



Office of Research and Innovation
Doctoral Research Programme
Course Specifications



Pro Vice Chancellor
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054.

2021 Batch Onwards

Course Specifications: Research Methodology

Course Title	Research Methodology
Course Code	RIC601
Course	Doctoral Programme

I. Course Summary

1. Aim and Summary

This course aims to impart skills to research scholars on the principles of research, research methodology and significant phases of research. Scholars are taught the realistic guidelines to be followed in the choice of field of research, topic of research and formulation of research problem. Key and careful considerations in the choice of tools for the solution of research problem are covered in this course. The course emphasizes the desirable close knit relation between innovation and concept of out of the box thinking. The principles of effective research and the need for a Proactive approach in a successful research programme are also explained. The course discusses significant role of Literature Review in a research cycle and the expectations from good literature review as well as procedure for systematic literature review. Scholars will get an insight into the privilege, honour and the associated responsibilities of a researcher.

2. Course Size and Credits:

Number of credits	4
Total Study Hours	60
Number of Weeks	16 weeks
Course marks	Total Marks : 100 Assignment : 50 % Weight SEE: 50% Weight
Pass requirement	A scholar is required to score a minimum of 50% for successful completion of a course and earning the credits.
Attendance requirement	80% attendance is mandatory for appearing for Semester End Examination


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II. Teaching , Learning and Assessment

1. Course Outcomes (COs)

After undergoing this course scholars will be able to:

CO 1. Describe the value, scope, relevance and mandatory steps of research as well as principles of effective research

CO 2. Demonstrate the application and utility of the Systematic approach and out of box thinking concepts for research to be effective

CO 3. Adapt and demonstrate the procedures outlined for a systematic Literature Review

CO 4. Analyze and prepare well-structured research proposal and research paper invoking clearly outlined principles

CO 5. Identify and apply the essential skills desirable for an effective technical presentation

2. Course Contents

Foundations of Research – Definitions of Research, Mandatory Steps in Research, Types of Research, Relevance of Research for Innovation and Technology Development, Effective Research, Critical thinking, and Self Discipline. Out of the Box Thinking and Systematic approach in Research – Transformation to Impossible Thinking, Convergent and Divergent Thinking, Generation, Evaluation and Selection of Ideas.

Importance of Literature Review, Constituents of Good Literature Review, and Strategies for Literature Search, Identification of problems, narrowing down the problem, Factors to be considered for problem selection. Referencing, Paraphrasing, and Summarizing Academic Standards and Ethics. Statistical Methods and Data Analysis.

Structure of a Good Research Proposal, Getting Started, Tips for compilation of Good Research Proposal. Technical Communication - Research Paper for Publication- Significance of Problem Statement and its scope, Formulation of Hypothesis, Adequacy of Methodology, Significance of Presentation and Discussion of Results, Relevance and Importance of references.

Preparation, Templates, Balance between Good Design and Good Content, Planning and Sequencing, PAMPERS (Projection, Articulation, Modulation, Punctuation, Enunciation, Repetition and Speed) rule, PEOPLE (Position & Gestures, Eye Contact, Orientation, Proximity, Looks & Appearance, and Expressions & Emotion) rule, 4P's Rule (Plan, Prepare, Practice and Present), Essentials of Effectiveness, Effective Pausing and Inclusive Answering.

3. Method of Assessment

Assessment is through submission of written report/Assignment (25 % weight) of Literature Review followed by presentation (25 % weight) and Semester End Examination (50 % weight).



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M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054.

Scholars are required to submit a word processed assignment report comprising the literature review of:

- (i) Abstract, Introduction and Conclusion of Two Ph.D. Theses closely related to the scholar's research topic of interest
- (ii) Five research papers pertaining to the scholar's specific field of research Initial evaluation of the written report/presentation is by the course leader and is followed with a review by the second examiner

4. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

a. Essential Reading

1. Class Notes
2. Booth W. C, Colomb and G.G Williams. (2005) The Craft of Research, The University of Chicago Press, Ltd., London
3. William M.K and Trochim. (2003) Research Methods, 2nd Edition, Dreamtech Publications, India
4. Jonathan Grix. (2004) The Foundation of Research, Palgrave Macmillan, London

b. Recommended Reading

1. Wisker Gina. (2001) The Post Graduate Research Handbook, Palgrave, New York
2. Rugg G. and Petre M. (2004) The Unwritten Rules of Ph.D research, Open University Press, Berkshire - United Kingdom

IV. Course Organization

Course Organization			
Course Code	RIC601		
Course Title	Research Methodology		
Course Teacher/s Name			
Course Teacher Contact Details		Phone:	0804906 5555
		E-mail:	
Course Specifications Approval Date		September 2021	
Next Course Specifications Review Date:			




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 Bangalore - 560 054.

Course Specifications: Research and Publication Ethics

Course Title	Research and Publication Ethics
Course Code	RPE601
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

The aim of the course is to inculcate the publication ethics in the research scholars.

This course is emphasizes on the creating awareness about publication ethics, research integrity, predatory publications, indexing and citation databases, open access journals, research metrics, plagiarism tools and publication misconduct.

2. Course Size and Credits:

Number of credits	2
Total Study Hours	30
Number of Weeks	16 weeks
Course marks	Total Marks : 50 Assignment : 50% Weight Semester End Examination : 50% Weight
Pass requirement	A scholar is required to score a minimum of 50% for successful completion of a course and earning the credits.
Attendance requirement	80% attendance is mandatory for appearing for Semester End Examination

II. Teaching , Learning and Assessment**1. Course Outcomes (COs)**

After undergoing this course scholars will be able to:


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- CO 1.** Discuss the process of submission to a journal, the specific format requirements, communication to editor, the review process, effective answering to the reviewer's comments
- CO 2.** Recognize the adequacy criterion to judge the quality of a research work for a possible publication
- CO 3.** Select appropriate journal and conference for publication of research work
- CO 4.** Write a clear and concise paper to effectively communicate the findings/novelty of the research work
- CO 5.** Prepare posters and slides for oral presentation of research findings

2. Course Contents

Philosophy of Ethics: Introduction to Philosophy: Definition, nature and scope, concept, branches

Ethics: Definition, moral Philosophy, nature of moral judgments and reaction

Scientific Conduct: Ethics with respect to science and research, intellectual honesty and research integrity, Scientific misconducts: Falsification, fabrication, plagiarism (FFP)

Redundant publications: Duplicate and overlapping publications, salami slicing
Selective reporting and misinterpretation of data

Publication ethics: Definition, Introduction and importance

Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.

Conflicts of interest

Publication misconduct: Definition, concept, problems that lead to unethical behavior and vice versa, types

Violation of publication ethics, authorship and co-authorship

Identification of publication misconduct, complaints and appeals

Predatory publishers and journals

Open Access Publishing;

Open access publications and initiatives

SHERPA/RoMEO online resource to check publisher copy right and self-archiving policies

Software tool to identify predatory publications developed by SPPU

Journal finder / journal suggestion tools viz, JANE, Elsevier Journal finder, Springer journal suggester, etc.

Publication Misconduct:

Group discussions: Subject specific ethical issues, FFP, authorship

Conflicts of Interest

Complaints and Appeals: Examples and fraud from India and Abroad

Software Tools:

Indexing databases, citation databases – Web of science, Scopus, etc.

Research Metrics: Impact factor of journal as per journal citation report, SNIP, SJR, IPP, Cite score

Metrics: h-index, g index, I 10 index, altmetrics

3. Method of Assessment

Assessment will be through submission of Assignment Written Report (50% weight) and Semester End Examination (50%).

4. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources**a. Essential Reading**

1. Class Notes
2. Bird A (2006), Philosophy of Science, Routledge, United Kingdom
3. MacIntyre, Alasdair (1967) A short History of Ethics, London
4. P. Chaddah (2008) Ethics in Competitive Research; Do not get scopped; do not get plagiarized, ISBN:978-9387480865
5. National Academy of Sciences, National Academy of Engineering and Institute of Medicine (2009) On being a Scientist: A Guide to Responsible Conduct in Research, Third Edition, National Academies Press, Washington DC.
6. Resnik, D. B. (2011) What is ethics in research & why is it important. National Institute of Environmental Health Sciences, 1-10. Retrieved from <https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm>
7. Beall, J. (2012) Predatory publishers are corrupting open access. Nature, 489(7415), 179—179. <https://doi.org/10.1038/489179a>
8. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance(2019), ISBN:978-81-939482-1-7. <http://www.insaindia.res.in/pdf/Ethics Book.pdf>

IV. Course Organization

Course Code	RPE601		
Course Title	Research and Publication Ethics		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date		September 2021	
Next Course Specifications Review Date:			




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Course Specifications: Technical / Specialization Subject 1

Course Title	Technical / Specialization Subject 1
Course Code	RIC602
Programme	Doctoral Programme

I. Course Summary**1. Aim and Summary**

This course aims to impart the advanced knowledge in the chosen -area of research of the research scholar pursuing the Doctoral degree.

Each department shall have courses identified for the Technical or Specialization subject 2, which shall be reviewed in the BOS, and approved in the academic council. A scholar is expected to opt for the course offered at the department or an equivalent online credited course on SWAYAM/Coursera, etc. in consultation with the supervisor/HOD.

2. Course Size and Credits:

Number of credits	3
Total Study Hours	45
Number of Weeks	16 weeks
Course marks	Total Marks : 100 Assignment : 50 % Weight Semester End Examination : 50% Weight
Pass requirement	A scholar is required to score a minimum of 50% for successful completion of a course and earning the credits.
Attendance requirement	80% attendance is mandatory for appearing for Semester End Examination

II. Teaching , Learning and Assessment**1. Course Outcomes (COs)**

Course outcomes are reflected in the domain specific course specifications document developed by the respective departments.

2. Course Contents

Course contents are provided in the domain specific course specifications document developed by the respective departments.

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MS Ramaiah University of Applied Sciences
Bangalore - 560 054.

3. Method of Assessment

Assessment will be through submission of Assignment Written Report (50% weight) and Semester End Examination (50%).

4. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

Course resources are provided in the domain specific course specifications developed by the respective departments.

IV. Course Organization

Course Organization			
Course Code	RIC602		
Course Title	Technical / Specialization Subject 1		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date		September 2021	
Next Course Specifications Review Date:			




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Course Specifications: Topic related Seminar pertaining to Scholar's Research

Course Title	Topic related Seminar pertaining to Scholar's Research
Course Code	RPE602
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

The aim of this course is to train scholars to conduct independent study a topic of relevance and deliver a seminar.

This course emphasizes the key considerations and significant care to progress towards precise definition of research topic /problem of thesis. This course emphasizes the scholar to develop enhanced skills to apply more effectively the good practices and guidelines of a systematic and structured literature review to collect, comprehend, sort and document the available information on specific topic of search in open literature. This course enables the research scholar to inculcate the aptitude to author opinion about the status of research, research trend and potential academic gaps in the chosen specific topic of research after holistic consideration of observations and inferences derived through methodical and detailed analysis of available literature. In view of the exhaustive review of literature on contemporary research work, scholar acquires deeper understanding of chosen specific topic of research. The outcome of this course enables the research scholar to progress from the specific topic of research to potential research topic/problem of thesis.

2. Course Size and Credits:

Number of credits	2
Total Study Hours	30
Number of Weeks	16 weeks
Course marks	Total Marks : 50 Presentation : 50 Marks (100% weight)
Pass requirement	A scholar is required to score a minimum of 50% for successful completion of a course and earning the credits.
Attendance requirement	80% attendance is mandatory for appearing for Semester End Examination

II. Teaching , Learning and Assessment**1. Intended Course Outcomes (COs)**

After undergoing this course scholars will be able to:

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Bangalore - 560 054.
Doctoral Programme

CO 1. Make a presentation to a panel of examiners

CO 2. Conduct a thorough literature review and submit a review article

2. Course Contents

Discussion on identifying the research problem of the thesis

Definition and classification of various sub domains under specific topic of research

Critical review and analysis of literature review on each sub domain of specific topic of research

Three Pass method of reviewing a research paper

Critical Analysis, assessment, classification, sorting and gradation of collected information for structured documentation and analysis

Discussion on pattern of the past research in the specific topic of research and predicting its present and future trends

Documentation of literature survey of the course RIC604

3. Method of Assessment

Make a presentation to a panel of examiners

Conduct a thorough literature review, give a presentation and submit notes/report

4. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

Course resources are provided in the domain specific course specifications developed by the respective departments.

IV. Course Organization

Course Code	RPE602		
Course Title	Topic related Seminar pertaining to Scholar’s Research		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			



Key

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Course Specifications: Technical / Specialization Subject 2

Course Title	Technical / Specialization Subject 2
Course Code	RIC606
Programme	Doctoral Programme

I. Course Summary

1. Aim and Summary

This course aims to impart the advanced knowledge in the chosen area of research of the research scholar pursuing the Doctoral degree.

Each department shall have courses identified for the Technical or Specialization subject 2, which shall be reviewed in the BOS, and approved in the academic council. A scholar is expected to opt for the course offered at the department or an equivalent online credited course on SWAYAM/Coursera, etc. in consultation with the supervisor/HOD.

2. Course Size and Credits:

Number of credits	3
Total Study Hours	45
Number of Weeks	16 weeks
Course marks	Total Marks : 100 Assignment : 50 % Weight Semester End Examination : 50% Weight
Pass requirement	A scholar is required to score a minimum of 50% for successful completion of a course and earning the credits.
Attendance requirement	80% attendance is mandatory for appearing for Semester End Examination

II. Teaching , Learning and Assessment

1. Course Outcomes (COs)

Course outcomes are reflected in the domain specific course specifications document developed by the respective departments.

2. Course Contents

Course contents are provided in the domain specific course specifications document developed by the respective departments.

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3. Method of Assessment

Assessment will be through submission of Assignment Written Report (50% weight) and Semester End Examination (50%).

4. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

Course resources are provided in the domain specific course specifications developed by the respective departments.

IV. Course Organization

Course Registration			
Course Code	RIC606		
Course Title	Technical or Specialization Paper – 2		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date		September 2021	
Next Course Specifications Review Date:			




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Course Specifications: Comprehensive Exam

Course Title	Comprehensive Exam
Course Code	PhD600A
Course	Doctoral Programme

I. Course Summary

1. Aim and Summary

The aim of this course is to train scholars to study the required technical subject to attain the minimum technical competency in the chosen area of research.

This course emphasizes on training the scholars to undergo course work to attain technical competency by making them study the basics and advanced topics in the chosen research field. A succinct report on the status of research in the chosen topic of research based on the existing literature forms a significant component of this course. The outcome of this course facilitates a research scholar to develop a comprehensive understanding of the basics and advanced level of research area forming a pre-requisite for the doctoral programme.

2. Course Size and Credits:

Number of credits	2
Total Study Hours	30
Number of Weeks	16 weeks
Course marks	Total Marks : 50 Presentation : 50 Marks (100% weight)
Pass requirement	A scholar is required to score a minimum of 50% for successful completion of a course and earning the credits.
Attendance requirement	80% attendance is mandatory for appearing for Semester End Examination

II. Teaching , Learning and Assessment

1. Intended Course Outcomes (COs)

After undergoing this course, scholars will be able to:

CO 1. Discuss the basics and advanced topics of the chosen research field

CO 2. Study the relevant literature that is required to attain the technical competency

CO 3. Prepare and give a technical presentation

Doctoral Programme

Pro Vice Chancellor
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054.

1. Course Contents

Supervisor meetings - Basic and Advanced level of study design – Discussion to identify and choose the relevant resources, study the subject to attain the required technical competency.

2. Method of Assessment

- Evaluation of the presentation on the course work study carried out to PRP / Doctoral Committee

3. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

Books and Research articles on the domain subject chosen.

IV. Course Organization

Course Code	PhD600A		
Course Title	Comprehensive Exam		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			




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Course Specifications: PhD – Research Problem Formulation

Course Title	PhD – Research Problem Formulation
Course Code	RIC605
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

The aim of this course is to train scholars to identify research gaps after the literature review and formulate the research problem.

This course deals with definition and formulation of research programme for the Doctoral thesis. Scholar proposes the title of the thesis and aim of the research programme. Scholar will identify and formulate 5 key research objectives to accomplish the proposed aim of the research. A succinct report on the status of research in the chosen topic of research and the identified gaps in the existing literature forms a significant component of this course. The appropriateness and choice amongst potential techniques required in accomplishing the research objectives, suitability and appropriateness of the assumptions, the requirement of resources, anticipated original contributions, key milestones to monitor the progress of research and the timelines for each of the research objectives are also identified. The outcome of this course facilitates a research scholar to develop a comprehensive research proposal encompassing the outline and roadmap of the entire research programme of the Doctoral thesis with requisite details.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Weeks	16 weeks
Course marks	Presentation : Satisfactory Report: Satisfactory
Pass requirement	Satisfactory grade for successful completion of a course.
Attendance requirement	80% attendance is mandatory for appearing for Semester End Examination


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II. Teaching , Learning and Assessment**1. Intended Course Outcomes (COs)**

After undergoing this course, scholars will be able to:

- CO 1.** Discuss the scope and core theme of Doctoral thesis
- CO 2.** Define the topic of research of the Doctoral thesis
- CO 3.** Identify and summarize the potential gaps in the literature pertinent to the chosen research topic
- CO 4.** Define the title, aim and objectives of thesis
- CO 5.** Identify, discuss and propose appropriateness of possible solution / techniques/ framework required to accomplish research objectives
- CO 6.** Prepare a comprehensive research proposal depicting the outline, framework and roadmap of Doctoral thesis

4. Course Contents

Research proposal and plan - Key milestones and deliverables, use of task lists and Gantt charts, identification of key research questions, resources and methodology and identification of proposed contribution to knowledge or practice

Supervisor meetings - Initial discussion on topic of research, focusing and defining the topic, identification of resources, identification of subject-specific and research methods courses

Outline Research Plan - The different schemes, assessment, key milestones and deliverables, maintenance of records, research documentation and examination arrangements

5. Method of Assessment

- Research proposal stating the title, aim, summary of literature, objectives, solution methodologies, original contributions, Gantt chart and key references
- Evaluation of research proposal initially by the supervisor and reviewed by second examiner
- Presentation to PRP / Doctoral Committee

6. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

Research articles on the domain subject chosen.

IV. Course Organization

Course Code	RIC605		
Course Title	PhD – Research Problem Formulation		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			



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Course Specifications: Work on Objective 1

Course Title	Work on Objective 1
Course Code	PhD601
Course	Doctoral Programme

I. Course Summary

1. Aim and Summary

The course aims at enabling the scholar to exercise and exhibit a considerate/learned judgment in the identification and choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators required for solution of specified research tasks.

This course deals with the identification and study of a domain specific course to facilitate better appreciation of the peripheral/core issues relevant and specific to research problem of the thesis. The study of this identified course facilitates the scholar in acquiring/augmentation of analytical and problem solving as well as cognitive skills required to proceed with the formulated research proposal. The course enables the research scholar to develop/demonstrate the skills of decision making to deal with the modalities/technicalities closely related to research oriented tasks of the Doctoral thesis.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	3 months for Full-time or 4.5 months for the Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee With affirmative decision

II. Teaching , Learning and Assessment

1. Course Outcomes (COs)

After undergoing this course scholars will be able to:

- CO 1.** Identify, describe and justify the need for acquiring/enhancing the technical grasp in specific sub topics or special techniques belonging to the identified research problem of the thesis
- CO 2.** Discuss the benefits the identified course brings to pursue the research objectives of the thesis
- CO 3.** Demonstrate the enrichment in analytical/problem solving/cognitive skills acquired through the study of identified sub topics
- CO 4.** Exhibit the ability of improved decision making/ judgment in the identification of choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators

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Bangalore - 560 054.

2. Course Contents

Supervisor meetings – On-going discussion on topic of research, focusing and defining the topic, identification of specific topics closely related to research thesis which potentially augments the research/analytical/problem solving/cognitive skills of the scholar.

Research Work – Work here will involve the implementation of methods and techniques identified in literature review to study /analyze the pertinent issues specific to the research thesis. Formulation of study material to compose the indicative content of the course, assessment modalities, contact classes. The content and the criteria/nature/quantum of work for the successful completion of course will be in accordance with the requirements of the individual research tasks.

3. Method of Assessment

- (a) A report on the work carried out related to objective 1.
- (b) A presentation to the PRP / Doctoral Committee

4. Assessment

Presentation is assessed by the PRP / Doctoral Committee

5. Reassessment

In keeping with University regulations, reassessments will be permitted

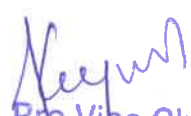
III. Course Resources**a. Essential Reading**

- 1. To be decided by Supervisory team

IV. Course Organization

Course Organization			
Course Code	PhD601		
Course Title	Work on Objective 1		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			




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Doctoral Programme

Course Specifications: Work on Objective 2

Course Title	Work on Objective 2
Course Code	PhD602
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

The course aims at enabling the scholar to exercise and exhibit a considerate/learned judgment in the identification and choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators required for solution of specified research tasks.

This course deals with the identification and study of a domain specific course to facilitate better appreciation of the peripheral/core issues relevant and specific to research problem of the thesis. The study of this identified course facilitates the scholar in acquiring/augmentation of analytical and problem solving as well as cognitive skills required to proceed with the formulated research proposal. The course enables the research scholar to develop/demonstrate the skills of decision making to deal with the modalities/technicalities closely related to research oriented tasks of the Doctoral thesis.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	3 months for Full-time or 4.5 months for the Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee with affirmative decision

II. Teaching , Learning and Assessment**1. Course Outcomes (COS)**

After undergoing this course scholars will be able to:

- CO 1.** Identify, describe and justify the need for acquiring/enhancing the technical grasp in specific sub topics or special techniques belonging to the identified research problem of the thesis
- CO 2.** Discuss the benefits the identified course brings to pursue the research objectives of the thesis
- CO 3.** Demonstrate the enrichment in analytical/problem solving/cognitive skills acquired through the study of identified sub topics
- CO 4.** Exhibit the ability of improved decision making/ judgment in the identification of choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators

 Pro Vice Chancellor
Doctoral Programme
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054.

2. Course Contents

Supervisor meetings – On-going discussion on topic of research, focusing and defining the topic, identification of specific topics closely related to research thesis which potentially augments the research/analytical/problem solving/cognitive skills of the scholar.

Research Work – Work here will involve the implementation of methods and techniques identified in literature review to study /analyze the pertinent issues specific to the research thesis. Formulation of study material to compose the indicative content of the course, assessment modalities, contact classes. The content and the criteria/nature/quantum of work for the successful completion of course will be in accordance with the requirements of the individual research tasks.

3. Method of Assessment

- (a) A report on the work carried out related to objective 2.
- (b) A presentation to the PRP / Doctoral Committee

4. Assessment

Presentation is assessed by the PRP / Doctoral Committee

5. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources**b. Essential Reading**

- 1. To be decided by Supervisory team

IV. Course Organization

Course Code	PhD602		
Course Title	Work on Objective 2		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			




 Pro Vice Chancellor
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Course Specifications: Work on Objective 3

Course Title	Work on Objective 3
Course Code	PhD603
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

The course aims at enabling the scholar to exercise and exhibit a considerate/learned judgment in the identification and choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators required for solution of specified research tasks.

This course deals with the identification and study of a domain specific course to facilitate better appreciation of the peripheral/core issues relevant and specific to research problem of the thesis. The study of this identified course facilitates the scholar in acquiring/augmentation of analytical and problem solving as well as cognitive skills required to proceed with the formulated research proposal. The course enables the research scholar to develop/demonstrate the skills of decision making to deal with the modalities/technicalities closely related to research oriented tasks of the Doctoral thesis.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	3 months for Full-time or 4.5 months for the Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee with affirmative decision

II. Teaching , Learning and Assessment**1. Course Outcomes (COS)**

After undergoing this course scholars will be able to:

- CO 1.** Identify, describe and justify the need for acquiring/enhancing the technical grasp in specific sub topics or special techniques belonging to the identified research problem of the thesis
- CO 2.** Discuss the benefits the identified course brings to pursue the research objectives of the thesis
- CO 3.** Demonstrate the enrichment in analytical/problem solving/cognitive skills acquired through the study of identified sub topics
- CO 4.** Exhibit the ability of improved decision making/ judgment in the identification of choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators

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Bangalore - 560 054.

2. Course Contents

Supervisor meetings – On-going discussion on topic of research, focusing and defining the topic, identification of specific topics closely related to research thesis which potentially augments the research/analytical/problem solving/cognitive skills of the scholar.

Research Work – Work here will involve the implementation of methods and techniques identified in literature review to study /analyze the pertinent issues specific to the research thesis. Formulation of study material to compose the indicative content of the course, assessment modalities, contact classes. The content and the criteria/nature/quantum of work for the successful completion of course will be in accordance with the requirements of the individual research tasks.

3. Method of Assessment

- (c) A report on the work carried out related to objective 3.
- (d) A presentation to the PRP / Doctoral Committee

4. Assessment

Presentation is assessed by the PRP / Doctoral Committee

5. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources**c. Essential Reading**

- 1. To be decided by Supervisory team

IV. Course Organization

Course Code	PhD603		
Course Title	Work on Objective 3		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			




Pro Vice Chancellor
 M.S. Ramaiah University of Applied Sciences
 Bangalore - 560 054.

Course Specifications: Work on Objective 4

Course Title	Work on Objective 4
Course Code	PhD604
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

The course aims at enabling the scholar to exercise and exhibit a considerate/learned judgment in the identification and choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators required for solution of specified research tasks.

This course deals with the identification and study of a domain specific course to facilitate better appreciation of the peripheral/core issues relevant and specific to research problem of the thesis. The study of this identified course facilitates the scholar in acquiring/augmentation of analytical and problem solving as well as cognitive skills required to proceed with the formulated research proposal. The course enables the research scholar to develop/demonstrate the skills of decision making to deal with the modalities/technicalities closely related to research oriented tasks of the Doctoral thesis.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	3 months for Full-time or 4.5 months for the Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee with affirmative decision

II. Teaching , Learning and Assessment**1. Course Outcomes (COS)**

After undergoing this course scholars will be able to:

- CO 1.** Identify, describe and justify the need for acquiring/enhancing the technical grasp in specific sub topics or special techniques belonging to the identified research problem of the thesis
- CO 2.** Discuss the benefits the identified course brings to pursue the research objectives of the thesis
- CO 3.** Demonstrate the enrichment in analytical/problem solving/cognitive skills acquired through the study of identified sub topics
- CO 4.** Exhibit the ability of improved decision making/ judgment in the identification of choice of analytical techniques, experimental procedures and set up, software tools and commercial simulators


Pro Vice Chancellor
 Doctoral Programme
 MS Ramaiah University of Applied Sciences
 Bangalore - 560 054.

2. Course Contents

Supervisor meetings – On-going discussion on topic of research, focusing and defining the topic, identification of specific topics closely related to research thesis which potentially augments the research/analytical/problem solving/cognitive skills of the scholar.

Research Work – Work here will involve the implementation of methods and techniques identified in literature review to study /analyze the pertinent issues specific to the research thesis. Formulation of study material to compose the indicative content of the course, assessment modalities, contact classes. The content and the criteria/nature/quantum of work for the successful completion of course will be in accordance with the requirements of the individual research tasks.

3. Method of Assessment

(e) A report on the work carried out related to objective 4.

(f) A presentation to the PRP / Doctoral Committee

4. Assessment

Presentation is assessed by the PRP / Doctoral Committee

5. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources**d. Essential Reading**

1. To be decided by Supervisory team

IV. Course Organization

Course Organization			
Course Code	PhD604		
Course Title	Work on Objective 4		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			




Pro Vice Chancellor
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 Bangalore - 560 054.

Course Specifications: Synopsis

Course Title	Synopsis
Course Code	PhD606
Course	Doctoral Programme

I. Course Summary

1. Aim and Summary

This course aims to train the scholar to formative stage of thesis writing of Doctoral research programme with the preliminary step of synopsis writing.

This course offers the scholar an opportunity to further streamline the ongoing research activities for an organized, smooth and logical conclusion of the research programme undertaken. This course provides an impetus/momentum for the scholar to consolidate the research work. This course offers the scholar an opportunity for the analyzed projection of the research findings to evaluate the authenticity and completeness of core study phase of research programme. The inculcated/acquired research aptitude along with written and oral communication skills of the scholar are assessed during the preparation and evaluation of synopsis of the thesis. Scholars are advised on the key components of a good Synopsis by highlighting the need of: comprehension, written communication skill for succinct write up, broader perspective of existing literature, clarity in technical grasp of research topic, elaboration and expansion of specifics of research finding, proposed original contributions and the associated value addition to the research topic. This course also constitutes a pre cursor for the compilation of the thesis of Doctoral research programme.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	3 months for Full-time and the Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee with affirmative decision

II. Teaching , Learning and Assessment

Course Outcomes (COs)

After undergoing this course scholars will be able to:

- CO 1. Discuss the scope and significance of Synopsis of a thesis
- CO 2. Explain the key attributes of an effective Synopsis
- CO 3. Recognize and appraise the relevance and importance of the research findings in the context of contemporary work and existing literature

Doctoral Programme


Pro Vice Chancellor
 M.S. Ramaiah University of Applied Sciences
 Bangalore - 560 054.

- CO 4.** Demonstrate the authenticity and completeness of the realized objectives through verifiable results/models/documents
- CO 5.** Prepare a well-documented Synopsis of the thesis incorporating all the key attributes and adhering to the recommended guidelines of the University

Course Contents

Supervisors meetings - On-going discussion on topic of research, Review of scholar's work, Critical analysis of completed objectives and Discussion on status of ongoing activities of research, Current assessment of the research programme Visa Vis the Gantt Chart, Tasks to be completed for initiation and completion of Synopsis writing,

Synopsis Preparation - Discussion on Synopsis and key constituents of effective Synopsis, Structure of Synopsis and identification of sections for continuity of information flow, relevance and focus of each section to the defined aim and objectives of the thesis.

Method of Assessment

Synopsis of a thesis conforming to format and guidelines of University
Presentation of the colloquium

Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

Essential Reading:

To be decided by Supervisory team

IV. Course Organization

Course Code	PhD606		
Course Title	Synopsis		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			




Pro Vice Chancellor
 M.S. Ramaiah University of Applied Sciences
 Bangalore - 560 054.

Course Specifications: Colloquium Presentation

Course Title	Colloquium Presentation
Course Code	PhD606A
Course	Doctoral Programme

I. Course Summary

1. Aim and Summary

This course aims to expose the scholar to formative stage of thesis writing of Doctoral research programme with the preliminary step of synopsis writing.

This course offers the scholar an opportunity to further streamline the ongoing research activities for an organized, smooth and logical conclusion of the research programme undertaken. This course provides an impetus/momentum for the scholar to consolidate the research work. This course offers the scholar an opportunity for the analyzed projection of the research findings to evaluate the authenticity and completeness of core study phase of research programme. The inculcated/acquired research aptitude along with written and oral communication skills of the scholar are assessed during the preparation and evaluation of synopsis of the thesis. Scholars are advised on the key components of a good Synopsis by highlighting the need of: comprehension, written communication skill for succinct write up, broader perspective of existing literature, clarity in technical grasp of research topic, elaboration and expansion of specifics of research finding, proposed original contributions and the associated value addition to the research topic. This course also constitutes a pre cursor for the compilation of the thesis of Doctoral research programme comprehensively.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	3 months for Full-time and Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee with affirmative decision

II. Teaching , Learning and Assessment

Course Outcomes (COs)

After undergoing this course scholars will be able to:

- CO 1. Discuss the scope and significance of Synopsis of a thesis
- CO 2. Explain the key attributes of an effective Synopsis
- CO 3. Recognize and appraise the relevance and importance of the research findings in the context of contemporary work and existing literature

Doctoral Programme

 Pro Vice Chancellor
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054.

- CO 4.** Demonstrate the authenticity and completeness of the realized objectives through verifiable results/models/documents
- CO 5.** Prepare a well-documented Synopsis of the thesis incorporating all the key attributes and adhering to the recommended guidelines of the University

Course Contents

Supervisors meetings - On-going discussion on topic of research, Review of scholar's work, Critical analysis of completed objectives and Discussion on status of ongoing activities of research, Current assessment of the research programme Visa Vis the Gantt Chart, Tasks to be completed for initiation and completion of Synopsis writing.

Synopsis Preparation - Discussion on Synopsis and key constituents of effective Synopsis, Structure of Synopsis and identification of sections for continuity of information flow, relevance and focus of each section to the defined aim and objectives of the thesis.

Method of Assessment

Synopsis of a thesis conforming to format and guidelines of University
Presentation of the colloquium

Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

Essential Reading:

To be decided by Supervisory team

IV. Course Organization

Course Organization			
Course Code	PhD606A		
Course Title	Colloquium Presentation		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date		September 2021	
Next Course Specifications Review Date:			




Pro Vice Chancellor
 M.S. Ramaiah University of Applied Sciences
 Bangalore - 560 054.

Course Specifications: Thesis Submission

Course Title	Thesis Submission
Course Code	PhD608
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

This course aims to prepare the scholar to prepare a formal thesis to be submitted for the award of degree of Doctor of Philosophy.

This course deals with the guidelines to be followed by the scholar for the submission of Doctoral thesis to the university. The course also initiates the preparatory work for the constitution of panel of Thesis examiners for the evaluation of thesis. The course facilitates the consolidated statement of academic records of the scholar during the course of Doctoral research programme to ensure that all the academic requirements are fulfilled before the submission of thesis. This course also facilitates the scholar to recognize the importance and significance of scholar's declaration of authenticity of the research findings and contributions of the Doctoral thesis

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	6 months for Full-time and Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee with affirmative decision

II. Teaching , Learning and Assessment**1. Course Outcomes (COs)**

After undergoing this course scholars will be able to:

- CO 1.** Discuss the good practices and salient considerations in the preparation of an effective thesis
- CO 2.** Explain and report the novelties and original contributions of the research in the context of the defined scope of the thesis
- CO 3.** Demonstrate the relevance and significance of structured flow of information to bring the clarity, conciseness and continuity in expressing view points and decimation of information
- CO 4.** Translate the scope and research findings of Doctoral programme to organized chapters of the thesis
- CO 5.** Prepare a Doctoral thesis featured with clarity of thoughts, continuity and completeness of information flow, critical analysis of relevance and validity of research findings, and appropriate thoughtful recommendations for future work on the topic of research

2. Course Contents

Supervisors meetings - On-going discussion on topic of research, critical review of scholar's work, Identification of potential chapters and their hierarchy, Scope and academic contents of each chapter of the thesis with the need for academic narration backed with academic content and continuity of information flow.

Thesis Preparation : Standard, style and regulations pertaining to preparation of Doctoral thesis of the University, Overview of the examination process, key considerations for effective presentation of research work into a cohesive thesis, identification of potential questions in each thesis chapter and the pertinent answers to bring more clarity, Incorporation of changes to the thesis chapters after supervisory review, Adherence to recommended format for referencing and the size of the thesis.

3. Method of Assessment

Draft copy of thesis reviewed by Supervisory team

4. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources**a. Essential Reading**

1. To be decided by Supervisory team

IV. Course Organization

Course Code	PhD608		
Course Title	Thesis Submission		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date		September 2021	
Next Course Specifications Review Date:			




Pro Vice Chancellor
 M.S. Ramaiah University of Applied Sciences
 Bangalore - 560 054.

Course Specifications: Thesis Evaluation and Viva-Voce

Course Title	Thesis Evaluation and Viva-Voce
Course Code	PhD609
Course	Doctoral Programme

I. Course Summary**1. Aim and Summary**

This course aims to prepare the scholar to defend the thesis work carried out for the award of degree of Doctor of Philosophy.

This course deals with the guidelines to be followed by the scholar after the submission of Doctoral thesis to the university. The course also initiates the preparatory work for the presentation to defend the thesis work carried out.

2. Course Size and Credits:

Number of credits	Satisfactory
Number of Months	6 months for Full-time and Part-time scholars
Pass requirement	Satisfactory grade assessed by the PRP / Doctoral Committee with affirmative decision

II. Teaching , Learning and Assessment**1. Course Outcomes (COs)**

After undergoing this course scholars will be able to:

- CO 1.** Compile the results obtained during the course of thesis work carried out by the scholar
- CO 2.** Report the novelties and original contributions of the research in the context of the defined scope of the thesis
- CO 3.** Present research findings of Doctoral programme to the panel of examiners including the external examiner
- CO 4.** Prepare a Doctoral thesis featured with clarity of thoughts, continuity and completeness of information flow, critical analysis of relevance and validity of research findings, and appropriate thoughtful recommendations for future work on the topic of research

2. Course Contents

Supervisors meetings - On-going discussion on topic of research, critical review of scholar's work, Identification of potential chapters and their hierarchy, Scope and academic contents of each chapter of the thesis with the need for academic narration backed with academic content and continuity of information flow.

Thesis Preparation : Standard, style and regulations pertaining to preparation of Doctoral

 Pro Vice Chancellor
Doctoral Programme
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054.

thesis of the University, Overview of the examination process, key considerations for effective presentation of research work into a cohesive thesis, identification of potential questions in each thesis chapter and the pertinent answers to bring more clarity, Incorporation of changes to the thesis chapters after supervisory review, Adherence to recommended format for referencing and the size of the thesis.

3. Method of Assessment

Draft copy of thesis reviewed by Supervisory team

4. Reassessment

In keeping with University regulations, reassessments will be permitted

III. Course Resources

b. Essential Reading

1. To be decided by Supervisory team

IV. Course Organization

Course Organization			
Course Code	PhD609		
Course Title	Thesis Evaluation and Viva-Voce		
Course Teacher/s Name			
Course Teacher Contact Details	Phone:	0804906 5555	
	E-mail:		
Course Specifications Approval Date	September 2021		
Next Course Specifications Review Date:			




Pro Vice Chancellor
 M.S. Ramaiah University of Applied Sciences
 Bangalore - 560 054.

Thesis Evaluative Procedure and Viva-Voce

1. The thesis submitted to Office of Research and Innovation by the scholar after acceptance by the Doctoral Committee / PRP will be sent to examiners (One Indian Examiner and One Foreign Examiner).
2. After the receipt of evaluative reports by the examiners, the comments will be shared to the supervisor and the scholar by the Doctoral Committee / PRP.
3. The scholar will be given time to incorporate the corrections based on the reviewers' comments and the revised/ amended thesis to be submitted to the Doctoral Committee. In some cases, if reviewers want to see the amended thesis, it should be sent to the reviewers/Examiners and concurrence on compliance be taken. The committee, after the verification of satisfactory incorporation of all the corrections suggested, will approve and recommend for the conduction of viva – voce.
4. During the open Viva-Voce, the scholar will be given 30 minutes time to make presentation and defend the thesis work, which will be followed by the question/answer session.
5. After the consensus of the Viva-voce examiner/s the result will be declared for the eligibility of the scholar to receive the Doctoral Degree.
6. The Supervisor / Doctoral committee will send all necessary documents along with the hard bound copy of the thesis and proceedings of the Viva-voce to Office of Research and Innovation for further needful.
7. A soft copy of the final thesis, after all the amendments (including suggestions during the Viva-voce if any) to be submitted to Librarian to post it on the Shodhganga and get a handle number for the thesis.
8. The scholar is required to submit hard bound copies of the thesis, in the prescribed format of the University to the: i) Library, ii) Office of Research and Innovation, iii) Department Library, iv) Supervisor, and iv) Scholar himself / herself
9. The Dean – Office of Research and Innovation, after verifying all the documents, will forward with his recommendation, the documents to Registrar's office for the result notification
10. Registrar's office will announce the Ph.D. degree result notification
11. The scholar can apply to COE's office for provisional degree certificate
12. The scholar will receive the Doctoral Degree Certificate in the University convocation



Pro Vice Chancellor
Doctoral Programme
M.S. Ramaiah University of Applied Sciences
Bangalore - 560 054.