapal Karbhal (Member)	Dr. M. K. Rai SOS in chemistry

UNIT-III INSTRUMENTAL TECHNIQUES

Principle, instrumentation and application of electro-analytical, spectrophotometry, fluorimetry, AAS, and NMR techniques. Principle instrumentation and application of chromatography and MS techniques.

UNIT-IV SAMPLING AND MODELING

Measurement and sampling techniques of air/water pollutants using air monitors in selected atmospheric receptors. Statistical approach in environmental monitoring and analysis using selected parameters (correlation and regression analysis, factor analysis etc.) and graph plotting (Boxplot, histogram etc.)

UNIT-V STATISTICAL ANALYSIS

Various types of errors – precision and accuracy- significant figures, various statistical tests on the accuracy of results, positive and negative deviation from accurate results the binomial distribution, the Gaussian distribution - the normal distribution of random errors, mean value, variance and standard deviation, reliability interval, deviations, from the Gaussian law of error distribution, student's t-test, F-test, Q-test, Graphical methods- Linear regression line, standard deviation, correlation coefficient-Multiple linear regression (one variable with two other variables).

COURSE - II **M.M. : 100**

I. PROJECT BASED ON REVIEW OF RESEARCH WORK **M.M.-50**
(Use of plagiarism software, software tool to identify predatory publisher and journals, data base and research matrics)

II. SEMINARS **M.M.-50**

(Group Discussion, subject specific issue)

Online											
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BOOK SUGGESTED:

1. Ahuja & Jespersen, Modern Instrumental Analysis, 1st Edition, Elsevier Science, 2006.
2. Douglas A. Skoog; F. James Holler; Stanley R. Crouch, Principles of instrumental Analysis, Cole Pub Co., 2006.
3. John Creswell, Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (Hardcover), 2008
4. John W. Creswell, Qualitative Research & Evaluation Methods , 2008
5. Thesis and Assignment Writing – J. Anderson, B.H. Dursten and M.Poole, Wiley Eastern (1977).
6. A Hand Book of Methodology of Research – P. rajamal and P. Devadoss, R.M.M.Vidya Press (1976).
7. instrumental Methods of Analysis – H.H. Willard, L.L.Merritt, J.a.Dean, F.A. Settle, CBS Publishers & Distributors, 1986.
8. Practical Process, Research and Development – Neal G. Anderson, Amazow

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