AURO UNIVERSITY

Integral & Transformational Learning

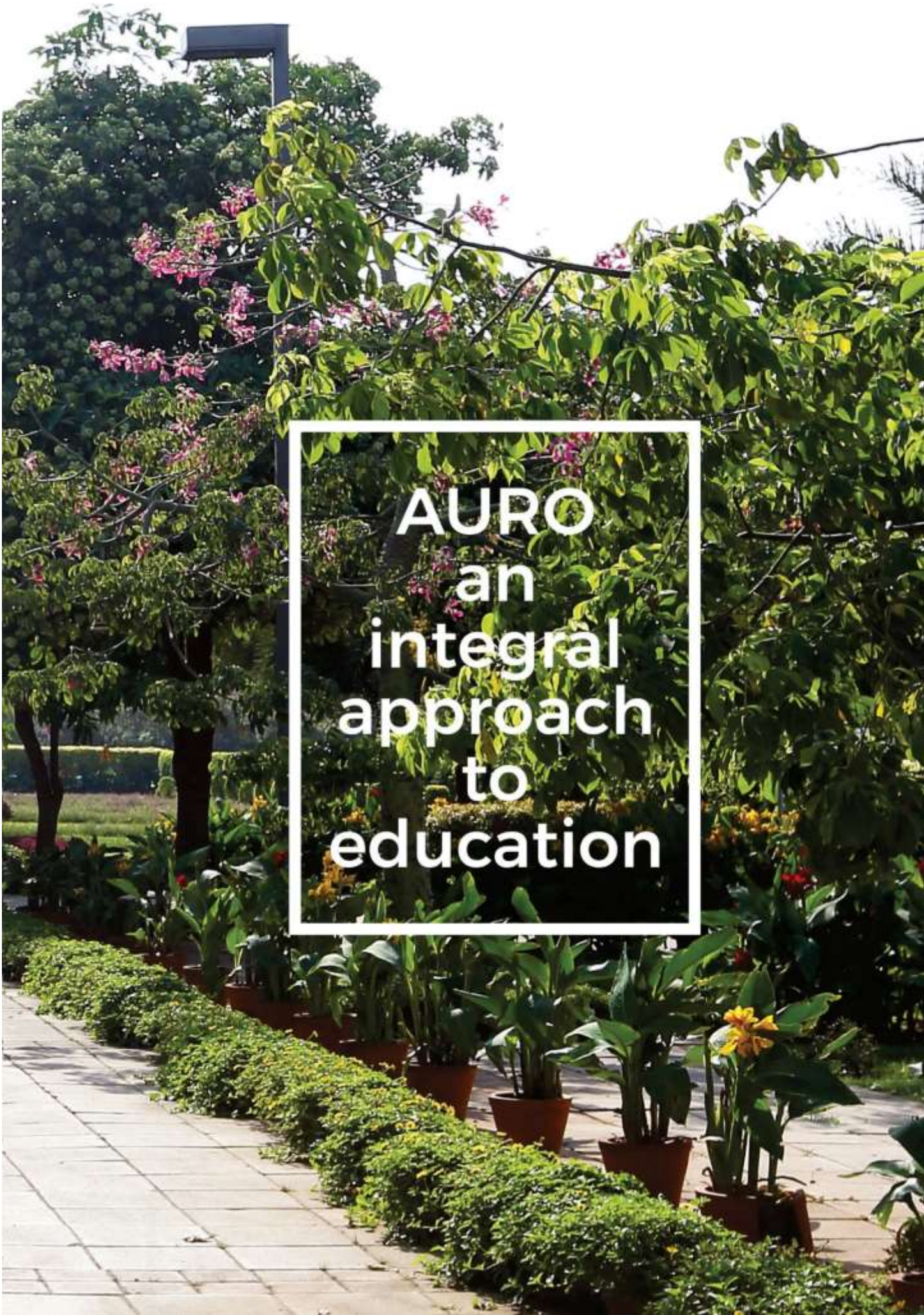
SURAT, GUJARAT

MANUAL FOR Ph.D.

(DOCTOR OF PHILOSOPHY)

THE MOTHER SRI AUROBINDO

"Let us keep flaming in our heart the fire of progress, higher always higher."


AURO
an
integral
approach
to
education

AURO STUDENTS

Encouraged

Empowered

Enlightened

Hasmukh P. Rama
The Founder President

On behalf of our faculty members, associates and the management team, it is my pleasure to welcome you to AURO University.

AURO University, founded by the Rama Family, is inspired by the vision and teachings of Sri Aurobindo Ghosh and The Mother. Our aim is to provide integral education, skill sets and values needed to lead a more purposeful and fulfilling life in today's complex and changing world.

AURO UNIVERSITY is an environment of collaboration and creativity driven by self-discovery of "Inner Being" that **ENCOURAGES, EMPOWERS** and **ENLIGHTENS** students in their **INTELLECTUAL, EMOTIONAL** and **SPIRITUAL GROWTH**.

The AURO University campus provides dynamic, energetic and progressive learning for students of tomorrow. Our campus atmosphere inspires students to discover themselves and to realize their highest potential. Students will be enriched through academic excellence, transformative experiences and excellent infrastructure facilities.

I invite you to join our learning community, which believes in pursuit of knowledge and success in life.

President
AURO University

Message From Hon'ble Vice-Chancellor

Prof. (Dr.) Parimal H Vyas

Vice - Chancellor, AURO University, Surat

School of Business AURO University aims to incorporate a holistic approach to management education through its MBA program. The business school has four core specialisations on offer, which includes, Finance accounting, Marketing, Human Resources and International Business. Through rigorous grooming within the classroom and through application – based curriculum, School of Business AURO University intends to contribute to the Indian economy at large by minting graduates who are adept to take up challenges in the corporate arena. Uncertainty is the new certainty which globally has thrown business schools across the globe, the challenge and the opportunity to educate train and prepare the upcoming future corporate leaders which intends to be a data driven process and is also highly technologically advanced.

I take this opportunity to invite the recruiting managers and hiring supervisors of India Inc to give the students of School of Business AURO University an opportunity to showcase their mettle and their calibre and to spearhead their career in the corporate world.

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About AURO University

AURO University, founded in 2011 by the Rama Family, is inspired by the vision and teachings of Sri Aurobindo Ghosh and The Mother. The University aims to provide integral education, skill sets and values needed to lead a more purposeful and fulfilling life in today's complex and changing world. The University is a learning hub with an amalgamation of seven schools viz. School of Business, School of Hospitality Management, School of IT, School of Law, School of Design, School of Journalism and Mass Communication, and School of Liberal Arts and Human Sciences. AURO University follows Shri Aurobindo's integral philosophy and the twelve living principles. The Mission and Vision of AURO University are as follows;

Vision: To be a premier University of Integral and Transformational Learning for future leaders.

Mission: A center for value based education, the University is focused on providing to:

Students

An environment for self-development; an institution that nurtures their potential based on their aptitudes and interests.

Faculty

A platform to be mentors and guides who shape the country's future leaders by imparting knowledge and skills; opportunities for research on emerging trends and industry practices.

The Industry and Community

Students with intellectual competence, reality-based knowledge and personal integrity; students who strive for excellence and aspire to become socially responsible leaders.

AURO University provides Value Based Education that is driven by our mission of providing integral and transformational education to our students. We firmly believe that education must not be limited purely to academic learning. At AURO, our focus will be to develop all faculties of an individual to ensure holistic development.

Mental Education

To develop high levels of concentration, power of observation, analytical organization, decision-making skills, and, most importantly, faculties of creativity and intuition.

Vital Education

For the development of one's character. Learning how to build and manage relationships and controlling emotions. The development of faculties for the appreciation of drama, music, arts, sports and the drive for self perfection as an individual.

Physical Education

For agility, strength, flexibility, team building and collaboration.

Spiritual Education

For the growth of consciousness from a lower to higher level and for the development of deeper and larger values.

Schools at AURO University

School of Business

AURO University School of Business was established in the year 2011 with the idea of imparting quality education to business management students. In its endeavour to deliver management education for the real world, the school encourages, empowers and enables the students to unlock their potential and talent in various streams and specializations at PhD., UG and PG level and excel productively in every sphere of their personal & professional excellence. The aim of School of Business is to inculcate functional competencies and core values in students to enable them to gain competitive edge over other professionals in all situations at local and global level.

The School of Business offers the following courses:

1. Ph.D.
2. M.B.A.
3. B.B.A.
4. B.Com International

School of Design

With the aim of envisaging a driving force that will permeate creative thinking in a fundamental way across schools and various disciplines, AURO University has set up the School of Design.

The School of Design offers the following programs

1. Ph.D.
2. Master of Design (specializations in Interior Architecture and Design, Interior Product and Furniture Design, Graphics and Communication Design, User Experiences and Interfaces, Fashion and Textile Design, Fashion, Apparel and Merchandising).
3. Bachelor of Design (specialisations in Interior Space Design, Graphics and Communication Design and Fashion and Textile Design)
4. Diploma in Design Technology

The following are the annual events at School of Design:

1. Winter Program
2. Conferences and webinars
3. Guest visits and Block Courses
4. Summer Programme
5. Juries and Displays
6. Cultural Events and Filed Trips

School of Hospitality Management

School of Hospitality Management is a premium school focused on creating through value education, a generation of high achieving leaders for the most dynamic and sought after hospitality industry. The school accomplishes its mission through engagement of students and scholars in excellent holistic learning environment, topical research and enriching continuously through industry interface. The curriculum is dynamic, practical and constantly revised to keep up with industry requirements. The school has the solid backing of AURO Hotels group – a notable presence in the hospitality sector across the globe and with Courtyard by Marriot on the university campus for hands on experience.

School of Hospitality offers the following programs:

1. Ph.D.
2. M.Sc. – International Hospitality and Tourism Management
3. B.Sc. +M.Sc. Hospitality Management (Integrated 5 Years)
4. B.Sc. (Hons) – Hospitality Management

School of Information Technology

The School of Information Technology offers a variety of programs that enable students to be industry ready. One of the core objectives of the School of Information Technology is to ensure

growth in technical knowledge of students. The following are the programs offered by the School of Information Technology:

1. Ph.D.

2. M.Sc. Information Technology

3. M.Sc. In Artificial Intelligence (2 years Program)

4. B.Sc. Information Technology (AI and ML)

5. B.Sc. + M.Sc. IT (5 years integrated)

School of Journalism and Mass Communication

The School of Journalism and Mass Communication (SoJMC) is all set to initiate an experiential journey; our aim is to create a centre of excellence in the field of journalism, advertising, Brand Communication, Films and Content Creation contributing towards the growth of Media and Entertainment Sector. The courses offered by SOJMC are designed by the media experts complementing the growing needs of the Media and Entertainment industry. At SoJMC, the students get an opportunity to execute the theories and creative learnings with hands on projects and best industry interface. We at SoJMC , inspire an era of education, which is well connected, well communicated and believe in converging better with dynamic world.

SoJMC offers the following programs:

1. Ph.D.
2. Masters in Journalism and Mass Communication
3. Bachelors in Journalism and Mass Communication
4. Integrated Bachelors in Journalism and Mass Communication

School of Law

The School of Law offers a curriculum designed to impart contemporary legal knowledge, acts, legal procedures, discussions of contemporary technology-enabled systems, processes and procedures in the course of teaching Indian laws as well as international laws. The focus is on developing a critical and usable understanding of the laws of India and international extending to related domains such as business, international trade and relations.

The teaching -learning process blends knowledge and skills in such way that the student can apply them in the real world with a focus on promoting and delivering multi disciplinary inquiry and practical appreciation of problems. The pedagogy offers an optima integration of Classroom lectures, Moot Courts, Cases, Case Studies, Judgement Review and Analysis, Projects and Assignments. Each course is monitored by a module leader who facilitates academic delivery by professional(s) and /or academicians(s) having proven competencies and experience in a range of domain under law and allied areas.

The programs offered by the School of Law are as follows;

1. Ph.D.
2. Integrated LLM-PhD
3. LLM
4. BBA – LLB
5. BA – LLB
6. BA - Legal Studies (Hons.)
7. BA - LLB

School of Liberal Arts and Human Sciences

The School of Liberal Arts and Human Sciences is launched with the vision and follows an interdisciplinary and comparative approach in its courses and pedagogical processes. The curricula include foundation courses in integral education, history and philosophy leading to specialisation in Aurobindo Studies, Economics, Psychology, English, Fine Arts, and Public Policy,

History, Sociology and film studies among others. The courses are taught by distinguished faculty from India and abroad and aim at inculcating a comprehensive understanding of the works and teachings of Indian and Western thinkers and writers like Valmiki, Ved Vyasa, Shakespeare, Plato, Aristotle and Indian thinkers like Sri Aurobindo from diverse domains as well as comparative perspectives.

School of liberal arts has incorporated the experiential learning programs alongside the academic curriculum, which provides its students an opportunity to correlate theory with reality and imbibe the essence of integral learning. Students have the opportunity to access these experiential learning programs through concurrent filed visits within India and foreign countries, in the form of interactions, the Explore India program (EIP) and the advanced level Summer Internship Programs (SIP). Through these programs students are able to reflect on and enhance their experiences.

The School of Liberal Arts & Human Sciences offers the following programs:

1. Ph.D.
2. Master of Arts in Psychology
3. Master of Arts in Applied Economics
4. Master of Social Works
5. Integrated B.A. – M.A.
6. Bachelor of Arts

Thrust Areas

School	Thrust Areas
School of Business	Strategy and Innovation
	Marketing and Consumer Behaviour
	Organizational Behaviour and Human Resource Management
	Operations Management and Supply Chain
	Finance and Investment
	Accounting and Auditing
	Entrepreneurship and Small Business Management
	Business Ethics and Corporate Social Responsibility
	International Business and Globalization
	Business Analytics and Data Science
School of Design	Design Theory and Criticism
	User Experience (UX) Design
	Sustainable and Eco-Design
	Design for Social Impact
	Design and Technology
	Design Management and Strategy
School of Hospitality Management	Hospitality and Tourism Marketing
	Hotel and Resort Management
	Food and Beverage Management
	Event Management and Tourism Development
	Hospitality Leadership and Human Resource Management
	Sustainable Tourism and Hospitality
School of Information Technology	Data Science and Analytics
	Cybersecurity and Privacy
	Human-Computer Interaction (HCI)
	Artificial Intelligence (AI) and Machine Learning
	Internet of Things (IoT) and Cyber-Physical Systems
	Software Engineering and Software Systems
School of Journalism and Mass Communication	Media and Society
	Journalism Studies
	Media Effects and Audience Research
	Strategic Communication and Public Relations

	Media Technologies and Digital Media
School of Law	Constitutional Law and Human Rights
	International Law and Global Governance
	Legal Theory and Jurisprudence
	Law and Technology
	Criminal Law and Justice
	Corporate and Commercial Law
School of Liberal Arts and Human Sciences	Cultural Studies
	Gender and Women's Studies
	History and Historiography
	Philosophy and Ethics
	Sociology and Social Justice
	Psychology and Behavioural Sciences
	Linguistics and Language Studies

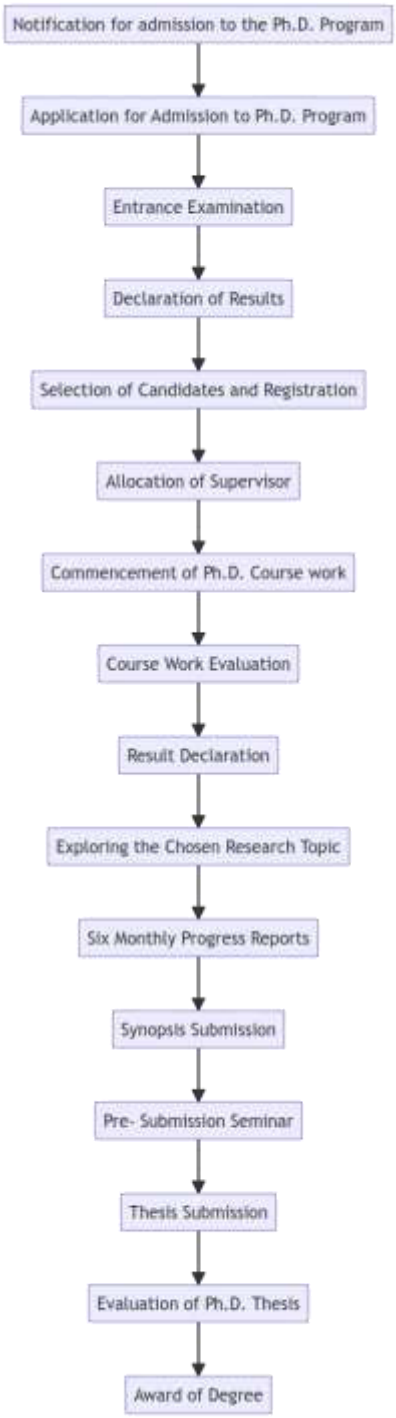
Approved Research Supervisors at AURO University

Faculty	Designation	School
Dr. C.V.Ramanna	Associate Professor	School of Business (SoB)
Dr. Dhaarna Singh Rathod	Assistant Professor	School of Business (SoB)
Dr. Gaurav Ashesh	Associate Professor	School of Business (SoB)
Dr. Meghna Dangi	Associate Professor	School of Business (SoB)
Dr. Monika Suri	Associate Professor	School of Business (SoB)
Dr. Nimesh Joshi	Professor	School of Business (SoB)
Dr. Richa Agarwal	Assistant Professor	School of Business (SoB)
Dr. Tina Dutta	Assistant Professor	School of Business (SoB)
Dr. Vishal Shukla	Associate Professor	School of Business (SoB)
Dr. Prunal Khawani	Associate Professor	School of Design (SoD)
Dr. Akhilesh Latoria	Assistant Professor	School of Information Technology (SoIT)
Dr. Bhanu Pratap Singh	Assistant Professor	School of Information Technology (SoIT)
Dr. Papri Das	Assistant Professor	School of Information Technology (SoIT)
Dr. Sunil Kumar	Assistant Professor	School of Information Technology (SoIT)
Dr. Shilpi Sharma	Associate Professor	School of Law (SoL)
Dr. Vrushti Patel	Assistant Professor	School of Law (SoL)
Dr. Prachi Patil	Assistant Professor	School of Liberal Arts and Humanities (SLAH)
Dr. Priya Rajkumar	Assistant Professor	School of Liberal Arts and Humanities (SLAH)
Dr. Sazzad Parvez	Associate Professor	School of Liberal Arts and Humanities (SLAH)
Dr. Sumedh Lokhande	Assistant Professor	School of Liberal Arts and Humanities (SLAH)

About Ph.D. Program:

The degree of Doctor of Philosophy (Ph.D.) is AURO University's principal research degree for graduate students and is available across all its seven schools namely School of Business, School of Law, School of Hospitality, School of Information Technology, School of Liberal Arts and Human Sciences, School of Design. And School of Journalism and Mass Communication. AURO University Ph.D. program is designed to challenge your intellectual curiosity and enhance your critical thinking. Also the program is intellectually demanding and calls for a high level of persistence and thirst for knowledge. AURO University's Ph.D. program is an advanced study and research that needs hard work and dedication along with focus on developing research skills.

From a process perspective, the Ph.D. Program can be divided into sixteen broad phases, which are as follows:



During the Ph.D. Program, apart from course work, workshops, guest lectures and other research related activities will be conducted for enhancement of the research potential of the research scholars. Library Reports is another important feature of the Ph.D. Program. Every week, research scholars will be submitting Library Reports to their research supervisors. By the end of course work, research scholars will be able to develop an extensive literature review for their chosen topics.

1. Eligibility Criteria of the candidate

1.1. Candidates who have completed a 1-year/2-semester master's degree programme after a 4-year/8-semester bachelor's degree programme or a 2-year/4-semester master's degree programme after a 3-year bachelor's degree programme or qualifications declared equivalent to the master's degree by the corresponding statutory regulatory body, with at least 55% marks in aggregate or its equivalent grade in a point scale wherever grading system is followed or an equivalentqualification from a foreign educational institution accredited by an assessment and accreditation agency which is approved, recognized or authorized by an authority, established or incorporated under a law in its home country or any other statutory authority in that country to assess, accrediting or assure quality and standards of educational institution.

1.2. A relaxation of 5% of marks or its equivalent grade, may be allowed for those belonging to SC/ST/SEBC (Non-creamy layer)/ Differently-abled, Economically Weaker Sections (EWS) and other categories of candidates as per the decision of the UGC, Government of Gujarat and other statutory bodies, as applicable, from time-to-time, or for those who had obtained their master's degree prior to 19th September 1991.

1.3. The eligibility marks of 55% (or an equivalent grade in a point scale wherever the grading system is followed) and the relaxation of 5% to the categories mentioned above are permissible based on the qualifying marks without including the grace mark procedures.

It provided that a candidate seeking admission after a 4-year/8-semester bachelor's degree programme should have a minimum of 75% marks in aggregate or its equivalent grade on a point scale wherever the grading system is followed. a relaxation of 5% marks or its equivalent grade shall be allowed for those belonging to SC/ST/OBC (Non-Creamy Layer)/Differently-Abled, Economically Weaker Section (EWS) and other categories of candidates as per

the decision of the UGC, Government of Gujarat and other Statutory bodies, as applicable, from time-to-time.

1.4. Related/Conjunct subject(s) shall be recommended by Auro Research Advisory Committee (ARAC). Such introduction of related/conjunct subject(s) will be reported to the Academic Council and the Board of Management through the concerned Board of Studies.

1.5. Notwithstanding, anything contained hereinabove, whenever any candidate, after possessing requisite qualification of marks not less than 55% in aggregate or its equivalent grade (or an equivalent grade in a point scale wherever grading system is followed) in a para particular subject, applies for joining the Ph.D. programme under the subject different from or not related to his/her post-graduation or an allied subject (related/conjunct subject) under the school, he/she may be permitted to join Ph.D. Programme in the desired subject upon recommendation from AURO Research Advisory Committee (ARAC). The application for this purpose shall have to be made by the interested candidate to the concerned School. Such cases be reported for information and noting purpose to the Academic Council and the Board of Management.

1.6. Notwithstanding, anything contained hereinabove, a person intends to register for thePh.D. Degree of this university, working in a national laboratory or an institution outside the university area, recognized by this university to impart guidance and research, is eligible to register for Ph.D. Programme by virtue of having the requisite qualifying degree of this or any university, or equivalent qualification having marks not less than 55% in aggregate or its equivalent (an equivalent grade in a point scale wherever grading system is followed. Such applications must be addressed for approval by the AURO Research Advisory Committee (ARAC). Such cases be reported for information and noting purpose to the Academic Council and the Board of Management.

2. Notification for admission to the Ph.D. Program

   An official notification will be issued for admission to the Ph.D. Program through national newspapers and AURO University website.

3. Application form for Admission to Ph.D. Program

   Refer to Annexure 1

4. Entrance Examination

AURO University will conduct the AURO Ph.D. Entrance Test (APET), once in a year. The mode of the examination will be communicated to the candidate who applied for the Ph.D. Entrance Test. The entrance test shall be of 2 hours consisting of two sections. Each section shall be of 60 minutes. Refer to Annexure 2 for the syllabus for the entrance examination.

1. Exemptions

   Candidates who have qualified UGC-NET/CSIR (JRF) Examination/SLET/GATE or are Teacher fellowship holders or DST/ICMR/any other National Agency Fellow.

2. Declaration of Results:

The results of the APET will be declared within the stipulated time and shall be available on the Ph.D. portal of the University.

NOTE:

1. The validity of the APET qualification shall for a period of one year from the date of the its declaration.
2. Selected candidates will get intimation of their selection through an admission letter available electronically to download
3. Details regarding payment of fees at the time of admission, date, time and venue for commencement of the academic session will be mentioned in the admission letter.

4. Offer of admission will be provisional & valid only for the specific program opted by the candidate as well as for the same academic session. The offer of admission will automatically stand cancelled if the conditions are not fulfilled by the specified time.

5. It is mandatory for working applicants to submit an NOC at the time of registration cum orientation for the program, i.e. within a month of their selection.

3. Selection of Candidates and Registration

The selection of the candidates will be based on the presentation of the Research Proposal. All the candidates who qualify for the written examination will be called for Research Proposal Presentation. For the Research Proposal template refer to Annexure 3. All the candidates whose Research Proposal will be approved will be given a letter of provisional admission.

4. Program Fee

Ph.D. Fees Framework

S.No.	Fee Component		Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
1.	Registration Fee	INR 10,000						
2.	Program Fees /Academic Fees		INR 75,000	INR 75,000	INR 75,000	INR 75,000	INR 75,000	INR 75,000
3.	Security Deposit	INR 20, 000						
4.	Dissertation Submission and Evaluation Fee							INR 25,000

Note: After sixth semester, every subsequent semester fee shall be INR 75,000

5. Allocation of Supervisor

Each Research Scholar will be allocated with a Research Supervisor by the university based on the recommendations of the Ph.D. Cell and approval from AURO Research Advisory Committee (ARAC)

6. Commencement of Ph.D. Course work

The Ph.D. Course Work will be conducted twice in a year (2 Semesters). The Ph.D. Course Work will be conducted in hybrid mode and consists of 12credits.

7. Details of Ph.D. Course Work

The Ph.D. course work comprises of the following courses:

Research Methodology -4 Credits

Data Processing and Analysis – 4 Credits

Professional and Technical Communication-2 Credits

Research and Publication Ethics-2 Credits

Refer to Annexure 4 for detailed Ph.D. Course Work Syllabus

8. Ph.D. Course Work Evaluation

The following are the details of the Ph.D. course work evaluation:

Internal Evaluation (Projects, Case Analysis, Article review): 50%

External Evaluation (End Term Examination): 50%

The Ph.D. Course Work evaluation will be conducted two weeks after the Completion of Second Semester.

9. Ph.D. Course Certificate

The Ph.D. Course certificate will be provided to the students who had passed the Ph.D. Course work Examination.

10. Exploring the chosen Research Topic

The research scholars will start working on the research topic under the guidance of the Ph.D. Supervisor.

11. Six Monthly Progress Reports

The research scholars shall be required to submit a six monthly progress report throughout the study period of the Ph.D. program. See Annexure 5 for the Six-Monthly Report format. Without a satisfactory progress report fee will not be accepted.

12. Synopsis Submission:

Research Scholars will be submitting a copy of the synopsis to the Research

Supervisor. See Annexure 6 for template for Synopsis. The synopsis submitted by Research Scholars will go through plagiarism check. No more than 15% similarity/resemblance will be allowed. Refer to Annexure 7 for Plagiarism Report format.

13. Pre-Ph.D Seminar

A panel of two external subject experts will evaluate the research work conducted by the research scholar and provide their remarks about the during the pre- submission seminar. The research scholar should make necessary modifications to the Ph.D. Thesis before final submission of the Ph.D. Thesis.

14. Ph.D. Thesis Submission:

Research scholars after successfully completing the Pre-Ph.D. seminar may submit the thesis within one year of the pre-Ph.D. seminar. A research scholar may give pre-Ph.D. seminar after completion of 30 months from the date of registration but shall be eligible for thesis submission only at the end of 36 months from the date of registration. Five copies of Ph.D. synopsis and five copies of Ph.D. Thesis needs to be submitted. Along with this the research scholar need to submit at least two papers published in web of Science or Scopus indexed journals. No more than 15% similarity/resemblance will be allowed. See Appendix 8 for the format of the Ph.D. thesis.

15. Plagiarism Policy:

15.1 The university shall do needful for providing facilities of access of well-developed software applications to detect Plagiarism in research work to teachers, research scholars and post-graduate students of this university.

15.2 The research integrity shall be an integral part of all the research activities of this university leading to the award of a Ph.D. degree.

15.3 A Ph.D. scholar shall submit the thesis for evaluation, along with (a) an undertaking from the Ph.D. scholar that there is no plagiarism and (b) a certificate from the research supervisor attesting to the originality of the thesis and that the thesis has not been submitted for the award of any other degree/diploma to any other HEIs.

16. Evaluation of Ph.D. Thesis:

The Ph.D. thesis of the research scholar will be evaluated by two external experts and remarks will be provided along with the evaluation report. Any questions posed in response to the “Invitation to External Examiner” should be answered by the research scholar during the oral defence.

17. Award of Ph.D. Degree

Research Scholars who had successfully completed the Ph.D. program will be awarded the Ph.D. Degree during the convocation ceremony of AURO University.

18. Auro University Scheme of JRF/SRF for Ph.D. Scholars

Policy

Auro University will award Junior/Senior Research Fellowship to its selected Ph.D. Scholars in accordance with the guidelines it may introduce from time to time pursuant to its Ph.D. Regulations. The Fellowship assistance is intended to motivate full time devoted Research and will be provided to six eligible Ph.D. scholars of the University. Selection of candidates for Junior/Senior Fellowship eligibility and the value of Fellowship will be as specified in the Regulation of the University in this regard. The Fellowship assistance may vary depending on the Research Discipline and will be normally for a period of three years and extendable up to four years. It shall be Junior Research Fellowship for the first 18 months and Senior Research Fellowship for the next 18 months and will be at such rates and subject to such terms and conditions as may be spelt out in the Regulation. Number of Junior/Senior Fellowship that may be approved every year by the University will depend upon its budgetary allocations and will be subject to a maximum number as may be notified by the University at the beginning of every academic year. Please see Annexure 9 for the Fellowship Policy of the University

Annexure 1: Application for Admission to Ph.D. Program

Personal Information

Session:

Faculty:

Full Name:

Gender:

Date of Birth:

Father/ Husband/ Guardian's Name:

Marital Status:

Category:

Nationality:

Email ID:

Phone No.

Address for correspondence:

Academic Information:

Exam	School/ College Name	Univ./ Board Name	Year	Marks (Max.)	Marks (Obtained)	Division	Percentage
Xth							
XIIth							
UG							
PG							
Other							

Upload following Documents:

Photo:

Signature:

Xth Marksheet

XII th Marksheet

UG Marksheet

PG Marksheet

Payment Details & Declaration

APPLICATION FORM FEES :

1 I Declare that entries made by me in this Admission form and the document submitted by me with the admission form are true in all respected and in any case, any information is found to be false, this shall entail automatic cancellation of my admission beside rendering me liable to such action, as the University may deem proper.

2 I note that my admission to the University and my continuance on it rolls are subject to the provision/rules of the University, issued from time to time. I shall abide by the rules of discipline and proper conduct .I am fully aware of the law regarding as well as the penalty and that if found guilty on this account I am liable to pay the penalty appropriately.

3 I Declare that I have read the prospectus carefully and understood that the dispute if any will be subject to jurisdiction, Surat, Gujarat Only.

I agree to our Terms & Conditions, Agreement and Privacy Policy.

Submit and Pay

Annexure 2: Syllabus of AURO Ph.D. Entrance Test

AURO University shall admit candidates for Ph.D. by a two-stage process through a written test followed by research proposal presentation.

Auro Ph.D. Entrance Test (APET) shall be regarded as a qualifying test with qualifying Marks of 50%.

The syllabus of the APET shall consist of two sections. Section1 will be a general paper on teaching and research aptitude and Section 2 shall be domain specific.

Section I:

Subject: GENERAL PAPER ON TEACHING & RESEARCH APTITUDE Code No.:

PAPER-I

The main objective is to assess the teaching and research capabilities of the candidates. The test aims at assessing the teaching and research aptitude as well. Candidates are expected to possess and exhibit cognitive abilities, which include comprehension, analysis, evaluation, understanding the structure of arguments, deductive and inductive reasoning. The candidates are also expected to have a general awareness about teaching and learning processes in higher education system. Further, they should be aware of interaction between people, environment, natural resources and their impact on the quality of life.

The details of syllabi are as follows:

Unit-I Teaching Aptitude

- Teaching: Concept, Objectives, Levels of teaching (Memory, Understanding and Reflective), Characteristics and basic requirements.
- Learner's characteristics: Characteristics of adolescent and adult learners (Academic, Social, Emotional and Cognitive), Individual differences.
- Factors affecting teaching related to: Teacher, Learner, Support material, Instructional facilities, Learning environment and Institution.

- Methods of teaching in Institutions of higher learning: Teacher centred vs. Learner centred methods; Off-line vs. On-line methods (Swayam, Swayamprabha, MOOCs etc.).
- Teaching Support System: Traditional, Modern and ICT based.
- Evaluation Systems: Elements and Types of evaluation, Evaluation in Choice Based Credit System in Higher education, Computer based testing, Innovations in evaluation systems.

Unit-II Research Aptitude

- Research: Meaning, Types, and Characteristics, Positivism and Post-positivistic approach to research.
- Methods of Research: Experimental, Descriptive, Historical, Qualitativeand Quantitative methods.
- Steps of Research.
- Thesis and Article writing: Format and styles of referencing.
- Application of ICT in research.
- Research ethics.

Unit-III Comprehension

- A passage of text be given. Questions be asked from the passage to be answered.

Unit-IV Communication

- Communication: Meaning, types and characteristics of communication.
- Effective communication: Verbal and Non-verbal, Inter-Cultural and group communications, Classroom communication.
- Barriers to effective communication.
- Mass-Media and Society.

Unit-V Mathematical Reasoning and Aptitude

- Types of reasoning.
- Number series, Letter series, Codes and Relationships.
- Mathematical Aptitude (Fraction, Time & Distance, Ratio, Proportion and Percentage, Profit and Loss, Interest and Discounting, Averages etc.).

Unit-VI Logical Reasoning

- Understanding the structure of arguments: argument forms, structure of categorical propositions, Mood and Figure, Formal and Informal fallacies, Uses of language, Connotations and denotations of terms, Classical square of opposition.
- Evaluating and distinguishing deductive and inductive reasoning.
- Analogies.
- Venn diagram: Simple and multiple use for establishing validity of arguments.
- Indian Logic: Means of knowledge.
- Pramanas: Pratyaksha (Perception), Anumana (Inference), Upamana (Comparison), Shabda (Verbal testimony), Arthapatti (Implication) and Anupalabddhi (Non-apprehension).
- Structure and kinds of Anumana (inference), Vyapti (invariable relation), Hetvabhasas (fallacies of inference).

Unit-VII Data Interpretation

- Sources, acquisition and classification of Data.
- Quantitative and Qualitative Data.
- Graphical representation (Bar-chart, Histograms, Pie-chart, Table-chart and Line-chart) and mapping of Data.
- Data Interpretation.
- Data and Governance.

Unit-VIII Information Technology (IT)

- ICT: General abbreviations and terminology.
- Basics of Internet, Intranet, E-mail, Audio and Video-conferencing.
- Digital initiatives in higher education.
- ICT and Governance.

Unit-IX People, Development and Environment

- Development and environment: Millennium development and Sustainable development goals.
- Human and environment interaction: Anthropogenic activities and their impacts on environment.
- Environmental issues: Local, Regional and Global; Air pollution, Water pollution, Soil pollution, Noise pollution, Waste (solid, liquid, biomedical, hazardous, electronic), Climate change and its Socio-Economic and Political dimensions.
- Impacts of pollutants on human health.
- Natural and energy resources: Solar, Wind, Soil, Hydro, Geothermal, Biomass, Nuclear and Forests.
- Natural hazards and disasters: Mitigation strategies.
- Environmental Protection Act (1986), National Action Plan on Climate Change, International agreements/efforts -Montreal Protocol, Rio Summit, Convention on Biodiversity, Kyoto Protocol, Paris Agreement, International Solar Alliance.

Unit-X Higher Education System

- Institutions of higher learning and education in ancient India.
- Evolution of higher learning and research in Post Independence India.
- Oriental, Conventional and Non-conventional learning programmes in India.
- Professional, Technical and Skill Based education.
- Value education and environmental education.
- Policies, Governance, and Administration.

Section II:

(Domain Specific)

Syllabus

Domain: Management

Code No. :

Unit – I

Management – Concept, Process, Theories and Approaches, Management Rolesand Skills

Functions – Planning, Organizing, Staffing, Coordinating and Controlling.

Communication – Types, Process and Barriers.

Decision Making – Concept, Process, Techniques and Tools

Organisation Structure and Design – Types, Authority, Responsibility, Centralisation, Decentralisation and Span of Control

Managerial Economics – Concept & Importance

Demand analysis – Utility Analysis, Indifference Curve, Elasticity & Forecasting

Market Structures – Market Classification & Price Determination

National Income – Concept, Types and Measurement

Inflation – Concept, Types and Measurement Business

Ethics & CSR

Ethical Issues & Dilemma

Corporate Governance Value

Based Organisation

Unit – II

Organisational Behaviour – Significance & Theories

Individual Behaviour – Personality, Perception, Values, Attitude, Learning andMotivation

Group Behaviour – Team Building, Leadership, Group Dynamics

Interpersonal Behaviour & Transactional Analysis

Organizational Culture & Climate

Work Force Diversity & Cross Culture Organisational Behaviour

Emotions and Stress Management

Organisational Justice and Whistle Blowing

Human Resource Management – Concept, Perspectives, Influences andRecent Trends

Human Resource Planning, Recruitment and Selection, Induction, Trainingand Development

Job Analysis, Job Evaluation and Compensation Management

Unit – III

Strategic Role of Human Resource Management

Competency Mapping & Balanced Scoreboard

Career Planning and Development

Performance Management and Appraisal

Organization Development, Change & OD Interventions

Talent Management & Skill Development

Employee Engagement & Work Life Balance

Industrial Relations: Disputes & Grievance Management, Labour Welfare andSocial Security

Trade Union & Collective Bargaining

International Human Resource Management – HR Challenge of InternationalBusiness

Green HRM

Unit– IV

Accounting Principles and Standards, Preparation of Financial Statements

Financial Statement Analysis – Ratio Analysis, Funds Flow and Cash FlowAnalysis, DuPont Analysis

Preparation of Cost Sheet, Marginal Costing, Cost Volume Profit Analysis

Standard Costing & Variance Analysis

Financial Management, Concept & Functions

Capital Structure – Theories, Cost of Capital, Sources and Finance Budgeting and

Budgetary Control, Types and Process, Zero base Budgeting

Leverages – Operating, Financial and Combined Leverages, EBIT–EPSAnalysis, Financial Breakeven Point & Indifference Level.

Unit –V

Value & Returns – Time Preference for Money, Valuation of Bonds and Shares,Risk and Returns;

Capital Budgeting – Nature of Investment, Evaluation, Comparison of Methods;Risk and Uncertainly Analysis

Dividend – Theories and Determination

Mergers and Acquisition – Corporate Restructuring, Value Creation, MergerNegotiations, Leveraged Buyouts, Takeover

Portfolio Management – CAPM, APT

Derivatives – Options, Option Payoffs, Option Pricing, Forward Contracts &Future Contracts

Working Capital Management – Determinants, Cash, Inventory, Receivables and Payables Management, Factoring

International Financial Management, Foreign exchange market

Unit - VI

Strategic Management – Concept, Process, Decision & Types

Strategic Analysis – External Analysis, PEST, Porter's Approach to industryanalysis, Internal Analysis – Resource Based Approach, Value Chain Analysis

Strategy Formulation – SWOT Analysis, Corporate Strategy – Growth, Stability, Retrenchment, Integration and Diversification, Business Portfolio Analysis - BCG,GE Business Model, Ansoff's Product Market Growth Matrix

Strategy Implementation – Challenges of Change, Developing ProgramsMckinsey 7s Framework

Marketing – Concept, Orientation, Trends and Tasks, Customer Value and Satisfaction

Market Segmentation, Positioning and Targeting

Product and Pricing Decision – Product Mix, Product Life Cycle, New Product development, Pricing – Types and Strategies

Place and promotion decision – Marketing channels and value networks, VMS, IMC, Advertising and Sales promotion

Unit –VII

Consumer and Industrial Buying Behaviour: Theories and Models of Consumer Behaviour

Brand Management – Role of Brands, Brand Equity, Equity Models, Developinga Branding Strategy; Brand Name Decisions, Brand Extensions and Loyalty

Logistics and Supply Chain Management, Drivers, Value creation, Supply ChainDesign, Designing and Managing Sales Force, Personal Selling

Service Marketing – Managing Service Quality and Brands, Marketing Strategiesof Service Firms

Customer Relationship Marketing – Relationship Building, Strategies, Values andProcess

Retail Marketing – Recent Trends in India, Types of Retail Outlets.

Emerging Trends in Marketing – Concept of e-Marketing, Direct Marketing,Digital Marketing and Green Marketing

International Marketing – Entry Mode Decisions, Planning Marketing Mix for International Markets

Unit –VIII

Statistics for Management: Concept, Measures Of Central Tendency andDispersion, Probability Distribution – Binominal, Poison, Normal and Exponential

Data Collection & Questionnaire Design

Sampling – Concept, Process and Techniques

Hypothesis Testing – Procedure; T, Z, F, Chi-square tests

Correlation and Regression Analysis

Operations Management – Role and Scope

Facility Location and Layout – Site Selection and Analysis, Layout – Design andProcess

Enterprise Resource Planning – ERP Modules, ERP implementation

Scheduling; Loading, Sequencing and Monitoring

Quality Management and Statistical Quality Control, Quality Circles, Total Quality Management – KAIZEN, Benchmarking, Six Sigma; ISO 9000 Series Standards

Operation Research – Transportation, Queuing Decision Theory, PERT / CPM

Unit –IX

International Business – Managing Business in Globalization Era; Theories of International Trade; Balance of payment

Foreign Direct Investment – Benefits and Costs

Multilateral regulation of Trade and Investment under WTO

International Trade Procedures and Documentation; EXIM PoliciesRole

of International Financial Institutions – IMF and World Bank

Information Technology – Use of Computers in Management Applications; MIS,DSS

Artificial Intelligence and Big Data

Data Warehousing, Data Mining and Knowledge Management – Concepts

Managing Technological Change

Unit – X

Entrepreneurship Development – Concept, Types, Theories and Process,Developing Entrepreneurial Competencies

Intrapreneurship – Concept and Process

Women Entrepreneurship and Rural Entrepreneurship

Innovations in Business – Types of Innovations, Creating and Identifying Opportunities, Screening of Business Ideas

Business Plan and Feasibility Analysis – Concept and Process of Technical,Market and Financial Analysis

Micro and Small Scale Industries in India; Role of Government in Promoting SSI

Sickness in Small Industries – Reasons and Rehabilitation

Institutional Finance to Small Industries – Financial Institutions, CommercialBanks, Cooperative Banks, Micro Finance.

Domain: Information Technology

Code No.:

Unit - 1 : Discrete Structures and Optimization

Mathematical Logic: Propositional and Predicate Logic, Propositional Equivalences, Normal Forms, Predicates and Quantifiers, Nested Quantifiers, Rules of Inference.

Sets and Relations: Set Operations, Representation and Properties of Relations, Equivalence Relations, Partially Ordering.

Counting, Mathematical Induction and Discrete Probability: Basics of Counting, Pigeonhole Principle, Permutations and Combinations, Inclusion- Exclusion Principle, Mathematical Induction, Probability, Bayes' Theorem.

Group Theory: Groups, Subgroups, Semi Groups, Product and Quotients of Algebraic Structures, Isomorphism, Homomorphism, Automorphism, Rings, Integral Domains, Fields, Applications of Group Theory.

Graph Theory: Simple Graph, Multigraph, Weighted Graph, Paths and Circuits, Shortest Paths in Weighted Graphs, Eulerian Paths and Circuits, Hamiltonian Paths and Circuits, Planner graph, Graph Coloring, Bipartite Graphs, Trees and Rooted Trees, Prefix Codes, Tree Traversals, Spanning Trees and Cut-Sets.

Boolean Algebra: Boolean Functions and its Representation, Simplifications of Boolean Functions.

Optimization: Linear Programming - Mathematical Model, Graphical Solution, Simplex and Dual Simplex Method, Sensitive Analysis; Integer Programming, Transportation and Assignment Models, PERT-CPM: Diagram Representation, Critical Path Calculations, Resource Levelling, Cost Consideration in Project Scheduling.

Unit - 2 : Computer System Architecture

Digital Logic Circuits and Components: Digital Computers, Logic Gates, Boolean Algebra, Map Simplifications, Combinational Circuits, Flip-Flops, Sequential Circuits, Integrated Circuits, Decoders, Multiplexers, Registers and Counters, Memory Unit.

Data Representation: Data Types, Number Systems and Conversion, Complements, Fixed Point Representation, Floating Point Representation, Error Detection Codes, Computer Arithmetic - Addition, Subtraction, Multiplication and Division Algorithms.

Register Transfer and Microoperations: Register Transfer Language, Bus and Memory Transfers, Arithmetic, Logic and Shift Microoperations.

Basic Computer Organization and Design: Stored Program Organization and Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output, Interrupt.

Programming the Basic Computer: Machine Language, Assembly Language, Assembler, Program Loops, Subroutines, Input-Output Programming.

Microprogrammed Control: Control Memory, Address Sequencing, Design of ControlUnit.

Central Processing Unit: General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, RISC Computer, CISC Computer.

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, Vector Processing Array Processors.

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA, Serial Communication.

Memory Hierarchy: Main Memory, Auxillary Memory, Associative Memory, Cache Memory, Virtual Memory, Memory Management Hardware.

Multiprocessors: Characteristics of Multiprocessors, Interconnection Structures,Interprocessor Arbitration, Interprocessor Communication and Synchronization, Cache Coherence, Multicore Processors.

Unit - 3 : Programming Languages and Computer Graphics

Language Design and Translation Issues: Programming Language Concepts, Paradigms and Models, Programming Environments, Virtual Computers and Binding Times, Programming Language Syntax, Stages in Translation, Formal Transition Models.

Elementary Data Types: Properties of Types and Objects; Scalar and Composite Data Types.

Programming in C: Tokens, Identifiers, Data Types, Sequence Control, Subprogram Control, Arrays, Structures, Union, String, Pointers, Functions, File Handling, Command Line Argumaents, Preprocessors.

Object Oriented Programming: Class, Object, Instantiation, Inheritance, Encapsulation, Abstract Class, Polymorphism.

Programming in C++: Tokens, Identifiers, Variables and Constants; Data types, Operators, Control statements, Functions Parameter Passing, Virtual Functions, Class and Objects; Constructors and Destructors; Overloading, Inheritance, Templates, Exception and Event Handling; Streams and Files; Multifile Programs.

Web Programming: HTML, DHTML, XML, Scripting, Java, Servlets, Applets.

Computer Graphics: Video-Display Devices, Raster-Scan and Random-Scan Systems; Graphics Monitors, Input Devices, Points and Lines; Line Drawing Algorithms, Mid-Point Circle and Ellipse Algorithms; Scan Line Polygon Fill Algorithm, Boundary-Fill and Flood- Fill.

2-D Geometrical Transforms and Viewing: Translation, Scaling, Rotation, Reflection and Shear Transformations; Matrix Representations and Homogeneous Coordinates; Composite Transforms, Transformations Between Coordinate Systems, Viewing Pipeline, Viewing Coordinate Reference Frame, Window to View-Port Coordinate Transformation, Viewing

Functions, Line and Polygon Clipping Algorithms.

3-D Object Representation, Geometric Transformations and Viewing: Polygon Surfaces, Quadric Surfaces, Spline Representation, Bezier and B-Spline Curves; Bezier and B-Spline Surfaces; Illumination Models, Polygon Rendering Methods, Viewing Pipeline and Coordinates; General Projection Transforms and Cipping.

Unit – 4 : Database Management Systems

Database System Concepts and Architecture: Data Models, Schemas, and Instances; Three-Schema Architecture and Data Independence; Database Languages and Interfaces; Centralized and Client/Server Architectures for DBMS.

Data Modeling: Entity-Relationship Diagram, Relational Model - Constraints, Languages, Design, and Programming, Relational Database Schemas, Update Operations and Dealing with Constraint Violations; Relational Algebra and Relational Calculus; Codd Rules.

SQL: Data Definition and Data Types; Constraints, Queries, Insert, Delete, and Update Statements; Views, Stored Procedures and Functions; Database Triggers, SQL Injection.

Normalization for Relational Databases: Functional Dependencies and Normalization; Algorithms for Query Processing and Optimization; Transaction Processing, Concurrency Control Techniques, Database Recovery Techniques, Object and Object-Relational Databases; Database Security and Authorization.

Enhanced Data Models: Temporal Database Concepts, Multimedia Databases, Deductive Databases, XML and Internet Databases; Mobile Databases, Geographic Information Systems, Genome Data Management, Distributed Databases and Client-Server Architectures.

Data Warehousing and Data Mining: Data Modeling for Data Warehouses, Concept Hierarchy, OLAP and OLTP; Association Rules, Classification, Clustering, Regression,

Support Vector Machine, K-Nearest Neighbour, Hidden Markov Model, Summarization, Dependency Modeling, Link Analysis, Sequencing Analysis, Social Network Analysis.

Big Data Systems: Big Data Characteristics, Types of Big Data, Big Data Architecture, Introduction to Map-Reduce and Hadoop; Distributed File System, HDFS.
NOSQL: NOSQL and Query Optimization; Different NOSQL Products, Querying and Managing NOSQL; Indexing and Ordering Data Sets; NOSQL in Cloud.

Unit – 5 : System Software and Operating System

System Software: Machine, Assembly and High-Level Languages; Compilers and Interpreters; Loading, Linking and Relocation; Macros, Debuggers.

Basics of Operating Systems: Operating System Structure, Operations and Services; System Calls, Operating-System Design and Implementation; System Boot.
Process Management: Process Scheduling and Operations; Interprocess Communication, Communication in Client–Server Systems, Process Synchronization, Critical-Section Problem, Peterson's Solution, Semaphores, Synchronization.

Threads: Multicore Programming, Multithreading Models, Thread Libraries, Implicit Threading, Threading Issues.

CPU Scheduling: Scheduling Criteria and Algorithms; Thread Scheduling, Multiple- Processor Scheduling, Real-Time CPU Scheduling.

Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Avoidance and Detection; Recovery from Deadlock.

Memory Management: Contiguous Memory Allocation, Swapping, Paging, Segmentation, Demand Paging, Page Replacement, Allocation of Frames, Thrashing, Memory-MappedFiles.

Storage Management: Mass-Storage Structure, Disk Structure, Scheduling and Management, RAID Structure.

File and Input/Output Systems: Access Methods, Directory and Disk Structure; File- System Mounting, File Sharing, File-System Structure and Implementation; Directory Implementation, Allocation Methods, Free-Space Management, Efficiency and Performance; Recovery, I/O Hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O Requests to Hardware Operations.

Security: Protection, Access Matrix, Access Control, Revocation of Access Rights, Program Threats, System and Network Threats; Cryptography as a Security Tool, User Authentication, Implementing Security Defenses.

Virtual Machines: Types of Virtual Machines and Implementations; Virtualization.

Linux Operating Systems: Design Principles, Kernel Modules, Process Management, Scheduling, Memory Management, File Systems, Input and Output; Interprocess Communication, Network Structure.

Windows Operating Systems: Design Principles, System Components, Terminal Services and Fast User Switching; File System, Networking.

Distributed Systems: Types of Network based Operating Systems, Network Structure, Communication Structure and Protocols; Robustness, Design Issues, Distributed File Systems.

Unit – 6 : Software Engineering

Software Process Models: Software Process, Generic Process Model – Framework Activity, Task Set and Process Patterns; Process Lifecycle, Prescriptive Process Models, Project Management, Component Based Development, Aspect-Oriented Software Development, Formal Methods, Agile Process Models – Extreme Programming (XP), Adptive Software Development, Scrum, Dynamic System Development Model, Feature Driven Development, Crystal, Web Engineering.

Software Requirements: Functional and Non-Functional Requirements; Eliciting Requirements, Developing Use Cases, Requirement Analysis and Modelling; Requirements Review, Software Requirment and Specification (SRS) Document.

Software Design: Abstraction, Architecture, Patterns, Separation of Concerns, Modularity, Information Hiding, Functional Independence, Cohesion and Coupling; Object-Oriented Design, Data Design, Architectural Design, User Interface Design, Component Level Design.

Software Quality: McCall's Quality Factors, ISO 9126 Quality Factors, Quality Control, Quality Assurance, Risk Management, Risk Mitigation, Monitoring and Management (RMMM); Software Reliability.

Estimation and Scheduling of Software Projects: Software Sizing, LOC and FP based Estimations; Estimating Cost and Effort; Estimation Models, Constructive Cost Model (COCOMO), Project Scheduling and Staffing; Time-line Charts.

Software Testing: Verification and Validation; Error, Fault, Bug and Failure; Unit and Integration Tesing; White-box and Black-box Testing; Basis Path Testing, Control Structure Testing, Deriving Test Cases, Alpha and Beta Testing; Regression Testing, Performance Testing, Stress Testing.

Software Configuration Management: Change Control and Version Control; SoftwareReuse, Software Re-engineering, Reverse Engineering.

Unit – 7 : Data Structures and Algorithms

Data Structures: Arrays and their Applications; Sparse Matrix, Stacks, Queues, Priority Queues, Linked Lists, Trees, Forest, Binary Tree, Threaded Binary Tree, Binary Search Tree, AVL Tree, B Tree, B+ Tree, B* Tree, Data Structure for Sets, Graphs, Sorting and Searching Algorithms; Hashing.

Performance Analysis of Algorithms and Recurrences:Time and Space Complexities; Asymptotic Notation, Recurrence Relations.

Design Techniques: Divide and Conquer; Dynamic Programming, Greedy Algorithms, Backtracking, Branch and Bound.

Lower Bound Theory: Comparison Trees, Lower Bounds through Reductions.

Graph Algorithms: Breadth-First Search, Depth-First Search, Shortest Paths, Maximum Flow, Minimum Spanning Trees.

Complexity Theory: P and NP Class Problems; NP-completeness and Reducibility.

Selected Topics: Number Theoretic Algorithms, Polynomial Arithmetic, Fast Fourier Transform, String Matching Algorithms.

Advanced Algorithms: Parallel Algorithms for Sorting, Searching and Merging, Approximation Algorithms, Randomized Algorithms.

Unit – 8 : Theory of Computation and Compilers

Theory of Computation: Formal Language, Non-Computational Problems, Diagonal Argument, Russels's Paradox.

Regular Language Models: Deterministic Finite Automaton (DFA), Non-Deterministic Finite Automaton (NDFA), Equivalence of DFA and NDFA, Regular Languages, Regular Grammars, Regular Expressions, Properties of Regular Language, Pumping Lemma, Non- Regular Languages, Lexical Analysis.

Context Free Language: Pushdown Automaton (PDA), Non-Deterministic Pushdown Automaton (NPDA), Context Free Grammar, Chomsky Normal Form, Greibach Normal Form, Ambiguity, Parse Tree Representation of Derivation Trees, Equivalence of PDA's and Context

Free Grammars; Properties of Context Free Language.

Turing Machines (TM): Standard Turing Machine and its Variations; Universal Turing Machines, Models of Computation and Church-Turing Thesis; Recursive and Recursively- Enumerable Languages; Context-Sensitive Languages, Unrestricted Grammars, Chomsky Hierarchy of Languages, Construction of TM for Simple Problems.

Unsolvable Problems and Computational Complexity: Unsolvable Problem, Halting Problem, Post Correspondence Problem, Unsolvable Problems for Context-Free Languages, Measuring and Classifying Complexity, Tractable and Intractable Problems.

Syntax Analysis: Associativity, Precedence, Grammar Transformations, Top Down Parsing, Recursive Descent Predictive Parsing, LL(1) Parsing, Bottom up Parsing, LR Parser, LALR(1) Parser.

Semantic Analysis: Attribute Grammar, Syntax Directed Definitions, Inherited andSynthesized Attributes; Dependency Graph, Evaluation Order, S-attributed and L-attributed Definitions; Type-Checking.

Run Time System: Storage Organization, Activation Tree, Activation Record, Stack Allocation of Activation Records, Parameter Passing Mechanisms, Symbol Table.

Intermediate Code Generation: Intermediate Representations, Translation of Declarations, Assignments, Control Flow, Boolean Expressions and Procedure Calls.

Code Generation and Code Optimization: Control-flow, Data-flow Analysis, Local Optimization, Global Optimization, Loop Optimization, Peep-Hole Optimization, InstructionScheduling.

Unit – 9 : Data Communication and Computer Networks

Data Communication: Components of a Data Communication System, Simplex, Half- Duplex and Duplex Modes of Communication; Analog and Digital Signals; Noiseless and Noisy Channels; Bandwidth, Throughput and Latency; Digital and Analog Transmission; Data Encoding and Modulation Techniques; Broadband and Baseband Transmission; Multiplexing, Transmission Media, Transmission Errors, Error Handling Mechanisms.

Computer Networks: Network Topologies, Local Area Networks, Metropolitan Area Networks, Wide Area Network, Wireless Networks, Internet.

Network Models: Layered Architecture, OSI Reference Model and its Protocols; TCP/IP Protocol Suite, Physical, Logical, Port and Specific Addresses; Switching Techniques.

Functions of OSI and TCP/IP Layers: Framing, Error Detection and Correction; Flow and Error Control; Sliding Window Protocol, HDLC, Multiple Access – CSMA/CD, CSMA/CA,Reservation, Polling, Token Passing, FDMA, CDMA, TDMA, Network Devices, Backbone Networks, Virtual LANs.
IPv4 Structure and Address Space; Classful and Classless Addressing; Datagram, Fragmentation and Checksum; IPv6 Packet Format, Mapping Logical to Physical Address (ARP), Direct and Indirect Network Layer Delivery; Routing Algorithms, TCP, UDP and SCTP Protocols; Flow Control, Error Control and Congestion Control in TCP and SCTP.

World Wide Web (WWW): Uniform Resource Locator (URL), Domain Name Service (DNS), Resolution - Mapping Names to Addresses and Addresses to Names; Electronic Mail Architecture, SMTP, POP and IMAP; TELNET and FTP.

Network Security: Malwares, Cryptography and Steganography; Secret-Key Algorithms, Public-Key Algorithms, Digital Signature, Virtual Private Networks, Firewalls.

Mobile Technology: GSM and CDMA; Services and Architecture of GSM and Mobile Computing; Middleware and Gateway for Mobile Computing; Mobile IP and Mobile Communication Protocol; Communication Satellites, Wireless Networks and Topologies; Cellular Topology, Mobile Adhoc Networks, Wireless Transmission and Wireless LANs; Wireless Geolocation Systems, GPRS and SMS.

Cloud Computing and IoT: SaaS, PaaS, IaaS, Public and Private Cloud; Virtualization, Virtual Server, Cloud Storage, Database Storage, Resource Management, Service Level Agreement, Basics of IoT.

Unit – 10 : Artificial Intelligence (AI)

Approaches to AI: Turing Test and Rational Agent Approaches; State Space Representation of Problems, Heuristic Search Techniques, Game Playing, Min-Max Search, Alpha Beta Cutoff Procedures.

Knowledge Representation: Logic, Semantic Networks, Frames, Rules, Scripts, Conceptual Dependency and Ontologies; Expert Systems, Handling Uncertainty in Knowledge.

Planning: Components of a Planning System, Linear and Non Linear Planning; Goal Stack Planning, Hierarchical Planning, STRIPS, Partial Order Planning.

Natural Language Processing: Grammar and Language; Parsing Techniques, SemanticAnalysis and Prgamatics.

Multi Agent Systems: Agents and Objects; Agents and Expert Systems; Generic Structure of Multiagent System, Semantic Web, Agent Communication, Knowledge Sharing using Ontologies, Agent Development Tools.

Fuzzy Sets: Notion of Fuzziness, Membership Functions, Fuzzification and Defuzzification; Operations on Fuzzy Sets, Fuzzy Functions and Linguistic Variables; Fuzzy Relations, Fuzzy Rules and Fuzzy Inference; Fuzzy Control System and Fuzzy Rule Based Systems.

Genetic Algorithms (GA): Encoding Strategies, Genetic Operators, Fitness Functions and GA Cycle; Problem Solving using GA.

Artificial Neural Networks (ANN): Supervised, Unsupervised and Reinforcement Learning; Single Perceptron, Multi Layer Perceptron, Self Organizing Maps, HopfieldNetwork.

Domain: Law

Code No.:

Unit – I: Jurisprudence

1. Nature and sources of law
2. Schools of jurisprudence
3. Law and morality
4. Concept of rights and duties
5. Legal personality
6. Concepts of property, ownership and possession
7. Concept of liability
8. Law, poverty and development
9. Global justice
10. Modernism and post-modernism

Unit -II: Constitutional and Administrative Law

1. Preamble, fundamental rights and duties, directive principles of state policy.
2. Union and State executive and their interrelationship
3. Union and State legislature and distribution of legislative powers
4. Judiciary
5. Emergency provisions
6. Temporary, transitional and special provisions in respect of certain states
7. Election Commission of India
8. Nature, scope and importance of administrative law
9. Principle of natural justice
10. Judicial review of administrative actions – Grounds.

Unit -III: Public International Law and IHL

1. International law – Definition, nature and basis
2. Sources of International law
3. Recognition of states and governments
4. Nationality, immigrants, refugees and internally displaced persons (IDPs)
5. Extradition and asylum
6. United Nations and its organs
7. Settlement of international disputes
8. World Trade Organization (WTO)
9. International humanitarian law (IHL) - Conventions and protocols
10. Implementation of IHL - Challenges

Unit -IV – Law of Crimes

1. General principles of criminal liability – *Actus reus* and *mens rea*, individual andgroup liability and constructive liability
2. Stages of crime and inchoate crimes - Abetment, criminal conspiracy and attempt
3. General exceptions
4. Offences against human body
5. Offences against state and terrorism
6. Offences against property
7. Offences against women and children
8. Drug trafficking and counterfeiting
9. Offences against public tranquility
10. Theories and kinds of punishments, compensation to the victims of crime

Unit – V: Law od Torts and Consumer Protection

1. Nature and definition of tort
2. General principles of tortious liability
3. General defenses
4. Specific torts – Negligence, nuisance, trespass and defamation
5. Remoteness of damages
6. Strict and absolute liability
7. Tortious liability of the State
8. The Consumer Protection Act 1986 - Definitions, consumer rights and redressal mechanism
9. The Motor Vehicles Act, 1988 - No fault liability, third party insurance and claimstribunal
10. The Competition Act, 2002 - Prohibition of certain agreements, abuse of dominant position and regulation of combinations

Unit -VI: Commercial Law

1. Essential elements of contract and e-contract
2. Breach of contract, frustration of contract, void and voidable agreements
3. Standard form of contract and quasi-contract
4. Specific contracts - Bailment, pledge, indemnity, guarantee and agency
5. Sale of Goods Act, 1930
6. Partnership and limited liability partnership
7. Negotiable Instruments Act, 1881
8. Company law – Incorporation of a company, prospectus, shares and debentures
9. Company law – Directors and meetings
10. Corporate social responsibility

Unit - VII: Family Law

1. Sources and schools
2. Marriage and dissolution of marriage
3. Matrimonial remedies - Divorce and theories of divorce
4. Changing dimensions of institution of marriage – *Live-in* relationship
5. Recognition of foreign decrees in India on marriage and divorce
6. Maintenance, dower and *stridhan*
7. Adoption, guardianship and acknowledgement
8. Succession and inheritance
9. Will, gift and *wakf*
10. Uniform Civil Code

Unit – VIII: Environment and Human Rights Law

1. Meaning and concept of 'environment' and 'environmental pollution'
2. International environmental law and UN Conferences
3. Constitutional and legal framework for protection of environment in India
4. Environmental Impact Assessment and control of hazardous waste in India
5. National Green Tribunal
6. Concept and development of human rights
7. Universalism and cultural relativism
8. International Bill of Rights
9. Group rights – Women, children, persons with disabilities, elderly persons, minorities and weaker sections
10. Protection and enforcement of human rights in India – National Human Rights Commission, National Commission for Minorities, National Commission for Women, National Commission for Scheduled Castes, National Commission for Schedule Tribes and National Commission for Backward Classes

Unit -IX: Intellectual Property Rights and Information Technology Law

1. Concept and meaning of intellectual property
2. Theories of intellectual property
3. International conventions pertaining to intellectual properties
4. Copyright and neighboring rights – Subject matters, limitations and exceptions, infringement and remedies
5. Law of patent – Patentability, procedure for grant of patent, limitations andexceptions, infringement and remedies
6. Law of trademark – Registration of trademarks, kinds of trademarks, infringementand passing off, remedies
7. Protection of Geographical Indications
8. Bio-diversity and Traditional Knowledge
9. Information technology law- digital signature and electronic signature, electronic governance, electronic records and duties of subscribers
10. Cyber crimes, penalties and adjudication

Unit – X: Comparative Public Law and Systems of Governance

1. Comparative Law – Relevance, methodology, problems and concerns in Comparison
2. Forms of governments – Presidential and parliamentary, unitary and federal
3. Models of federalism – USA, Canada and India
4. Rule of Law – 'Formal' and 'substantive' versions
5. Separation of powers – India, UK, USA and France
6. Independence of judiciary, judicial activism and accountability – India, UK andUSA
7. Systems of constitutional review – India, USA, Switzerland and France
8. Amendment of the Constitution – India, USA and South Africa
9. *Ombudsman* –Sweden, UK and India
10. Open Government and Right to Information - USA, UK and India

Annexure 3: Template for the Research Proposal

I. Research Problem

II. Research Questions

III. Objectives of the Study

IV. Literature Review

V. Research Gaps and Need Justification

VI. Proposed Methodology:
(a) Approach to research
(b) Data Collection
(c) Sampling
(d) Instruments
(e) Statistical tools and software to be used (tentative)

VII. Proposed outcome and implications

VIII. Appendices

IX. References

X. Bibliography

Annexure 4: Ph.D. Course Work Syllabus

Preamble

AURO University offers Ph. D. Programmes in Management, Law, IT, Design, Hospitality, Journalism and Mass Communication. Thus the approach of the programme is inter-disciplinary and integral in nature and carries in a comparative perspective. Keeping the importance of research in present scenario and to enhance the quality of research the university conducts a pre-Ph.D. coursework of 12 credits which are delivered in two semesters. The Ph.D. coursework is a crucial part of the doctoral journey, designed to equip students with the necessary knowledge and skills to conduct high-quality, independent research in their chosen field. This coursework is not merely an academic exercise, but a comprehensive training programme that prepares students for the rigours of research and the challenges of a professional career in academia or industry.

The coursework is structured to provide a deep understanding of both the theoretical and practical aspects of the subject. It includes advanced courses in the chosen field of study, research methodology courses, and professional development courses. The coursework is designed to be rigorous and challenging, pushing students to think critically, question existing knowledge, and contribute new ideas to their field.

Objectives of the Program/Program Educational Objectives:

PEO 1: To develop substantive knowledge in the chosen area of specialization.
PEO 2: To design and conduct original research in the chosen area of specialisation
PEO 3: To develop research proficiency
PEO 4: To develop teaching proficiency
PEO 5: To develop the ability to communicate the results of a research study
PEO 6: To develop an understanding and concern for the high ethical standards in research, teaching and service.
PEO 7: To develop integral approach for achieving personal and professional excellence.

Outcomes of the Program/Program Outcomes: After successful completion of the program, scholars shall be able to:

PO 1: Explain and implement an integral approach in the personal and professional context.
PO 2: Design a research study and choose appropriate statistical tools for analysis of the data
PO 3: Conduct an original research in the chosen area of specialization
PO 4: To develop principles for teaching and research
PO 5: To make an effective presentation of a research study

Detailed Syllabus

Research Methodology (4 Credits)

Course Description:

The Research Methodology course is an intensive programme designed to provide students with a comprehensive understanding of the methods and techniques used in academic and professional research. This course covers a wide range of topics, including the formulation of research questions, the design of research studies. The course also addresses ethical considerations in research and the importance of critical evaluation in the research process. Through a combination of theoretical learning and practical exercises, learners will gain the skills necessary to conduct high-quality, independent research in their chosen field.

Course Objectives:

By the end of this course, learners will be able to:

1. Understand the fundamental principles and processes of research methodology.
2. Formulate clear and concise research questions and hypotheses.
3. Design and conduct research studies using appropriate methodologies.
4. Understand and apply ethical considerations in conducting research.
5. Critically evaluate research studies and present research findings effectively.

Unit I: Scientific Research and Approaches to Study Social Phenomena

The meaning and nature of science, the characteristics of scientific research, and the types of research methods. Nature of social phenomena, approaches to study social phenomena and ethics of social research.

Unit II: Problem Formation, Research Topic, and Hypothesis

Problem formulation and selection of research topics, sources for selecting research topics, types of variables and their selection, research objectives and purpose, types of research questions and their characteristics, types of hypothesis, and formulation and testing of hypothesis.

Unit III: Research Design and Planning

The meaning and types of research design, the advantages of designing research, stages for outlining a research proposal and planning for a good research project.

Unit IV: Sampling Techniques

Principles and purposes of sampling, types of sampling and sample size, qualitative and quantitative approaches, and principles of PRA and FRA techniques.

Suggested Readings:

- Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.
- Goddard, W., & Melville, S. (2004). Research methodology: An introduction. Juta and Company Ltd.
- Sekaran, U., & Bougie, R. (2016). Research methods for business: A skill building approach. John wiley & sons.

Data Processing and Analysis (4 Credits)

Course Description:

The Data Processing and Analysis course is a comprehensive programme designed to provide learners with a robust understanding of the methodologies and techniques used in the processing and analysis of data. This course delves into the core concepts of data manipulation, cleaning, transformation, and analysis, with a strong emphasis on practical application. The learners will gain hands-on experience with various data processing tools and software, and will learn how to apply statistical methods to derive insights from data. The course also covers the ethical considerations in data processing and analysis, ensuring students are well-equipped to handle data responsibly in their professional careers.

Course Objectives:

By the end of this course, learners will be able to:

1. Understand the fundamental concepts and techniques in data processing and analysis.
2. Apply various data processing methods to clean, transform, and manipulate data.
3. Use statistical methods and data analysis tools to extract meaningful insights from data.
4. Understand and apply ethical considerations in data processing and analysis.
5. Effectively communicate the results of data analysis to both technical and non-technical audiences.

Unit I: Data Collection Techniques

Methods and techniques of data collection, sources of data collection (primary and secondary), schedule and questionnaire, observation, interview, group discussion and key-informant interview, case study, survey, content analysis and projective techniques.

Unit II: Data Processing and Analysis

Data processing and distribution, tabulation of data, coding and re-coding, diagrammatic representation, and statistical manipulation of data including frequency of distribution, measures of central tendency, measures of dispersion, comparison, correlation analysis, regression analysis, and chi-square test.

Unit III: Computer Application: SPSS and AMOS

Introduction to SPSS software, data entry and manipulation using SPSS, and data analysis using SPSS. Multivariate data analysis and SEM using AMOS.

Unit IV: Computer Application: R programming

Introduction to R programming, data management using R, Data visualization, Univariate and Multivariate analysis using R-Studio.

Suggested Readings:

- Field, A. (2013). Discovering statistics using IBM SPSS statistics. London: Sage.
- Field, A., Miles, J., & Field, Z. (2012). Discovering statistics using R (Vol. 3). London: Sage.
- Fischetti, T. (2015). Data analysis with R. Packt Publishing Ltd.

Professional and Technical Communication (2 Credits)

Course Description:
This course is designed to equip the learners with advanced professional and technical communication skills. The course will cover a range of topics including research writing, grant proposal writing, conference presentations, and effective communication with diverse audiences. The course will also delve into the ethical considerations and best practices in professional and technical communication.

Course Objectives:
By the end of this course, learners will be able to:

1. Write clear, concise, and impactful research papers and grant proposals.
2. Deliver effective and engaging conference presentations.
3. Communicate complex technical information to diverse audiences.
4. Understand and apply ethical considerations in professional and technical communication.

Unit I: Advanced Research Writing

Introduction to research writing at the Ph.D. level. Structuring a research paper: Abstract, Introduction, Methods, Results, Discussion, and Conclusion. Writing style and tone in research writing. Citing sources and avoiding plagiarism. Peer review process and responding to reviewers' comments.

Unit II: Grant Proposal Writing

Introduction to grant proposal writing. Identifying funding opportunities. Structuring a grant proposal: Executive Summary, Need Statement, Goals and Objectives, Methods, Budget. Writing style and tone in grant proposal writing. Review and feedback process in grant proposal writing.

Unit III: Conference Presentations

Preparing for a conference presentation. Structuring a conference presentation: Introduction, Methods, Results, Discussion, and Conclusion. Presentation skills: Body language, voice modulation, use of visual aids. Handling Q&A sessions. Virtual presentations and webinars.

Unit IV: Communication with Diverse Audiences

Understanding diverse audiences: Non-specialists, policy makers, general public. Simplifying complex technical information for non-specialist audiences. Ethical considerations in professional and technical communication. Best practices in professional and technical communication.

Suggested Readings:

- Alred, G. J., Brusaw, C. T., & Oliu, W. E. (2009). Handbook of technical writing. Macmillan.
- Markel, M., & Markel, M. H. (2009). Technical communication. Macmillan.
- Yang, O. O. (2012). Guide to effective grant writing: How to write a successful NIH grant application. New York: Springer.

Research and Publication Ethics (2 Credits)

Overview of the course
This course has total 6 units focusing on basics of philosophy of science and ethics, research integrity, publication ethics. Sessions are designed to identify research misconduct and predatory publications. Indexing and citation databases, open access publications, research metrics (citations, h-index, impact factor, etc.) and plagiarism tools are introduced in this course.
Pedagogy:
Interactive video sessions, group discussions through online platforms, and practical sessions. Students have to attend online lectures, watch offline videos, read online resources and complete assignments.
Evaluation:
Those students who want to be issued with a certificate of St Thomas College are required to satisfy the following:
Final examination – 50 % marks is required for a pass
Course Structure:
The course comprised of six modules listed in table below. Each module has 4-5 units.

Modules	Unit Title	Teaching Hours
Theory		
RPE 01	Philosophy and Ethics	5
RPE 02	Scientific Conduct	5
RPE 03	Publication Ethics	8
Practice		
RPE 04	Open Access Publishing	5
RPE 05	Publication Misconduct	5
RPE 06	Database and Research Metrics	8
Total		36

Syllabus in detail: Theory

RPE 01: Philosophy and Ethics
1. Introduction to Philosophy: definition, nature and scope, concept, branches
2. Ethics: Definition, moral philosophy, nature of moral judgments and reactions.

RPE 02: 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

RPE 03: Publication Ethics
1. Publication ethics: definition, introduction and importance
2. Best practices/standards setting initiatives and guidelines: COPE, WAME etc.
3. Conflicts of interest
4. Publication misconduct: Definition, concept, problems that lead to unethical behavior and vice versa, types
5. Violation of publication ethics, authorship and contributorship
6. Identification of publication misconduct, complaints and appeals
7. Predatory publishers and journals

Practice

RPE 04: Open Access Publishing

1. Open access publications and initiatives
2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
3. Software tool to identify predatory publications developed by SPPU: UGC-CARE list of journals
4. Journal finder/journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

RPE05: Publication Misconduct

1. Group discussions
2. Subject specific ethical issues, FFP, authorship
3. Conflicts of interest
4. Complaints and appeals: examples and fraud from India and abroad

Software tools

Use of reference management software like Mendeley, Zotero etc. and anti-plagiarism software like Turnitin, Urkund

RPE 06: Databases and research metrics

1. Databases
2. Indexing databases
3. Citation databases: Web of Science, Scopus etc.
4. Research Metrics
5. Impact factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score
6. Metrics: h-index, g-index, i-10 index, altmetrics

Suggested Readings:

- Bird, A. (1998). Philosophy of science (Vol. 5). McGill-Queen's Press-MQUP.
- McIntyre, A. (1998). A Short History of Ethics. Notre Dame, IN.
- Praveen, C. (2018). Ethics in Competitive Research.

Annexure 5: Six Monthly Progress Report

Six Months Progress Report for PhD Scholar

1.Name of the Candidate:	
2.Enrolment/Registration Number:	
3.Discipline:	
4.Name of the Supervisor & Co-Supervisor (if any):	
5.Title of Thesis:	
6. Progress Report for the Session:	
7. Research Activities Performed *in last 6 months (Course work in progress/completed, Synopsis Submitted/Defended, Pre-Abstract Submitted/Defended and Thesis Submitted/Defended):*	

8. Brief Summary of the Research Work Carried (300 words):
9. Research Papers Published in the Refereed Journals in last 6 months with Impact Factor. Reprint should be also enclosed:
10. Research Papers Published in the Conference Proceedings with Publication Detail in Last Six Months i.e. Authors Name, Journal Name, Years and Pages. Reprint should be also enclosed:

11. Conferences/Seminars/Workshops Attended with Detail: Date, Workshop Name, Sponsoring Body etc:
12. Any Other Achievements (*Please attach separate sheets if required):*

It is Certified that all information in the six month progress report is correct to best of my knowledge.

Date: Full Signature of the Research Scholar

Signature of Supervisor Signature of Co-supervisor

Note: The Progress report will be placed before the RPC of concern student for approval. The report and further recommendation will be kept in the personal file of the candidate.

Date Research scholar Supervisor Co-Supervisor

Annexure 6: Template for Synopsis

1. Background /Introduction
2. Research Problem
3. Research Questions
4. Objectives
5. Hypotheses
6. Review of Literature
7. Methodology
8. Variables of the study / Parameters of the study
9. Operational Definitions
10. Design of the study /Technique used
11. Sampling technique
12. Tools for collecting the data
13. Validation procedures
14. Experimentation/Field work details
15. Tools for analysis/statistical techniques/
16. Findings & Discussions
17. Conclusions
18. Implications of the Study
19. Limitations of the study
20. Directions for further research
21. Appendices
22. References
23. Bibliography

Annexure 7: Plagiarism Report

1. Analyzed document (Name of the student)
2. Doc/PDF Form:
3. Date of Submission:
4. Time of submission:
5. Name of the Person submitted
6. E-mail ID of the person submitted
7. Similarity (In Percentage)
8. Online Analysis Address
9. Name of the File (Software Generated Plagiarism Report) Attached

Annexure 8: Format of the Ph.D. Thesis
AURO UNIVERSITY, SURAT

Template for the PhD Thesis

SOME IMPORTANT POINTS

- COLOR COMBINATION for the Cover page of final thesis (i.e. Hard bound copies): Black Color of the Front Page: White; Color of Font on the Cover Page: Yellow

- FONT SIZE on the cover page should be same as provided in this template
- Font and Font size for the general text of the report: Times New Roman 12
- LINE SPACING: 1.5
- MARGINS: At least 2.5 inch on the binding side; 1 inch at top and bottom
- PAGE NUMBERING: Roman numerals till the first page of first chapter. The chapters to be numbered in the Arabic numerals. The Page number should be bottom centered
- PAPER TYPE AND SIZE: A4 size Executive Bond Paper
- PRINTING: BOTH SIDE PRINTING
- Number of copies of PhD thesis to be submitted: 5 + number of thesis supervisor(s)
- REFERENCES: List of References should include only those published or accepted for publication works that are cited in the text. Use of footnotes or endnotes should be avoided as a substitute for a reference list. Ideally, the names of all authors should be provided, but for the long author lists "*et al*" can be used.

Following are two ways of citing the references and preparing the list of references

[A] Citations of the reference in the text by its number in a square brackets i.e. *1. Negotiation research spans many disciplines [3]; 2. This result was later contradicted by Becker and Seligman [5]. 3. This effect has been widely studied [1-3, 7].*

[A.1] Reference list: The references for such style should be listed and numbered consecutively in the order of citation.

[B] Citation of the reference by surname(s) of the author(s) directly (or parenthetically) and year of publications i.e. *as demonstrated (Allan and Jones, 1995). Kramer et al. (2000) have recently shown ….*

1. Single Author: the author's surname (without initials, unless there is ambiguity) and the year of publication; 2. Two Authors: both authors' surnames and the year of publication; 3. Three or more authors: first author's surname followed by 'et al.' and the year of publication. [B.1] List of References: The references for such style should be arranged alphabetically.

Following are the examples of preparing the list of references

JOURNAL ARTICLE

- Gamelin F.X., Baquet G., Berthoin S., Thevenet D., Nourry C., Nottin S., Bosquet L. (2009), Effect of high intensity intermittent training on heart rate variability in prepubescent children, Eur J Appl Physiol, 105, 731-738 (DOI: 10.1007/s00421-008-0955-8)
- Smith J., Jones M. Jr, Houghton L. *et al* (1999) Future of health insurance, N Engl J Med, 96, 325–329

ARTICLE BY DOI

- Slifka M.K., Whitton J.L. (2000), Clinical implications of dysregulated cytokine production, J Mol Med, doi:10.1007/s001090000086

ARTICLE FROM THE PROCEEDINGS

- Weber, D.J., Hess, W.M., (1985) Simple solar model for direct and diffuse irradiance, In: Bilgen, E., Hollands, K.G.T. (Eds.), Proceedings of ISES World Congress, Montreal, Canada, pp. 123-132.

BOOK

- Duffie, J.A., Beckman, W.A., (1991) Solar Engineering of Thermal Processes, second ed. Wiley Interscience, New York, pp. 54-59 (ISBN).

BOOK CHAPTER

- Brown B., Aaron M. (2001) The politics of nature. In: Smith J (ed) The rise of modern genomics, 3rd edn. Wiley, New York, pp 230-257 (ISBN)

FOR CHAPTERS IN AN EDITED BOOKS

- Marcus, B.C., Nemo, A., (1992), Estimation of total solar radiation from cloudiness in Spain. In: Winchester, F., Yu, S., Pfaff, S.W., Major, K. (Eds.), Global Solar Radiation, vol. 2. Raven Press, New York, pp. 1393-1399 (ISBN).

ONLINE DOCUMENT

- Cartwright J. (2007) Big stars have weather too. IOP Publishing PhysicsWeb. http://physicsweb.org/articles/news/11/6/16/1. Accessed 26 June 2007

DISSERTATION

- Trent J.W. (1975) Experimental acute renal failure. PhD Dissertation, University of California

FOR WEBSITE REFERENCES

- Bpsolar (2002), www.bpsolar.com OR: CEC (2002), www.consumerenergycenter.com/renewable/

<TITLE OF PHD THESIS>

Ph.D. Thesis

By
<NAME OF THE PHD STUDENT>

SCHOOL OF < NAME OF THE SCHOOL >
AURO UNIVERSITY, SURAT
< MONTH AND YEAR OF SUBMISSION>

<TITLE OF PHD THESIS>

A THESIS

Submitted in partial fulfillment of the requirements for the award of the degree of
DOCTOR OF PHILOSOPHY

by
NAME OF THE STUDENT

SCHOOL OF < NAME OF THE SCHOOL >
AURO UNIVERSITY, SURAT
< MONTH AND YEAR OF THESIS SUBMISSION>

I hereby certify that the work which is being presented in the thesis entitled <TITLE OF PHD THESIS> in the partial fulfillment of the requirements for the award of the degree of DOCTOR OF PHILOSOPHY and submitted in the DEPARTMENT/SCHOOL OF < NAME OF THE DEPARTMENT/SCHOOL >, Auro University, Surat, is an authentic record of my own work carried out during the time period from <Month and year of joining the PhD program> to < Month and year of PhD Thesis submission> under the supervision of <Name of the PhD Thesis Supervisor #1, Designation, and Affiliation> and <Name of the PhD Thesis Supervisor #2, Designation, and Affiliation>

The matter presented in this thesis has not been submitted by me for the award of any other degree of this or any other institute.

Signature of the student with date
(NAME OF THE PhD STUDENT)

This is to certify that the above statement made by the candidate is correct to the best of my/our knowledge.

Signature of Thesis Supervisor #1 with date
(NAME OF THESIS SUPERVISOR)

Signature of Thesis Supervisor #2 with date
(NAME OF THESIS SUPERVISOR)

<NAME OF THE PhD STUDENT> has successfully given his/her Ph.D. Oral Examination held on <Date of PhD Oral Examination>.

Signature of Thesis Supervisor #1 with date
(NAME OF THESIS SUPERVISOR)

Signature of Thesis Supervisor #2 with date
(NAME OF THESIS SUPERVISOR)

ACKNOWLEDGEMENTS

DEDICATION (if any)

SYNOPSIS

The synopsis should be a concise summary (including the figures, tables, few references, and list of publications) of the PhD thesis. It should not contain more than 8-12 pages of A4 size with the text typed in 12 pt Times News Roman font having 1.5 spacing.

The primary objective of the synopsis is to enable the reader to judge whether a prima facie there exists a case for accepting the proposed PhD thesis for the award of the PhD degree. The synopsis should therefore, clearly list the contributions resulting from the investigations carried out by the candidate, which have led to advancement of knowledge in the field of investigation.

In order to fully appropriate the candidate's contribution. It is necessary to put it in a proper context. It is, therefore, recommended that the synopsis should contain a brief account of the existing knowledge and the inadequacy or gaps in this knowledge that led the candidate to the formulation of the problem of his / her investigation. A few references, needed in this respect should be included but their number should normally, not exceed ten.

List of publications (including published, accepted, submitted in the refereed journals and conferences) or Patents (granted or applied) from the PhD work should be included.

LIST OF PUBLICATIONS

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NOMENCLATURE

ACRONYMS (if any)

Chapter I:

Introduction

APPENDIX A

AURO UNIVERSITY
Integral & Transformational Learning

REFERENCES

Annexure 9: Regulation for Auro University JRF/SRF Scheme

This Regulation for Auro University Junior/Senior Research Fellowship Scheme shall be part of Ph.D. Regulations of the University and shall come in to effect from the date of its Notification. The Scheme shall be coordinated and administered by Ph.D. Cell of the University in coordination with the School/Department concerned.

A. Eligibility

The Scheme shall be open for all Ph.D. Scholars of the University subject to the following eligibility criteria.

1. The candidate must be pursuing full time Ph.D. Programme at the University having successfully completed the Coursework.
2. The Candidate should not be receiving any grant or research assistance by whatever name called from any other source including UGC/CSIR/Shodh Scheme of Government of Gujarat. However, they are encouraged to apply for financial assistance from these bodies.
3. The Candidate should not be engaged in any part-time or full time employment of any nature during the entire tenure of Fellowship.
4. The candidate must be present full time at the University during the period of the fellowship.
5. Candidates who are UGC-NET and/or MPhil qualified will be preferred.
6. Candidates to be eligible for Senior Research Fellowship (SRF) shall satisfy the following additional criteria:
    a. Adequate compliance of the requirements as specified in the Ph.D. Regulations as certified by the Ph.D. Supervisor.

b. No arrears in Fee Payment

c. Research has progressed without any extension of duration other than approved.

d. Not otherwise disqualified as per this Regulation.

B. Duration of Fellowship

The tenure of the JRF shall be for a period of 18months commencing from the month after successful completion of the Coursework. No extension of period shall be permitted.

unless under special circumstances as may be approved by the Ph.D. Cell on the recommendation of the Ph.D. Supervisor subject to a maximum period of 6 months on such conditions as may be specified. The tenure of SRF shall be for a period of 18 months commencing from completion of the first half of the approved duration of the Ph.D. Programme subject to satisfactory research progress during the completed period as may be assessed and approved by the certifying authority as herein stated. No extension of period shall be permitted unless under special circumstances as may be approved by the Ph.D. Cell on the recommendation of the Ph.D. Supervisor subject to a maximum period of 6 months on such conditions as may be specified.

C. Fellowship Assistance

Sl. No.	Nature of Assistance	JRF	SRF
1	Monthly Fellowship (INR)	31000	35000
2	Contingency Fund per annum	10000	15000
3	Monthly HRA@9% of the Monthly Fellowship (INR)*	2790	3150
4	Monthly Escort/Reader Assistance**	2000	2000

* Will apply where residential accommodation is not provided by the University.

**Will apply where the Scholar is differently abled as approved.

D. Payment of Fellowship and Contingency Fund

Payment of Fellowship will be in arrears at the end of the month. The Contingency Fund shall be disbursed in two half yearly instalments. 50% of the permissible fund shall be paid in advance along with payment of the Fellowship for the first month and the balance 50% along with the payment of the Fellowship for the ninth month. However the Senior Research Fellowship due for the last two months of the tenure shall be effected only on successful completion of the Ph.D. defence and acceptance of the final thesis by the Ph.D. Cell. Prescribed claim form duly pre-acknowledged and duly recommended by the Ph.D. Supervisor and endorsed by the Head of the School/Department and the Chairperson of the Ph.D. Cell must be submitted every month to the Office of Accounts for all the aforesaid payments. The form must be

prepared in triplicate, one copy to remain with the Supervisor and one copy with the Ph.D. Cell. The payments will be made to the personal bank account of the Scholar to be opened with bank prescribed by the Auro University. The Contingency Fund utilisation must be properly accounted for duly supported by vouchers including for the interest, if any, earned thereon.

E. Contingency Fund Utilisation

The utilisation of contingency fund is permissible only for the following purposes:

a. Purchase of Books/Journals/Monographs etc related to the subject of research not available in the Auro University Library. However such purchases shall be routed through the Ph.D. Cell of Auro University for specific utilisation for research by the Junior/Senior Research Fellow and shall remain the property of the University at all times.
b. Photographic and other media material of relevance required for research
c. Field work and Local Travel
d. Computation and Analytical Charges for Consultants
e. Re-Prints and Off Prints of relevant Research Papers
f. Registration fee for attending Conferences/Seminars in India
g. Any other specific research related requirement other than for Capital Goods and for foreign travel, subject to prior approval of the University

F. Application and Selection Process

Ph.D. Scholars interested in availing the benefits of the Scheme shall make application in the prescribed format within such time limits as may be notified at the beginning of every academic year by the Ph.D. Cell of the University. The selection of candidates for JRF/SRF shall be by a process of test/interview and shall follow the criteria matrix tabulated hereunder which shall be
common for all disciplines.

S.No.	Criteria	Weightage
1.	Score in the Qualifying Examination (Postgraduation)	35
2.	Score in PhD Entrance Examination of the University	5
3.	Pass in UGC-NET /MPhil Course Completion	10
4.	Prior Research Publications (Excluding Project/MPhil related	10
5.	**JRF/SRF Test and Interview	40

Notes:

a. Where UGC-NET and/or MPhil is not applicable for any specific discipline, the candidate will be awarded full weight for the criterion.
b. Qualifying written test for JRF/SRF may be decided at the discretion of the Ph.D. Cell depending upon number of applications received and where it deems it necessary to conduct a written examination for the purpose of selection.

Selection of candidates for JRF/SRF shall be based on the Ranking of the Candidates who have secured a total weight of not less than 60% and subject to maximum number of JRF/SRF Positions announced for the year. The Test/Interview process for SRF shall inter-alia consider the progress of Research during the completed period. All assessments for selection will expire on announcement of the results and any candidate who does not succeed in any year may need to apply fresh and undergo the applicable selection process.

All applications for JRF/SRF shall be submitted online along with such details and enclosures as may be specified. The selection for JRF shall take place in the month following the scheduled completion of the coursework and for SRF shall take place in the month following the scheduled completion of 18 months of Ph.D. Research as stipulated in the doctoral regulations. The Selection Committee headed by the Chairperson of Ph.D.Cell shall include the Head of the School/Department of the Discipline, The The Director of Research and Development Cell and the Ph.D. Supervisor. Successful candidates will be intimated of the selection and award of the fellowship and the information will also be published in the website of the University. The selected candidate will be issued the award letter in the prescribed format.

G. Supervision and Progress Report

The Ph.D. Scholars who are recipients of the Fellowship under this Scheme (hereinafter referred to as Doctoral Fellow) shall be absolutely governed by the Ph.D. Regulations of the University for All Matters including presentation of periodic Progress Reports like any other Ph.D. Scholars in the matter of accountability and adherence to the instruction of the guiding Supervisor/s. The Supervisor will oversee the Scholar for performance and research progress including for administrative compliances of the requirements specified in Clause H herein.

H. Code of Conduct/Obligations of Junior/Senior Research Fellow

a. The Doctoral Fellow in this scheme will be bound by the General Code of Conduct applicable to all Staff of the University as specified in the Staff Hand Book and must uphold the Vision, Mission and Core Values of the University in their work ethics. Any breach of this obligation shall be misconduct.
b. The Doctoral Fellow must be a full time researcher and must subscribe to the regulations of the University with regular attendance. Doctoral fellow will be allotted a dedicated personal email id by the University which should be the principal contact for all official communications. The attendance norms for the fellow will be as applicable to the full time faculty members of the University and the will be monitored by the Office of Personnel Relations.
c. The Doctoral Fellow is not permitted to take any paid or unpaid assignment within or outside the University without written permission of the University. Permission may be granted only in exceptional circumstances of adding value to the approved research programme and will be on such terms and conditions as may be specified.
d. The Doctoral Fellow shall administratively report to his/her Ph.D. Supervisor and shall submit the Research Progress Report to the University in the prescribed format at such interval as may be specified.
e. The Doctoral Fellow will not be entitled for any leave other than on account of any specific emergency as may be approved by the Ph.D. Supervisor and the

Head of the School/Department. Such emergency leave shall not normally be permitted for more than 14 days in a year excluding public holidays. Any absence from work for attending duly approved Seminars or Conferences, Field work etc will be treated as 'on duty' provided such absence does not exceed 15 days in a year. Unauthorised absence from work will not be permitted as leave and will be a deemed misconduct. All leave details must be pre-informed to the Chairperson- Ph.D. Cell. The doctoral fellow will not be entitled for any Vacation applicable to University faculties.

f. Women Doctoral Fellow may additionally avail maternity leave (pre-natal or post natal or in combination) of not exceeding 180 days in the entire duration of the Ph.D. study with half rate of Fellowship and this may be considered as justifiable reason for extension of tenure of Fellowship under Clause B.

g. The Doctoral Fellow at the direction of and/or with the consent of the Supervisor and the Head of School/Department, shall assist the School/Department/ University (including its Centres) in its academic work, including tutorials, evaluation of the test papers, laboratory demonstration, supervision of fieldwork, library activities like group seminars and symposia, without hindering the progress of research being pursued. The total amount of time to be spent on such academic activities shall not exceed eight hours of teaching or 12 hours of practicals/tutorial/teaching assistance/research assistance per week. No such assignment shall normally carry any remuneration and will exclude any co-curricular/extra-curricular activities of the School/Department.

h. The Doctoral Fellow may be issued with an Identity Card as for students/faculty of the University which must be retained/carried by the JRF/SRF at all times during his/her tenure of research for verification by any of the Authorities of the University. The Card must be surrendered to the University on submission of the Ph.D. Thesis.

The Identity Card will entitle the Doctoral Fellow to have access to the Library and online resources of the University and to borrow books, journals etc with privileges similar to other Ph.D. Scholars of the University. Any unauthorised or improper use of the Card/Library Resources will be deemed misconduct.

I. Withdrawal of the Fellowship

The Fellowship is liable to be withdrawn at any time in the following circumstances:

a. The Doctoral Fellow directly or indirectly commits or becomes a party to any misconduct or is in breach of any of the obligations under this Regulation.
b. Non submission of periodic progress reports as specified
c. Failure to comply with the regulations stipulated for the conduct of doctoral research in the University.
d. The Doctoral Fellow is involved in any Criminal Proceedings.
e. The Doctoral Fellow has secured the Fellowship by mis-representation of any of the material information and/or by fraudulent act.
f. The Doctoral Fellow avails or signs any contract for availing Fellowship/Financial Assistance or Grant from any third party sources.
g. The Doctoral Fellow engages in any paid or unpaid assignment without express consent of the University.
h. Wilful and continuing neglect of Research work or unsatisfactory progress

in Research or unauthorised and/or prolonged absence from work.

i. Wilful disobedience of or indifference to the Supervisor.

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