SRINIVAS UNIVERSITY

RESEARCH AND INNOVATION COUNCIL

MUKKA, MANGALURU – 574 146.

RESEARCH CONCLAVE - 2022

(Date: 01.05.2022)

Research Handbook

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Srinivas University

Mangalore, Karnataka, India

RESEARCH HAND BOOK

VISION

To be a trendsetter among universities and build students who emerge as leaders with competence, conscience and compassion by empowering them with sound education and high standards of ethical and professional behavior enabling them to build and promote a more humane, just and sustainable world for future generations.

MISSION

Our mission is to provide an exceptional learning environment where students can develop and enhance their leadership and teamwork skills, creative and intellectual powers and passion for learning by providing an uncompromising standard of excellence in teaching; embodying the spirit of excellence to educate the citizen-leaders of society with distinction.

CHANCELLOR'S MESSAGE

The hard work of 34 years has borne fruit. It is indeed an honour and a great moment in time for me to be at the helm of affairs as the Srinivas University takes shape. The nation is peaking towards phenomenal growth and time couldn't be better for all of us; including the final stakeholders i.e., students learning diverse disciplines such asMedicine, Dentistry, Nursing, Engineering, Management, Pharmacy, Para Medical Sciences, etc. in the numerous constituentcolleges and I'm certain, that with properguidance and motivation, this sparkling energy can be channelized for the utilizationof building the nation.

Dr. CA A. Raghavendra Rao

PRO-CHANCELLOR'S MESSAGE

We are committed to building a truly exceptional future for our students in an encouraging environment; and work tirelessly towards building skill-sets, knowledge and intellect of our students which imbibe in them curiosity, critical thinking, innovation and professional skills. Our students are refined with state-of-the-art resources at hand and experienced and energetic faculty members who impart knowledge emphasizing on values which ensures inclusive development and growth of all students. The colleges also provide a conducive environment for intellectualstimulation and all-round development of receptive young minds.

Dr. A. Srinivas Rao

SRINIVAS UNIVERSITY REGULATIONS GOVERNING THE STANDARDS & PROCEDURES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY (Ph.D.).

1. TITLE AND COMMENCEMENT:

These Regulations shall be called **"SRINIVAS UNIVERSITY REGULATIONS GOVERNING THE STANDARDS AND PROCEDURES FOR THE DEGREE OF DOCTOR OF PHILOSOPHY (Ph.D.), 2018".**

- These Regulations shall come into force from the date of assent of the Chancellor.
- The DIRECTOR - Research and Innovation Council shall be responsible for all the matterspertaining to Ph.D. programs of the SRINIVAS University.

2. DEFINITIONS:

In these Regulations, unless the context otherwise requires:

- "University" means the SRINIVAS University;
- "Degree" means the degree of Doctor of Philosophy (Ph. D);
- "COLLEGE" means the College of Studies and Research of the SRINIVAS Universityestablished by Statutes and intend to work for a Degree;
- "Department" means the Department of Studies and Research of the College / ConstituentColleges of the SRINIVAS University that intends to work for a degree;
- "Dean of the College" means the Dean of the college of Studies and Research of theSRINIVAS University where a candidate works for a degree;
- "Head" means Head of the Department of Studies and Research
- "Candidate" means any person who satisfies the prescribed eligibility condition as stated in Section 5 of the Regulations and who intend to register / has registered for degree;
- "Foreign candidate" means any person who is a foreign national with a valid foreign Passport satisfying the prescribed eligibility conditions as stated in Section 5 and who intends to register/ has registered for a degree, with a valid research VISA;
- "Board of Studies" means the Board of Studies in the subject concerned/ Joint Boards of Studies in more than one subject / Interdisciplinary Board of Studies as constituted by the University;
- "Course work" means the compulsory preparatory study to be undertaken by a candidate as prescribed by the concerned Board of Studies.
- "Guide" means the recognized supervisor for the research work of a candidate satisfyingeligibility conditions as in Section 4 of Regulations;
- "Co-guide" means the recognized supervisor(s) who supervises the Ph.D. work of a Candidate.Jointly with the guide satisfying eligibility conditions as in Section 4 of these

Regulations;

- "Doctorial Committee" means the Committee constituted by the University to oversee theResearch work of a candidate;
- "Board of Examiners" means the panel of examiners constituted by the University foradjudicating the Ph.D. thesis submitted by a candidate.
- "Journal of Repute" means the journal enlisted by the Board of Studies as per the UGCguidelines in the concerned discipline / subject / group of subjects.

3. CONSTITUTION AND FUNCTIONS OF THE DOCTORAL COMMITTEE:

The Doctoral Committee shall consist of:

- The Guide and Co-guide if any, of the candidate
- Dean of the College of Studies and Research concerned
- The Head of the Department of Studies and Research of the University
- Two Faculty Members/ Scientists of the Department/Institution suggested by the guide. The faculty members/Scientists are those who are in the broad area of the research work.

The Guide shall be the Chairperson of the Doctoral Committee. Wherever Guide is also the Deanof the College of Studies and Research / Head of the Department of Studies and Research of the University or Head of the Department of the Constituent Colleges of the concerned subject or another Senior Faculty Member / Scientist in the School shall be included in the Committee. In suchSchools of Studies and Research / Departments wherein the number of faculty is less than two, members of the Doctoral Committee shall be chosen from sister Colleges of Studies / Departmentof Studies/other institutions. The Doctoral Committee shall monitor and assess

- Ph.D., Comprehensive viva as in section 6.3 below,
- Progress reports of a candidate submitted periodically
- Pre-thesis submission colloquium as in 8.1(b) of these regulations;
- Open viva-voce of the candidate as in 8.7 of these regulations.

4. ELIGIBILITY CRITERIA FOR RECOGNITION AS GUIDE:

A. Any regular Professor of the University with at least five research publications in refereed journals.

B. **Assistant Professors/Associate Professors and Scientists of equivalent cadre** working in various Colleges/departments of the University / Constituent Colleges / recognized Research Centers of the University are eligible to be recognized as Ph.D. Guides in their respective subject provided, they:

- Full time Faculty with 2 years after Ph.D. & minimum 3 publications; or Full time Faculty with Ph.D. & minimum 8 publications are eligible for guiding. Publication

clause can be waived off for Rare Guide availability subjects.

- Research Professor : Senior Professor completed Ph.D. with minimum 2 publications in ISSN journals.
- Co-Guide Option: Support from Co-guide is an option for Interdisciplinary research. Co-Guide should have Ph.D. in related subject with minimum 10 Journal publications and such application should be forwarded through their institutional head. Srinivas University will charge a nominal annual fees (Rs. 5,000) for accepted Co-guide.

C. Assistant Professor / Scientists of equivalent cadre including those working in Srinivas University desirous of supervising candidates of other disciplines / interdisciplinary studies, shall submit an application with detailed curriculum vitae (CV) to the Director of Research and Innovation Council of the University along with evidence of regular service and of publications of research articles in the discipline concerned.

D. Teaching faculty / scientists / industry personnel, who join the University after serving elsewhere with three years of regular teaching / research experience in relevant discipline, are also eligible to be considered for recognition as guide if they satisfy the other requirements as mentioned in (a), (b) and (c).

To decide upon recognition of Guides, the Director of Research and Innovation Council shall convene a meeting of a Committee as and when required. The Committee shall have the Vice Chancellor or his / her nominee as Chairperson, the Registrar (Evaluation), the Chairperson of the concerned Board (s) of Studies, two members each of the concerned Board (s) of Studies as members. The committee shall consider applications for recognition of guides in specific discipline (s) / interdisciplinary / multidisciplinary studies as and when necessary. The Director of

Research and Innovation Council shall be the convener of the Committee.

Faculty / Scientists of the University / constituent colleges who attain **superannuation or resign** their jobs will forfeit recognition as Guide / Co-guide. However, such a person shall continue to guide those candidates who have already registered and pursuing research until such candidates complete their research work, submit the thesis and are awarded and he or she shall sign a letter of taking the responsibility accordingly before getting relieved from the University.

(a) A Guide may **supervise not more than eight** candidates. Research Guide who is a Professor,at any given point of time, cannot guide more than three (3) M.Phil. and Eight (8) Ph.D. scholars. An Associate Professor as Research Guide can guide up to a maximum of two (2) M.Phil. and six (6) Ph.D. scholars and an Assistant Professor as Guide can guide up to a maximum of one (1) M.Phil. and four (4) Ph.D. scholars.

(b) A Guide may be permitted to recruit two more candidates in addition the specified candidatesspecified as in (a). Under projects funded through the University by recognized

funding agencies.

(c) Foreign nationals and candidates belonging to reserved categories maybe given due opportunity while selecting candidates to register for PhD.

(d) A Guide has to sign a declaration about the number of candidates working with him / her. Such declarations shall accompany the registration application of every candidate. A faculty who joins the University and is guiding candidates working in other Universities / Institutions shall inform the University of the same and get permission to continue guiding those candidates.

(e) A Guide / Co guide also has to give an undertaking that he/she shall continue to be the guide till such time that the candidate complete research, submit thesis and degree is awarded.

A Guide / Co-guide who has been recognized to supervise the work in more than one subject is also governed by the preceding regulations at sub section 4.5 (a) and (b). The total candidates working under any Guide shall be the sum total of all the candidates working under his / her supervision in all the subjects.

In the Colleges wherever infrastructure requirements including chemicals / equipments / instruments are required, the concerned College Council / Department Council shall decide on the number of candidates without fellowship / stipend it can accommodate per faculty member and send this information to the Dean of Research and Innovation Council before notification for PhD admission is issued.

The College Council shall recommend the amount of Laboratory Fee to be collected from thecandidates without fellowship / stipend based on research needs of the candidate.

5. ELIGIBILITY CRITERIA FOR A CANDIDATE:

- Any candidate who satisfies the following conditions is eligible to seek registration for Ph.D. in the University application for provisional registration after going through these Regulations and Guidelines for Ph.D. which shall be supplied along with the application.
- A candidate shall have Master's Degree or any other Degree / Diploma of the University or any other Degree / Diploma of any other University / Institution recognized as equivalent thereto, with a minimum of 55% marks or equivalent Cumulative Grade Point Average (CGPA) or an equivalent Grade. However, this condition is relaxed to 50% in case of belonging to SC/ST/Cat.-I candidates
- A candidate shall be guided by a Research Guide recognized by the University in the concerned subject.
- In case where the research of a candidate is inter/ multi-disciplinary in nature, the candidate may opt for a Co-guide, who shall also be the recognized Guide of the University in the concerned subject. However, the main responsibility of supervising the research work is

vested with the Guide and the candidate shall finalize and submit the thesis through the Guide giving due acknowledgement and credit to the Co-guide which shall also be mentioned in the Ph.D Notification by the Registrar (Evaluation) after successful completion of Ph.D.

- **Entrance Test: Admission to Ph.D. shall be through an Entrance Test and Interview.** Applications for Entrance Test shall be invited **twice a year** in the months of January & June, depending on the vacancies existing in each subject. The Director of Research and Innovation Council shall obtain details of vacancies from the Head of Colleges / Centres/ Departments / Deans of Constituent Colleges before inviting applications.
- The Entrance Test shall consist of **one paper on the broad area of Ph.D. of 100 marks** with 3 hours duration and **syllabus of the paper shall be framed by the respective Boards of Studies based on UGC / CSIR National Eligibility Test (NET) pattern.** The question paper shall have two parts of objective type- Part I consisting of 50 objective type questions of one mark each, and Part II containing 25 objective type questions (level 2) for 50 marks (i.e., each carrying 2 marks). For candidates intending to do inter / multidisciplinary research, the Entrance Test shall be a common Entrance Test in a general paper and the syllabus of the paper shall be framed by the Inter disciplinary Board of Studies. A candidate securing at least 50 marks out of 100 in the Entrance Test shall be declared as eligible to apply for admission to Ph.D. The results of the Entrance Test shall be declared by the Dean of Research and Innovation Council who shall issue eligibility certificate to candidates attending the Entrance Test.
- Candidates who have qualified for Lectureship only in the UGC / CSIR / AICTE / NET examinations, SET examinations conducted by centre's recognized by the UGC and candidates possessing MPhil qualifications are exempted from Entrance Test. However, they shall applywith all necessary certificates and take Interview along with other candidates who have appeared for entrance test and are found eligible.
- After announcement of results of Entrance Test, the college board shall prepare consolidated alphabetical list combining
    (i) Candidates who appeared for entrance test and are found eligible for interview;
    (ii) Candidates who have cleared NET conducted by UGC/CSIR and such other bodies qualified for Lectureship;
    (iii) Candidates who have qualified in SET conducted by Centres/ Universities recognized bythe UGC; and
    (iv) Candidates who possess M Phil degree.

  The list of eligible candidates for interview so prepared shall be announced on the Notice Board and as well hosted in the University website.
- The College Council shall invite for interview, all candidates so listed as eligible, giving specific date, time and place. The Interview shall be for 50 marks to be conducted by the College council. Selection of candidates for provisional registration shall be based on the

performance in the interview only provided further that such a selection depends on the availability of the guide in the subject / area of interest of the candidate. The College Council in consultation with Dean of respective Faculty and identified guides finalise list of selected candidates and **shall notify the List of Selected Candidates** for Ph.D. and specify last date for admission.

- **Provisional Registration:** Selected candidates shall apply for **Provisional Registration** as Doctoral Candidates after payment of stipulated fee to the University. The duly filled-in application form shall be sent to the Director of Research and Innovation Council, Srinivas University, through the Guide, Co- guide (s), if any, and the Dean of the College / Head of the Department / Dean of College along with all necessary enclosures as stipulated in the form beforethe last date specified by the College Council. Application forms can be had from the office of the Director of Research and Innovation Council.

- Candidates who are not selected for a Ph.D. program have to **re-apply whenever the applications** are invited again and go through the Entrance Test afresh.
- Candidates who have qualified for UGC / CSIR JRF fellowships through UGC/CSIR NET Examinations are **exempted from the Entrance Test** and can apply directly to the Dean of Research and Innovation Council whenever they become eligible. Such applications shall be forwarded by the Dean of Research and Innovation Council to the College Council in consultation with Dean of respective Faculty shall allot a Guide to such candidates as per Section

  4. (e) of these regulations.
- Director will make an arrangement to appear final round of interview with chancellor for all the qualified candidates. On the same day, Provisional Registration Letter will be issued to the candidates.

6. REGULAR REGISTRATION:

Course Work: Course Work is an essential component of Research leading to Doctoral Degree. Each candidate provisionally registered for the Ph.D. programme shall have to go through the prescribed coursework choosing four subjects, out of which one subject namely Research Methodology is compulsory.

- Minimum four subjects
  - Research methodology should be compulsory for all disciplines
  - Second Subject from core subjects of respective discipline.
  - Third paper is on analysis of patents in core subject with Publication
  - Fourth paper – Review on Research topic and publication. One additional workshop on Research Ethics
- Maximum duration for completion of course work is 1 year (2 attempts).
- The internal assessment for the all the subjects comprise of Seminars Assignments and

Internal examination. The overall marks distribution is decided by the Doctoral committee.

- The Internal Assessment (IA) for fourth paper shall comprise of seminars, assignments and Literature Review report/Publishing the Literature review in the Journal. The overall marks distribution is decided by the Doctoral committee.
- The concerned research guide shall maintain record of evidences of research progress of their research candidate.
- The course end examination shall be conducted by the Corresponding Deans of the college bytaking the help of College research council and guides.
- Coursework exam for Paper 1 &r 2 will be conducted once in 6 months. However, Coursework exam for Paper 3 & 4 will be conducted based on request of individual scholar, periodically, as decided by Research Coordinator in consultation with Dean & Research Director with written intimation.

The Scheme of Assessment of Course Work:

Sl. No.	Title of the Course	Internal Assessment Marks	Course End Written Test Marks	Total Marks	Total Credits
01	Research Methodology.	50	50	100	4
02	Advanced Subject	50	50	100	4
03	Analysis and Interpretation of Research	50	50	100	4
04	Research and Publication Ethics and Review of Literature	50	50	100	4

Candidates who are unsuccessful in the Course Work shall be permitted to reappear for Assessment in the next semester. Provisional Registration of a candidate who fails in the Assessment of Course Work in four attempts shall be cancelled by the Director.

6.1 First Doctoral Committee Meeting:

(a) After successful completion of Course Work as certified by the Registrar (Evaluation), a candidate, in consultation with his / her Guide, shall prepare a Research proposal (synopsis) in consultation with his / her Guide and shall submit a copy of the synopsis to the Director through Guide and Co-guide (s), if any.

(b) The Research proposal (synopsis) shall consist of the background of the research problem, review of literature, need with justification of research problem, title of the proposed problem, definition of concepts, objectives and hypotheses of the study, methodology to be followed and techniques to be adopted for data collection and analysis, scope and limitation of the study and proposed form of research report. The candidate shall ensure that the synopsis clearly defines the objectives, methodology and state expected results and their implications in terms of filling up gaps in existing knowledge and its social / scientific relevance.

(c) The Guide shall organize a meeting of Ph.D Comprehensive viva by seeking the permission form Director

(d) Every candidate shall prepare a brief technical report comprising literature survey / review, work plan and the scientific relevance of the proposed research and shall present it in the form of a viva before the Doctoral Committee.

(e) The Doctoral Committee is authorized to suggest changes, if necessary, in the title /scope methodology of the topic selected for research, based on the performance of the candidate in the viva

(f) The Doctoral Committee shall assess the preparedness of the candidate for the research to be undertaken and submit its report in the format. It may, however, ask the candidate to present the viva again if the performance / preparedness of the candidate in the first instance is not satisfactory. Only one re-appearance is permitted within 2 months from the date of first viva.

(g) If the Doctoral Committee does not approve the research proposal even after the second presentation, such a candidate, after a lapse of one year from the date of the second presentation, can again present the Comprehensive viva, **after fresh Provisional Registration without undergoing Course Work**.

The Chairperson of the Doctoral Committee shall inform the decision of the comprehensive viva to the Director of Research and Innovation Council of the University through Dean of the College, as well as to the candidate **within one week** of the viva. Based on the recommendations of the Doctoral Committee**.**

Registration Conformation

Based on the reports of Doctoral committee, Director will issue the Final Registration Letter which consists of Topic and Guide name.

7. PROGRESS OF WORK:

The report of progress of research work along with recommendation of the Guide has to besubmitted to the Director of Research and Innovation Council once in every Six months.

- The candidate is required to submit the following to the Director of Research and InnovationCouncil through the Guide and the Dean of the College / Principal of the College:
- Half yearly Progress Report of Research Work done
- Prescribed tuition and laboratory fees, as applicable,
- Recommendation of the Guide and Co-guide (if any) regarding progress of research.
- June 30th and December 31st is the last day for Progress report submission
- **Failure to submit two Consecutive Research Progress Reports** shall entail cancellation ofthe Registration, and this shall be notified by the Director of Research and Innovation Council.

- The candidate shall publish at least **TWO** research articles as First author based on his / herResearch Work in UGC refereed journals to be eligible to submit the final thesis.

8. SUBMISSION OF THESIS AND EVALUATION:

Ph.D. programme shall be for a minimum duration of three years for full time and four years for part time candidates, including course work and a maximum five years for full time and six yearsfor Part time candidates

Second Doctoral Committee Meeting (Pre-Thesis Submission Colloquium):

- A candidate has to **submit a copy of the Synopsis** of his / her Ph.D. Thesis highlighting contents of the Thesis and enclosing evidences of two research publications in peer reviewed journals in the form of acceptance letters or published papers, to the Chairperson of the Doctoral Committee.
- The Chairperson of the Doctoral Committee shall organize **the Pre-thesis Submission Colloquium** meeting in the concerned Department in consultation with the Dean of the College within fifteen days of the receipt of the Synopsis.
- The Doctoral Committee shall advise and offer suggestions to the candidate for the finalization of the Thesis. The Doctoral Committee shall also look into the quality of two articles published in standard / reputed journals.
- The Chairperson of the Doctoral Committee shall inform the decision of the Pre-thesis Submission Colloquium to the Director of Research and Innovation Council of the Universityas well as to the candidate **within a week** of conducting the Colloquium.
- If the Doctoral Committee is not satisfied with the performance of the candidate in the Pre- thesis Submission Colloquium of a candidate, it may suggest necessary incorporations / modifications, if any and ask the candidate to appear for the Colloquium again **after a gapof one month.**

Submission of Final Synopsis of Ph.D.:

- After successful completion of the Second Doctoral Committee meeting, a candidate shall **submit a copy of the Synopsis (Hard and soft copy)** of his / her Ph.D along with Panel of Examiners approved in BOS/Doctoral committee. Thesis with prescribed fees is submitted to the Director of Research and Innovation Council through the Guide, Co Guide (if any) and the Dean of the College / Centre / Principal of the College. The Director will forward the same with necessary certification about progress reports & Fees paid, to the Director - Research
- Panel of examiners should contain minimum of twelve examiners drawn from different Universities, six of whom shall be from outside Karnataka / India, to the Director - Research.

Submission of Ph.D. Thesis:

- A candidate shall prepare a Thesis embodying results of original research and submit to the Director- 3 copies of his / her Ph.D. Thesis and an electronic version of the Synopsis and Thesis in pdf format (3 discs) for evaluation, **within 3 months from the date of submission of the Final Synopsis**. Failure to submit the Thesis within this period shall entail cancellation of the Ph.D. Registration of the candidate.
- A certificate duly signed by the Guide and Co-guide, if any, to the effect the candidate has produced as main author / co-author. Two research articles based on his / her research work in his / her Ph.D. thesis and that the research work and the thesis has not been previously submitted by the candidate or the Guide or the Co-guide, if any, either for award of any Degree or Diploma to this or any other University, shall be enclosed along with the Thesis.
- If any candidate fails to submit his / her Ph.D. Thesis within FIVE years for Full time and SIX years for part time, he / she may apply to University for **Extension of his / her Registration for a maximum of one more year** with the recommendation of the Doctoral Committee, through the Dean of the College / Principal of College, by remitting the prescribed fee.

Anti-Plagiarism Check & Submission of the Thesis:

- The candidate's thesis shall undergo plagiarism check as per the norms
- The plagiarism shall be checked by software approved by the university and the percentage of plagiarism (similarity Index) shall be as permitted by university owing to software limitation to identify the self-written research papers and definitions and common theory
- The candidate may be given two more chances by the University to re-submit the thesis forplagiarism checking, if the plagiarism level is found unacceptable.
- Suitable fees shall be charged to the candidate by the University for Plagiarism checks conducted

Evaluation of the Ph.D. Thesis:

- The Thesis shall be evaluated by Guide as Internal Examiner and two External Examiners.
- Director will forward the thesis to the registrar (Evl) after satisfaction of all the conditions. The Registrar (Evaluation) shall seek from the Chancellor appointment of at least Twelve examiners, of whom 6 are from other state(s) / abroad. Registrar (Evaluation) will take the final approval of two external examiners form Chancellor and submit the report to the Director. Director (Research) shall write seeking acceptance from all examiners approved by the Chancellor and send thesis to two examiners whose

acceptance are received first, provided one of them should be outside the State / abroad.

- The Examiners shall be asked to sign a Declaration that he / she is not a relative of the candidate or the Guide or the Co-guide and that he / she has no conflict of interest in valuing the Ph.D. Thesis.
- The Examiners of the Thesis shall get a copy of the Thesis along with a copy of the Registered Synopsis and the Examiners have to examine whether the candidate has achieved the objectives mentioned in the Synopsis.

Evaluation Reports:

- The External Examiners shall send the Evaluation Report to the Registrar (Evl).
- Registrar (Evl) will forward same to Director (Research) for further process

Decision about Evaluation:

- If **both External Examiners reject the Thesis outright,** the Director shall notify rejection of the Thesis and cancellation of Ph.D. Registration.
- If **one** of the External Examiners **rejects** the thesis, the thesis shall be referred to **another** examiner. If this Examiner **also rejects** the Thesis, the Director shall notify **Rejection of theThesis** and cancellation of Ph.D. Registration.
- If any one of the Examiners recommends **Revision and Revaluation** of the Thesis, then the candidate shall revise the Thesis based on the suggestions made by the Examiner and submit the Revised Thesis, duly certified by the Guide and with payment of the prescribed fees to the Director of the University through the Guide and the Dean of the College /Principal of college. The Director shall send the Revised Thesis **within fifteen days** to the same Examiner.
- If an Examiner recommends the award of degree after incorporating the suggested revisions / corrections, such modifications shall be complied with by the candidate and Guide and ratified by the Doctoral Committee upon receipt of the letter from the Director. After ratification, the Revised Thesis shall be submitted to the Director along with the prescribed fees.
- If both External Examiners recommend acceptance of the Thesis, Director Will submit the report to the Registrar (Evaluation). Finally, Director will take the permission form Registrar(Evaluation) and ask the guide to conduct the final viva voce by contacting the external examiner.

Viva Voce Exam:

- After receipt of the above mentioned Evaluation and Consolidated Reports from the examiners, Director shall ask the Chairperson of the Doctoral Committee of the concerned candidate to conduct an open Viva-Voce examination in the presence of the

members of the Doctoral Committee, members of the concerned Faculty, research scholars and students by giving wide publicity. The Proceedings of this Meeting and the original Evaluation and Consolidated Reports shall be sent to the Registrar (Evaluation) and Director within three days and the Registrar (Evaluation) has to notify the declaration of the results within one week after getting approval from the Vice Chancellor.

- If the candidate desires, the viva-voce examination may be held via video conferencing as described in (a) after payment of necessary additional fees prescribed by the University.
- In case of the death / disability / non-availability of the Guide, the Vice-Chancellor may nominate a member from the Panel of Examiners / Chairperson of respective Board of Studies to act as the Chairperson, Board of Examiners of the Thesis to adjudicate the thesis and to conduct the Viva- Voce Examination.

Ph.D. Notification:

The Ph.D. Declaration Notification by the Director by consulting with Registrar (Evaluation) shallbe on the Official Letter Head and shall contain:

- The Name of the candidate;
- The Discipline / Subject of the Ph.D.;
- The Names of Guide, Co-guide (s), if any;
- The Name of the School where the research work was carried out; and
- The Title of the Thesis.

The Director and Registrar (Evaluation) shall affix a Seal with the University Emblem statingthat the Thesis was accepted for the award of Ph.D. Degree as per Srinivas University Ph.D Regulation,2018 and the candidate has under gone course work in accordance with UGC Regulation and issue this copy to the candidate.

9. CHANGE OF TITLE / GUIDE:

- A candidate desiring to change the title of the Thesis shall apply to the Director of Research and Innovation Council with a copy of revised Synopsis and changed Title through the Guide after paying the prescribed fee.
- The Director of Research and Innovation Council shall forward the same to the Chairperson Board of Studies who shall seek the opinion of the Board of Studies for the change of title within one month. Such a change can be permitted anytime before the Pre-thesis Submission Colloquium.
- If a candidate decides to change the topic of research, his / her registration stands canceled, and the candidate has to undergo the Provisional Registration process again.
- Generally, change of Guide is not permissible. It may be permitted only under exceptional

circumstances such as death / disability / other medical conditions of the Guide or legal actions on the Guide by the administration. However, if there is any written complaintabout conflict between the Guide and the candidate, the Director of Research shall refer the matter to a Committee constituted by the University whose decision has to be placed before the Vice-Chancellor for final decision.

10. DEPOSITORY WITH INFLIBNET:

- Following the successful completion of the evaluation process and before the announcementof the award of the M.Phil./Ph.D. degree(s), the Institution concerned shall submit an electronic copy of the M.Phil. dissertation /Ph. D. thesis to the INFLIBNET, for hosting the same so as to make it accessible to all Institutions/Colleges.
- Prior to the actual award of the degree, University shall issue a provisional Certificate to the effect that the Degree has been awarded in accordance with the provisions of these UGC Regulations, 2016.

11. RESIDENCE PERIOD

Attendance: Minimum 80% physical attendance (240/360 days) is compulsory for full time researcher. For part-time researcher, weekly one communication & submission of weekly report to Guide is compulsory. Further, all research scholars should attend monthly online General Session to be conducted by Research Director/Vice-Chancellor on Research Issues. Attendance for Annual Research Conclave is compulsory for all research scholars

12. PUBLICATION OF THE THESIS:

If a candidate intends to publish the Thesis, he / she shall seek the permission of the University after paying the prescribed fee.

13. Any issue not covered by the foregoing shall be governed by the decision of the Vice-Chancellor.

GUIDELINES FOR DOCTORAL RESEARCH

The Ph.D. program of the Srinivas University entails two stages:

- Entrance Test, Provisional registration, Coursework and Registration
- Thesis Submission

The following guidelines indicate procedures to be followed to maintain certain minimum standards in doctoral work. These procedures should help in minimizing large scale variations in the formats followed in doctoral work.

A. ENTRANCE TEST, PROVISIONAL REGISTRATION, COURSEWORK ANDREGISTRATION:

- All candidates except those who have qualified for UGC / CSIR JRF fellowships, intending to pursue doctoral work shall apply for Entrance Test as per Section 5, as and when the University notifies such a test. Foreign candidates are exempted from Entrance Test because of Visa requirements.
- Those candidates possessing MPhil and those qualified for only Lectureship in NET Exam conducted by UGC/CSIR and also those who are qualified in SET conducted by UGC approved centre's are exempted from the Entrance Test. However, such candidates have to apply, and take interview as their merit will be considered based on the performance in the interview.
- After successful completion of the Entrance Test, candidates shall be called for Interview as and when vacancies arise and after successful completion of Interview, a candidate is allotted a Ph.D. Guide by the School Board as per Section 5 of the regulations. Mere qualification in the Entrance Test shall not necessarily entitle a candidate for Provisional Registration for Ph.D.
- After selection, a candidate has to provisionally register as per Section 5. Application for Provisional Registration may be obtained from the office of the Director of Research and Innovation Council after payment of prescribed fee. Date of Provisional Registration for foreign candidates is the date of reporting for doctoral work to the Dean of the College concerned with a valid research Visa.

- All the candidates shall compulsorily undergo course work. After successful completion of Course Work as certified by the Dean of the College as per Section 6, a candidate has to deliver a Ph.D. Comprehensive viva as per Section 6.

- Candidates shall submit Research Progress Reports and pay prescribed tuition fee / laboratory fee wherever applicable, before the end of every year from the date of Provisional Registration, without fail, as per Section 7. Failure to submit two

successive Research Progress Reports / pay tuition fee entails cancellation of Registration as per Section 7.

B. Ph.D. THESIS SUBMISSION:

- A candidate is eligible to submit his / her Thesis only:
  1. After completing 3 Yrs. of research work from the date of Registration, as per Section 8.
  2. After publishing / getting acceptance letters as main author / co-author, for at least 2 research articles based on his / her research work related to his / her Thesis, as per Section7.
- A candidate has to prepare Thesis and submit a copy of synopsis and 3 set of thesis (Hard and Soft copy), as per Section 8.
- All candidates shall pretest using anti plagiarism software, before submission of the thesis and follow the guidelines below while preparing their Theses:
- The University would cross check the malpractice / plagiarism using anti plagiarism software and shall initiate necessary disciplinary action against the candidate and the Guide, in addition to rejecting thesis.

The Abstract

An Abstract shall be included in the preliminary section of the Thesis. The abstract in the body of the Thesis shall be in the same style as that used in the rest of the Thesis and shall be placed after the Certificate page. The Abstract shall reflect the contents of the Thesis

Evidence of Publication

At the end of the Thesis, reprints of published papers or acceptance letters with manuscripts been closed.

Thesis Copies

Five bound copies of the Thesis must be submitted and the candidate is advised to keep a copy of the same for personal use. The electronic version of Thesis is to be submitted in CD in .pdf form and a copy of the same is to be retained by the candidate.

Certificate

The certificate in the enclosed format shall be provided in the Thesis.

Copies

Good quality paper must be used for copies and photocopy of the final copy shall be such that it ensures consistent quality without gray or dark casts to the background. All copies shall be on white A4 paper and on one side of a paper.

Typeface

Type size should be 10 point or larger. Script or ornamental fonts shall not be used. Print must be letter quality. Accent marks and hand annotations must be done, neatly in black ink.

Margins

Margins on the binding edge must be 1.5 inches and all other margins must be one inch. (Pagination, headers, and/or footers may be placed within the margin, but margin from the edge of the page should be maintained as foresaid.

Spacing

One and a half or double spacing is to be followed in the main body excepting in presenting foot notes, tables etc which may be single space. Final copies of the Thesis must be clear and attractive .Each copy should be reviewed for evenness and clarity of type, missing pagesand crooked text.

ORDER AND CONTENT

- Title page
- Certificate page - containing the signature of the candidate, guide, co-guide, if any, and Director of the School/Principal of College.
- Certificate that the thesis has been revised and resubmitted based on suggestions by examiners, if applicable, signed by the candidate, guide, co-guide, if any, Dean of the College and /Principal of College.
- Preface and/or Acknowledgement
- Table of contents with page references
- List of tables with titles and page references

- List of illustrations with titles and page references.
- Abstract
- Text
- References
- Appendices, if any
- Bibliography or list of references, if any

Pagination

Each page of the manuscript, including all blank pages, and pages with photographs, tables, figures, maps, Computer printouts shall be assigned a number. Consistent pagination, at least one-half inch from the right-hand top corner of the page, shall be used throughout the Thesis.

Land Scape

For Text, Illustrations, Charts, Graphs, etc. printed in landscape form, the orientation shall be facingaway from the bound edge of the paper.

Important to Note

1. For the preliminary pages, small Roman numbers (i, ii, iii, iv etc.) shall be used.
2. For the remainder of the Thesis, the continuous pagination in arabic numerals shall be followed.
3. Address of the candidate / Guide must be School / College address where research was carried out. The Address shall not contain personal affiliation or any other official information / details about the candidate / Guide such as qualification, designation, etc.
4. Official logo / symbol of the Srinivas University / Research Institute must not be used anywhere in the Thesis.
5. No dedication of any sort is permitted anywhere in the Thesis.

SRINIVAS UNIVERSITY

Srinivas Nagar, Mukka– 574 146, Mangalore, Phone: 0824-2477456
Web: www.srinivasuniversity.edu.in, Email info@srinivasuniversity.edu.in
Administrative Office: G.H.S. Road, Mangalore-575 001. Phone 0824-2425966

Ph.D. PROGRAMME (Full-time/Part-time)

For Researchers/Academicians/Industrialists as Full-time/Part-Time Programme

(In All areas like Engineering, Computer Science, Basic Science, Management, Hotel Management & Tourism, Physiotherapy, Education, Health Science and also Inter-disciplinary)

Duration of the Programme:

Full-time: Minimum 3 years

Part-time: Minimum 4 years

MINIMUM QUALIFICATIONS FOR ADMISSION:

The required minimum qualification for admission to a Ph.D. programme shall normally be a Master's Degree in the subject/relevant field with a minimum of 55% marks or equivalent grade (50% for SC, ST or those who have minimum ten years teaching/industry experience). Or with M.Phil. Degree

ADMISSION PROCEDURE:

Admission to Ph.D. shall be through an Entrance Test and Interview.

Applications for Entrance Test shall be invited twice a year in the months of January & June, depending on the vacancies existing in each subject. Candidates who have qualified for Lectureship only in the UGC / CSIR / AICTE / NET examinations, SET examinations conducted by centre's recognized by the UGC and candidates possessing MPhil qualifications are exempted from Entrance Test. However, they shall apply with all necessary certificates and take Interview along with other candidates who have appeared for entrance test and are found eligible.

COURSE WORK EXAMINATION:

As part of course work completion, all candidates shall be required to take an examination in theprescribed manner to test his/her knowledge in his/her broad field of research and his/her academic preparation and potentials to carry out the research work. This shall be conducted by the DRC.The candidate should secure at least 50% marks in the examination for successful completion of course work.

CONSTITUTION & FUNCTIONS OF DEPARTMENT RESEARCH COMMITTEE (DRC):

(a) This Committee is constituted for each College of the University and shall comprise of Guide(s), two other faculty members in the related area and Dean/HOD as the Chairman.

(b) DRC shall perform the following functions:

(i) Invite the candidate for scrutinizing his/her research proposal to ensure that the proposal is suitable.

(ii) Ascertain the availability of facilities required for the proposed research.

(iii) Prescribe the Course Units to be taken by the candidate, and recommend exemption from the requirement if so, with justification.

(iv) Recommend to URC the suitability or otherwise of the candidate and his/her proposal along with relevant details and documents.

(v) Periodically monitor the work performance of the candidate and provide advice to candidate, wherever necessary.

(vi) Approve the final synopsis of the thesis on its completion and the final title of the thesis.

(vii) Recommend the panel of examiners.

PERFORMANCE MONITORING:

The academic/research progress of each candidate shall be monitored by the DRC. For this purpose each candidate shall submit a progress report at the end of each Semester to the Chairman, DRC through his Guide(s). DRC shall evaluate the work of the candidate and award S (Satisfactory) or U (Unsatisfactory) grade. (a) If the progress is "unsatisfactory", on the first appearance of "U" grade, a warning would be issued to the candidate. (b) If a candidate gets three "U's" or two successive "U's", his registration is liable to be terminated.

SRINIVAS UNIVERSITY

MUKKA, MANGALURU

STANDARD OPERATING PROCEDURE FOR PH.D. PROGRAM

(1) Based on availability of seats as decided by University Research Council (URC) in consultation with Deans, the advertisement shall be made in University website annually two times (May & December respectively) indicating the last date for application.

(2) Applications shallreceive by the URC and consolidated applications will be sent to Corresponding Deans

(3) Entrance Exam and Interview is conducted by the Departmental Research Committee (DRC) headed by Dean of the respective College. The DRC is composed of at least three senior faculty members including Dean of the College.

(4) The DRC will scrutinize the applications received, prepare a list of eligible candidates after conducting written test and interview. DRC should verify the Original Marks cards, qualifications and certificates properly. DRC also send the result to the candidates by mail. Eligible and First year Full Fee paid candidates list with possible guide and research topic will be recommended to URC by DRC for approval of admission within ten days after the Exam and Interview.

NOTE: Qualified candidates should pay the first year course fee and registration fee within 10days after the declaration of the results compulsorily.

(5) URC shall send the detailed report to Registrar to grant approval for admission within three days after receiving the result sheet from the DRC. URC also publish the eligible candidate list in the website within three days.

(6) Final round of Interview will be conducted with Chancellor for all the qualified candidates.

(7) Registrar shall issue the Registration letters based on URC recommendation. The date of the registration shall be considered to be the date of payment Registration fee.

(8) Course Work Examination should be conducted twice in year and preferably in February and July. This exam shall be conducted in the respective college level.

(9) Exam Time table should intimate to the URC, Registrar (Evl) and Candidates at least one month before examinations.

(10) The DRC will develop the syllabus of coursework for 16 Credit/400 Marks with the minimum time frame of 6 months and get the approval of URC. Research Methodology topic and Research Ethics should be one of the mandatory subjects to all disciplines. DRC should conduct course exams at least twice in a year. Each subject carries 100 marks with 50% weightage for Internal marks. Internal marks carries for Seminars, Assignments, paper presentation etc.

(11) Deans should send the Results of Course work exams to the URC and Registrar (Evl) within 10 days after the examination.

(12) Registrar (Evl) shall provide the Course work Marks cards within one month after the results

(13) After completion of the course work exam student shall appear for the first Doctoral Committee (Pre Ph.D., Comprehensive viva) Meeting to initiate the research work. In this meeting Student should produce proposed synopsis with Guide and Co Guide name to the URC.

(14) The Doctoral Committee shall consist of at least 4 members with minimum one external member.

(15) The First Doctoral Committee give the proper directions to the candidate to continue the research work. It may also suggest changing the topic and title. The proceedings of the doctoral committee shall be sent to the URC for Ratification and a copy of the same shall be made available to the candidate.

(16) URC should provide the Course work completion letter within a week. This letter should contain the title of the proposed work, Name of the Guide and co Guide.

(17) Candidates have to submit Progress reports once in every six months in the prescribed format along with receipt of annual fee paid to the Dean. It should be forwarded to the director of URC after placing it in the DRC. The DRC will adjudge if the progress is satisfactory. Failure to submit two consecutive progress reports shall lead to cancellation of the registration. Deans should make an arrangement to send the consolidated Progress reports to URC in the last week of June and December.

(18) Candidates should publish minimum2 research papers (UGC approved Journals) and present 2 conference presentations for thesis submission. After satisfying the minimum requirements candidate can appear in front of the second Doctoral Committee (Colloquium). If Doctoral committee approves the work candidate can submit the thesis after completion of three/Four years from the registration.

(19) On completion of the Thesis, the candidate has to request for Pre-Thesis presentation before DRC and other faculty members before thesis submission. This has to be made through the Guide.

(20) Following the Pre-Thesis presentation, the Dean of the college has to send a consolidated report on the acceptability of the Thesis for final evaluation to the Director of URC.

(21) The guide shall instruct the candidate to submit 1 copy of the final synopsis and soft copyof thesis to the Director of URC through the Dean of the College. The Dean also has to collect and submit a panel of Adjudicators who are expert academicians in the field of the research topic under consideration (Six from the State and Six from out of State) in a sealed envelope and submit it to Director of URC.

(22) URC will forward the Thesis and Synopsis to The Registrar (Evl) after checking the Plagiarism within three days.

(23) The Registrar (Evl)gets approval to start the evaluation process by submitting the Panel of adjudicators list to the Chancellor as the case may be to choose the examiners for valuation of the thesis within one week

(24) Registrar (Evl) shall update the status of the thesis once in a month to chancellor and URC

(25) Examiners report received by the Registrar (Evl) will be send to the URC for further process.

(26) URC is asked to conduct the Final viva exam (if the report is acceptable) to Guide and Dean

(27) Guide should conduct the final viva by consulting the identified examiner and send the report to the URC and Registrar (Evaluation)

(28) Dean/Guide should submit the Final Viva Report to URC. URC should send the same to Registrar office to take final approval in Board of management Meeting.

(29) Based on the Management meeting Approval, Director shall issue the final Notification of award.

(30) Registrar (Evl) shall issue the Provisional Degree certificate on the basis of Notification.

Complete Ph.D. regulations is available in the University website

Fee Structure:

(1) Application fee = Rs. 1,000

(2) Registration Fee = Rs. 5,000

(3) Annual Course Fee**:** Rs. 60,000 (Full Time) / Rs.90,000 Part time Karnataka Candidates / Rs.1,20,000 Part Time Non Karnataka candidates/Rs.1,50,000 (Physiotherapy, Nursing and Allied Health Sciences)

(3) Course work Exam Fee = Rs 4000 (Rs 1000/ each paper0

(4) Doctoral Committee Meeting Fee = Rs 4000/- (Minimum two meeting in entire course)

(5) Thesis Evaluation Fee = Rs 15,000/-

(6) viva voce = Rs 15,000/-

(7) Provisional Certificate = Rs 1000

(8) Convocation fee = Rs 5000/-

Note: Different Fee Structure for Foreign Candidates

SRINIVAS UNIVERSITY

Educating the Next Generation

Main Campus, Srinivas Nagar, Mukka, Mangalore – 574 146.
City Campus, Pandeshwar, Mangalore – 575 001, Karnataka State, India.
(Private University established by Karnataka State Govt. Act 42 of 2013, Recognized by UGC, New Delhi, Member of Association of Indian Universities, New Delhi)
Administrative Office Phone : 0824-2425966
E-mail – info@srinivasuniversity.edu.in, Web :www.srinivasuniversity.edu.in

Photo

Application for Admission to Ph.D.

Application for admission to Ph.D programme in the subject of						
Full Time			Part-time			
Name of the Candidate (BLOCK LETTERS)						
Father's/ Husband Name						
Address	Present Address/ CommunicationAddress			Permanent Address		
Phone No and Email Address						
Date of Birth	Aadhar Number	Gender	Category	Physically Challenged(Yes/No)	Nationality	Marital Status Single/ Married

Note: Please tick the appropriate Box (√)

Academic Qualification				
Name of the Degree	Name of the University	Specialization/ Branch	Percentage of marks/ CGPA	Year of Pass
Master Degree				
Bachelor Degree				
PUC/Equivalent				
SSLC / Equivalent				

Whether cleared-GATE/NET/SLET/M.Phil./JRF If yes, specify (if yes enclose copies of the relevant certificate/s)	Yes	No
If part-time, Please provide the following details with NOC from the organization	Yes	No

Name of the Organization Employed	Designation	Date of Joining the Organization	Total Experience

If sponsored, whether the candidate is a permanent employee of Educational/ Research Institution or Public/Private sector organization/FIP/QIP/Project Fellow? If yes, specify (if yes Enclose copies of the relevant certificates)	Yes	No
Whether the candidate is a foreign citizen ? If yes, specify the Citizenship (if yes enclose copies of the relevant certificate/s)	Yes	No

Area of Research

Fee Paid details (DD in favor of Srinivas Universtya and Payable at Mangalore)

D.D. No. …… for Rs……..…….…. dated ……..……..……..…….

Name of the Bank……..……

Date :

Place :

Signature of the Candidate

Enclosures:
10th Marks card, PUC/12th marks Card, Degree certificates and marks Card of UG and PG, NOC, Adhar Card Mandatory to submit three sets of application forms along with enclosures.
Incomplete Application will be rejected

NOTE: Send the Filled application to : Director – Research and Innovation council, Srinivas University, Srinivas Nagara,Mangaluru- 574146, Karnataka, India (researchdirector@srinivasuniversity.edu.in)

*Candidates please note that the authenticity of the candidate's application and other related certificates/documents liessolely with the candidate only. Srinivas University has no role on it.

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HALF YEARLY PROGRESS REPORT OF RESEARCH

PART – I

(To be completed by the Research Scholar)

ADMINISTRATIVE INFORMATION:

1. **Assessment Period :** _____
2. **Name of Research Scholar :** _____
3. **Name of Supervisor :** _____
4. **Name of Co-Supervisor (if any) :** _____
5. **Topic of Research :** _____

---

6. **Date of Registration :** _____
7. **Registration No./Enrolment No. :** _____
8. **Name of College/Department :** _____

ACADEMIC INFORMATION*:

1. **How often and by what means do you contact your supervisory team:**

Interaction	Daily	Weekly	Fortnightly	Monthly	More than a Month
By Phone Call					
By Personal Meeting					
By Email/Post/Courier					

2. **How often do you visit library for your research work:**

Name of Library	Daily	Weekly	Fortnightly	Monthly	More than a Month

3. **Details of workshop(s) attended:**

Workshop Title	National / International	Date(s)	Venue	Organized by	Remarks

4. **Details of conference/seminar(s) attended:**

Conference/ Seminar Title	National / International	Date(s)	Venue	Organized by	Remarks

5. Details of paper(s) presented in conference/seminar(s):

Conference/ Seminar Title	National / International	Paper Title	Author(s)	Date(s)	Venue	Organized by

6. Details of book(s) edited/authored:

Title of Book	Author(s)	Vol. No.	ISBN No.	ISSN No.	Year	No. of Pages	Published by

7. Details of paper(s) published in journal (national/international):

Title of Paper	Author(s)	Name of Journal	Vol. No.	ISBN No.	ISSN No.	Year	Page No.	Published by	Impact factor

8. Have you submitted your research work to your Supervisor/Co-supervisor?

Yes ☐ No ☐

9. Did you receive written feedback? Yes ☐ No ☐

10. **What sections of the thesis have been written?** ***(in draft or final form)***

_____

11. Briefly describe specific research goals for the next semester and how they will beaccomplished:

_____

_____

12. **Please attach a Completion Plan for the remainder of your candidature** ***(including research methodology, research instrument, data collection and analysis, hypothesis, statistical tests etc.).***

13. Other details:

_____

_____

_____

Candidate signature with date: _____

**** Provide additional Sheets (If required)***

PART – I

(To be completed by the Supervisor/Co-supervisor)

1. How often and by what means is contact with the candidate maintained (e.g. e-mail, face-to-face)?

_____

_____

2. Does the research scholar have sufficient contact with you?

Yes ☐ No ☐

If no, please comment:

_____

_____

_____

3. Please rate the research scholar's progress:

Excellent ☐

Satisfactory ☐

Marginal ☐ *(please justify)*

Unsatisfactory ☐ *(please justify)*

_____

_____

4. If you rate the research scholar's progress as unsatisfactory, have you informed the student:

Yes ☐ No ☐

5. Is the research scholar's written report both sufficient and accurate?

Yes ☐ No ☐

6. Do you recommend that the research scholar undertakes any other training or development activities, e.g. particular units, workshops or courses, or general development in any area? *(please give details)*

Yes ☐ No ☐

7. Is there sufficient detail in the proposed plan of activity for the next 12 months, and is the plan appropriate?

Yes ☐ No ☐

8. Any other information: _____

Supervisor signature with date: _____

Co - Supervisor signature with date: _____

PART – II

(To be completed by the CRC)

1. Overall quality of work of the

☐ research scholar:Very good
☐ Good
☐ Satisfcto ry
☐ Irregular but satisfactory
☐ Below acceptable standard

2. Overall rate of progress of the

☐ research scholar:Very good
☐ Good
☐ Satisfact ory
☐ Irregular but satisfactory
☐ Below acceptable standard

3. We recommend that the candidate's

☐ enrolment be:Continued
☐ Continued subject to specified conditions as outlined
☐ belowTerminated

Conditions of continued enrolment:

_____
_____
_____
_____
_____

4. We have discussed our comments with the candidate:

☐ Yes
☐ No

If no, please comment:

_____
_____

Signature of the Chairman/Head of the CRC_____

Recommendation of the Director/Dean/Head of the College/Department:

_____
_____

(Signature)

SRINIVAS UNIVERSITY

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SYNOPSIS OF THE PROPOSED RESEARCH WORK

ON

TITLE OF THE RESEARCH WORK

(*Font: Times New Roman, Size 18,*

Bold)Submitted by

Name : (*Font: Times New Roman , Size 14,Bold*)

Research Centre

*(**Font**: Times New Roman, Size 14)*

Under the Guidance of

Guide	**Co-Guide**
Name	**Name**
Designation	Designation
Affiliation	**Affiliation**

*(**Font**: Times New Roman, Size 14)*

January 2019

Name of the Department

Research Centre

Name of the College – 574146

TABLE OF CONTENTS

Note: **Candidates should strictly follow below said instruction while preparing synopsis.**

Proposed Research Work
Introduction
Literature Survey
Research gap identify
Objectives of the proposed work with justification
Methodology to be followed
Expected Outcome of the Proposed Study
Research facilities available at the Research Center

INTRODUCTION:

(Font: Times New Roman, Size 14**)**

Content:(Font: Times New Roman, Size 12**)**

LITERATURE SURVEY (Font: Times New Roman, Size 14**)Content: (Font:** Times New Roman, Size 12**)**

RESEARCH GAP IDENTIFY (Font: Times New Roman, Size14**)**
Content: (Font: Times New Roman, Size 12**)**

METHODOLOGY TO BE FOLLOWED: (Font: Times New Roman, Size 14**)**
Content: (Font: Times New Roman, Size 12**)**

EXPECTED OUTCOME OF THE PROPOSED STUDY: (Font: Times New Roman, Size 14)
Content: (Font: Times New Roman, Size 12**)**

RESEARCH FACILITIES AVAILABLE AT THE RESEARCH CENTER: (Font: Times New Roman, Size 14**)**

SAMPLE FORMAT FOR REFERENCES:

[1] S. Rajanna, and R.P. Saini, "Optimal Modeling o f S olar /Biogas/Biomass based IRE System for a Remote Area Electrification", 6th IEEE Power India international Conference 2014(PIICON),pp.1-5, DOI: 10:11 09/POWERI.2014.7293554. (Conference)

[2] F. Adamo, F. Attivissimo, A. Di Nisio and M. Spadavecchia, "Characterization and testing of a tool for photovoltaic panel modeling", IEEE Trans actions on Instrumentation and Measurement, 60 (5),2011, pp. 1613–1622. (Journal)

[3] Literature available at URL: www.homerenergy.com, www.nrel.gov/homer (Web link)

(Font: Times New Roman& italic, size 12)

Candidate's Signature **Co-Guide's Signature** **Guide's Signature**

***Forwarded through Dean of the Research Centre**

Note:

1. Entire synopsis should consist of paragraphs which are both left & right justified.
2. Contents of each paragraph should have line spacing of 1.5.
3. Do not allow any tab space at the beginning of any paragraph.

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Web :www.srinivasuniversity.ac.in, Email: info@srinivasuniversity.ac.in

DOCTORAL COMMITTEE MEETING REPORT

Name of the Candidate	
Date of meeting	
Date of Provisional Registration as per officeorder	
Registration Number	
Branch/Discipline/Program	
Full – time / Part – time Registration	
Title of the Proposed Research work	
Research Centre	
Name of the supervisor	
Name of the Co- supervisor's	
Domain Expert-1 (External)	
Domain Expert-2 (External/Internal)	
Head of Research Centre/Department	
Head of Institute/Nominee (Chairperson)	
Comments on the Ph.D. Work: (Attach additional sheet if necessary)	
Suggestions for Further Work:	
Recommendations:	

Signature of the supervisor	
Signature of the co-supervisor	
Signature of Domain Expert (External)	
Signature of Domain Expert (Internal)	
Signature of Research Centre Head	
Signature Head of institute	

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APPLICATION FOR PRE THESIS SUBMISSION RESENTATION

Dated:_____

The Director
University Research Council
Srinivas University
Mukka – 574 146.
Mangalore.

Dear Sir/Madam,

Subject: Request for Pre Thesis Submission Presentation

With reference to above, the details of my registration to the PhD programme are as givenbelow:

1 Name : _____

2 Supervisor : _____

3 Co-supervisor (*if any)* : _____

4 Discipline : _____

5 College/Department/Centre : : _____

6 Registration No. : _____

7 Date of Registration : _____

8 Approved Title of Thesis : _____

I have completed my research work on the approved topic and my draft thesis is complete. I want to make a Pre Thesis Submission Presentation on my research work. I have already completed the coursework requirement and attached the Course work Completion certificate/exempted from course work due to having M.Phil. degree and also submitted and presented all my Annual Progress Reports (APRs), and complied with all the suggestions/observations made by DC/URC in APR presentations regarding the progress of my research work. Further, I have published the required number of research papers related to my topic of research in reputed national/international research journals to the satisfaction of

DC/URC. I have also presented t wo research papers related to the approved topic of research in national/international conferences of repute to the satisfactionof URC.
Further, I have also paid all my dues up to date and nothing is outstanding against me as ondate.

Kindly permit me to make 'Pre Thesis Submission Presentation' and arrange for the same at your earliest convenience. I am submitting herewith eight copies in soft binding of summary of my research work as per your requirement.

Date: …….

Place: ……

Signature of the candidate ……

Name ……

Institution ……

Address……

……

……

FORWARDING BY RESEARCH SUPERVISOR(S):

Recommended/Not recommended for pre thesis submission presentation.

Signature of the Supervisor

Name ……

Address……

……

……

Date……

Signature of the Co-Supervisor

Name ……

Address……

……

……

Date……

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Web:www.srinivasuniversity.ac.in, Email: info@srinivasuniversity.ac.in

FORMAT FOR SUBMISSION OF COMPREHENSIVE VIVA-VOCE REPORT

Name of the Candidate	
Date of Provisional Registration as per office order	
University Seat Number	
Branch/Discipline/Program	
Full – time / Part – time Registration	
Research Centre	
Name of the Research Supervisor	
Name of the Co- Supervisor	
Title of the research work	

Subjects/ Courses taken and completed:

Sl. No	Sub-Code	Subject Title	Month & Year of Passing
1			
2			
3			
4			
5			

a. Introduction: (1page)
b. Literature survey: (4 to 5 pages)
c. References
d. Objectives of the work (1 to 2 pages):
e. Work Carried out so far:
f. Results and Discussions (4 to 5 pages):
g. Further Work to be carried out
h. Number of Papers/Publications out of the research work (presented/submitted), (if any): (Affix the list of papers/publications)

Signature of the Candidate

Signature of the Supervisor

Signature of the Co- Supervisor

Signature of the Head of Research Centre

Signature of the Head of Institute

List of documents to be provided along with this format:

1) Office order (Provisional Registration copy)
2) Course completion certificate
3) Change of Doctoral committee members if any
4) Change of guide/research centre if any
5) Letter from guide for conducting comprehensive through research centre head.
6) On-line fee payment receipt towards comprehensive viva voce.

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DOCTORAL COMMITTEE

Name of Research Centre:	

Name of Research Candidate:	
Registration Number:	

Sl. No	Doctoral Committee Composition	Name and Designation	College/Organization, Address, E-mail, Mobile	Signature
1	Head of Institute/Nominee (Chairperson)			
2	Head of Research Centre/Department(Member)			
3	Domain Expert-1 (External)- (Member)			
4	Research Supervisor (Member Convener)			
5	Co- Supervisor (Member Convener)			

* Write NA wherever not applicable

Forwarded by the Guide and Dean/Coordinator of the College

Approved by

Director, Research & Innovation Council:_____

SRINIVAS UNIVERSITY

Srinivas Nagar, Mukka– 574 146, Mangalore.

(Private University Established by Karnataka Govt. ACT No.42 of 2013, Reconized by UGC, New Delhi, & Member of Association of Indian Universities, New Delhi)

NO DUES CERTIFICATE FOR Ph.D. THESIS SUBMISSION

(To be completed by the research scholar)

1 Name of Research Scholar :

2 Registration No. :

3 Date of Registration :

4 Discipline :

5 College/Department/Centre :

6. Type (Fulltime/ Part time)

Verified that Mr./Ms. ..... has paid his/her PhD fee as per the following details:

Fee Description	Amount (Rs.)	Receipt No.	Payment Date	Remarks
Application Fee				
Registration Fee				
Course fee (I Year)				
Course fee (II Year)				
Course fee (III Year)				
Course fee (IV Year)				
Course fee (V Year)				
Course fee (VI Year)				
I DCM Meeting Fee				
II DCM meeting Fee				
Coursework exam Fee				
Thesis Submission fee				
Viva Voce Exam fee				
Change of Title fee				
Any other charges, *if applicable*				

Further, it is verified that Mr./Ms.....has paid all his/her dues including fine and other charges up to date and nothing is outstanding against him/her as on date. He/She may be allowed to submit his/her thesis as mentioned above.

Signature of Dean with Date

Signature of Director – Research with Date

Signature of Registrar with Date

SRINIVAS UNIVERSITY

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FINAL THESIS SUBMISSION FORM

[To be filled in by the candidate and submitted alongwith No Dues Certificate, Copyright Certificate (if applicable)]

1 Name of Research Scholar : ……

2 Registration No. : ……

3 Date of Registration : ……

4 Discipline/Subject : ……

5 College/Department/Centre : ……

6 Approved Title of Thesis (BLOCK LETTERS) :

……

……

……

……

7 Any IPR involved in the thesis *(If yes, please submit a copyright certificate separately)* **:**

……

CERTIFICATE

Certified that I have incorporated all the corrections and modifications suggested by the **External Examiners**; suggestions and observations given by the **II Doctoral Committee** and the **University Research Council.**

Date:_____ **Signature of candidate: _____**

ENDORSEMENT BY THE RESEARCH SUPERVISOR(S):

This is to certify that Mr./Ms …… has incorporated all the suggestions and observations in his/her thesis and the final thesis is recommended hereby for submission to Srinivas University.

Signature of the Supervisor

Name ……
Address……
Date:_____

Signature of the Co-Supervisor

Name ……..
Address……..
Date:_____

FORWARDING TO 'COE' BY THE OLLEGE/DEPARTMENT/CENTRE

Certified that Mr./Ms. ……. has incorporated all the corrections and modifications made by the External Thesis Examiners; suggestions and observations given by the Oral Defence Committee and the Research Degree Committee, to the satisfaction of the CRC/DRC. As such, the thesis is recommended for final submission for the award of PhD degree at the next convocation.

Signature of Director/Dean/Head (with seal)

Name _____

Date: **College/Department/Centre**

SRINIVAS UNIVERSITY

Educating the Next Generation

Main Campus, Srinivas Nagar, Mukka, Surathkal, Mangalore – 574146.
City Campus, Pandeshwar, Mangalore – 575001, Karnataka State, India.

(Private University established by Karnataka State Govt. Act 42 of 2013, Recognized by UGC, New Delhi,Member of Association of Indian Universities, New Delhi)

Administrative Office Phone : 0824-2425966, Pandeshwar City Campus, Phone : 0824-2441022

E-mail – info@srinivasuniversity.ac.in, Web : www.srinivasuniversity.ac.in

S. No.	Course	Eligibility	Course Duration	Type
1	**D. Litt. /D.Sc.** (Post-Doctoral Research Degrees)	Ph.D. in a related field with minimum 5 years of teaching/research experience and a minimum of 10 research publications* as first author after obtaining Ph.D.	Any Time	-

REGULATIONS GOVERNING THE DEGREE OF DOCTOR OFLETTERS/DOCTOR OF SCIENCE (D.Litt./D.Sc. /D.Ed. /D.Engg.)

1. PREAMBLE:

The Degrees of Doctor of Letters (D.Litt.)/ Doctor of Science (D.Sc.) is the highest Post-Doctoral Research degree of this University in respective disciplines which are awarded to a candidate who has earlier acquired a Ph.D. degree. This Post-Doctoral Research degree is awarded on the basis of original and independent research that has made distinct contributions to the advancement of knowledge in a particular discipline, as evidenced by publications in reviewed journals and are recognized by peers. The research work of the candidate must have been characterized either by the discovery of facts or by a fresh approach towards the interpretation of facts or theories or formulating a new theory/hypothesis and evince his capacity for original thinking, critical examination and sound judgement.

2. ADMINISTRATION OF THE PROGRAMME:

(a) The Programme leading to Post-Doctoral Research degree will be offered at the Colleges of Srinivas University.

(b) Subject to the general guidance of the Academic Council, research work in the University leading to Post-Doctoral Research degree shall be overseen by the University Research Council (URC).

(c) Any candidate who fulfils the eligibility condition can seek registration according to the enrolment procedure laid down hereunder.

3. DURATION OF THE PROGRAMME:

The duration of the Programme is **three months to three years** from the date of enrolment.

4. ELIGIBILITY CONDITIONS:

The applicant for enrolment must have A Doctoral degree (Ph.D./DBA) from a recognized Indian or foreign University in the relevant discipline provided that :

(1) He/she presently active in research/teaching with a minimum period of five years after obtaining Ph.D. /DBA degree, in the Department of this University or other Universities or Affiliated colleges or Institutions recognized for purpose of advanced research, located in India or abroad.
(2) The publications submitted by him/her for consideration for the award of D.Litt./D.Sc. degree are substantially the result of Post-Doctoral research work carried out during this period.
(3) He should have published at least 10 research publications as first author after Ph.D. in refereed, peer reviewed, indexed journals preferably approved by UGC. The proposed D.Litt./D.Sc. thesis shall be related to these published papers.
*However, the total number of published papers (first author & joint author together) should be proportionate to the duration after obtaining Ph.D. calculated at the rate of one paper per every completed year. Books are not treated as substitute for research paper. Aspiring candidates may submit the eligibility checklist provided as Annexure.
A candidate already holding D.Sc../D.Litt. degree in a particular discipline is eligible to registerfor D.Sc./D.Litt. in another discipline after a gap of two years provided that evidence of standard publications as per fresh eligibility are produced in the second discipline in which he/she intendsto submit for D.Sc./D.Litt. degree.

5. SUBJECT OF THE THESIS

(1) The Thesis submitted by the candidate for consideration for the award of the degree of Doctor of Letters (D.Litt.)/ Doctor of Science (D.Sc.) shall be substantially related to the result of his/her post-doctoral research work.
(2) The candidate shall state in his/her application the faculty/discipline on which he/she bases his/her qualification for the Degree. The topic of the D.Litt./D.Sc. thesis may be related to his/her Ph.D. work or independent research work. If the thesis submitted for D.Litt./D.Sc. is related to the thesis of Ph.D. or any other equivalent previous research degree, the findings of such study shall be confined only to the review of literature. The thesis submitted for the Ph.D. degree or any other equivalent previous degree, shall not form part of the D.Litt./D.Sc. thesis. He/she shall submit with his/her application five copies of his/her thesis based on published papers that contain original contribution to the advancement of knowledge.
(3) The subject of the thesis shall relate to the branch of knowledge chosen.
(4) The thesis shall be a scholarly work and must be on one main theme falling with in the area or field of proposed study. However, published research papers can form part of the thesis provided they are presented as consistent with the theme of the thesis and elaborated into the requisite form and size.

6. ENROLMENT & REGISTRATION FOR THE PROGRAMME:

The application form for the award of D.Litt./D.Sc. shall be downloaded from the University website www.srinivasuniversity.ac.in and duly filled form should be submitted to the Registrar any time during the year with prescribed Application fee.
In addition, he/she should enclose
(1) Bio-data with 2 Photos.
(2) List of his/her research publications.
(3) Reprints of required number of research papers as per eligibility criteria.
(4) Copy of Ph.D. Thesis.
(5) Attested copies of certificates in support of the qualifications (from matriculation to Masters, Ph.D. degree) and experience.
(6) Proposal for D.Litt./ D.Sc. thesis shall contain an outline of the proposed research work, why it is important, the methodology to be used and the expected outcome of the research, specifically highlighting in what respect the research will advance the knowledge in the particular field of his Post-Doctoral work.
(7) Two references from eminent scholars each of whom is either a member of the Academic

Council of this University, working/retired directors of any Post graduate institutions, or a graduate of D.Litt./ D.Sc. to the effect that he/ she is by habits and character a fit and a proper person to be admitted to the degree.

The University Research Council (URC) shall constitute an Academic Expert Committee (AEC) of three members who shall be reputed scholars in the relevant area. The Academic Expert Committee shall consider and recommend the suitability of the applicant. The Academic Expert Committee, while considering the proposal shall invite the applicant for detailed discussion, and make a recommendation with a provisional date of registration for starting of the Post Doctoral program by providing a provisional approval letter to the candidate.

Registration for the Programme :

Upon receiving provisional approval letter, the candidate has to register for the programme by paying the prescribed admission fee along with the eight copies of Synopsis of the Thesis.

Submission of final Thesis :

The candidate has to submit the final thesis (five copies along with a soft copy) in prescribed format within three years after registration.

FORMAT OF THE THESIS

(1) Title page
(2) Certification from the Director - Research
(3) Declaration
(4) Preface
(5) Introduction
(6) Literature review
(7) Body of the thesis which shall consists of analytical discussion leading to demonstrate the contribution of new knowledge and/or additional knowledge to the chosen area.
(8) Additional publications relevant to the thesis if any, with explanatory note.
(9) Summary and conclusion
(10) Bibliography
(11) Copy of papers published in Journals relevant to the thesis.

7. ACCEPTANCE OF THE THESIS FOR EVALUATION

(1)Upon receipt of the application and thesis, the Controller of Examinations shall, in the first instance, arrange to refer the thesis to the Standing Committee of the URC to make suitable recommendations as to its acceptability for valuation. The Standing Committee may co-opt such other member or members, who are specialists/experts in the subject of the thesis, it deems fit for this purpose. Thereafter the Standing Committee shall make its recommendations as to the suitability or otherwise of the thesis for processing for evaluation based on its assessment as to its originality, etc.
(2)When the thesis is not accepted for valuation, the thesis will be returned to the candidate and the fee paid by him/her will be refunded (after deducting a processing fee of Rs.30,000).
(3)When the thesis is accepted for evaluation, the procedure prescribed herein will be followed.
NOTE: Candidates are required to publish minimum four papers as first author during the Programme under the affiliation of Srinivas University as Post Doctor Fellow in refereed, peer reviewed, indexed journals preferably approved by UGC

8. EXAMINERS

(1)If the thesis is recommended to be accepted for evaluation, the Standing Committee of the URC shall suggest a panel of not less than nine external Examiners being experts in the field of research chosen by the candidate for the D.Litt./D.Sc. Thesis, three from abroad, remaining from India, for consideration for appointment as examiners for evaluating the
thesis, to the Controller of Examination/Registrar (Evaluation) by name in a cover marked

"confidential".

(2)If the panel of nine names of external examiners suggested by the Standing Committee of the URC is found to be inadequate, the Vice-Chancellor shall be at liberty to obtain additional names of experts, in consultation with experts of his/her choice, in the concerned field.

9. VALUATION OF THESIS

(1) The Thesis shall be referred by the Vice-Chancellor for valuation to a Board of Examiners consisting of three persons (usually two from India and one from abroad) from the panel submitted by the Standing Committee of the URC. (2) The Board of Examiners who valuethe Thesis shall report on the merit of the candidate for the D.Litt./D.Sc. Degree. As "Commendable" "Highly commendable" or "Not commendable" If two of the three Examiners do not commendthe thesis, the thesis shall stand rejected. If two of the three Examiners commend the thesis andone examiner does not commend the thesis, the Vice- Chancellor may refer the same to a fourth examiner for his valuation. The fourth Examiner shall be from the same category of the examiner, who rejected the thesis (i.e., Examiner from Southern state/Northern state/ rest of India/ abroad). Ifthe fourth examiner commends the thesis, the candidate will be declared qualified for the award ofthe D.Litt./D.Sc. If the fourth Examiner also does not commend the thesis, the candidate will be declared not qualified for the degree. (3) The reports of the Board of Examiners appointed by the University shall be placed before the URC and Board of Management for declaring the candidate to be qualified/not qualified for the award of D.Litt./D.Sc. Degree.

(4) A candidate who has been declared qualified, shall be awarded the Degree of D.Litt./ D.Sc. in the Convocation of Srinivas University.

10. RE-SUBMISSION OF THESIS

(1)A candidate whose thesis has not been commended in the first instance may be permittedto re-submit the Thesis a second time after a period of one year and after inclusion of additional publications on the subject, following the procedure prescribed under Regulation of the University. Ordinarily, the re-submitted thesis will be referred to the same Board of Examiners which valued the thesis on earlier occasion.

(2)A candidate shall not be permitted to submit thesis for the award of D.Litt./D.Sc. Degreeon more than two occasions.

11. SAVINGS

(1) For anything not specifically covered by the above Regulations and questions arising outof these regulations, the same shall be referred to the Standing Committee of the University Research Council, whose decision shall be final.

****

FEE Structure for the Candidates admitted during 2019:

1. **Application Fee = Rs. 2,000 / $ 200 for Foreign Nationals** (To be paid at thetime ofsubmitting Application)
2. **Registration Fee = Rs. 20,000 / $ 1000 for Foreign Nationals** (To be paid by approved candidates)
3. **Course Fee = Rs. 1,00,000 / $ 8,000 for Foreign Nationals** (To be paid along withRegistration Fee)
5. **D. Litt./D.Sc.** /D.Ed. /D.Engg. **Thesis Submission & Evaluation Fee = Rs.30,000 / $1,000 for Foreign Nationals** (To be paid before submission of Thesis)
6. **D.Litt./D.Sc. Provisional Certificate Fee = Rs. 2,000 / $ 500 forForeign Nationals**

(To be paid after declaration of result).

7. **Convocation Degree Certificate Fee - Rs. 10,000 / $ 500 for NRI/Foreign Nationals** (Tobe paid after declaration of result).

Annexure

Eligibility Check-list Format for D.Litt./D.Sc. Degree

1. Name of the Applicant : Dr. _____
2. Age :_____Years.
3. Title of Ph.D. Thesis : _____
4. Year of awarding Ph.D. Degree : _____
5. Name of the Institute /University & Country where Ph.D. was awarded : _____
6. Number of Years completed after obtaining Ph.D. :_____years (X)
7. Present Occupation (Name of the institution, Designation, Number of years of Service):
8. Number of Research papers (in refereed, peer reviewed, indexed journals preferably UGC approved) published as **first author** in the area of D.Litt./D.Sc. Thesis Topic after Ph.D. = (N)
9. Number of Research papers (in refereed, peer reviewed, indexed journals preferably UGCapproved) published as **joint author** during/after Ph.D. =_____(M)

The Eligibility conditions : (i) N ≥ 10; (ii) (N + M) ≥ [10 + (X - 6)]

10. List of First Author Publications after Ph.D. in APA format : (N≥ 10)

[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]

11. List of Joint Author Publications during/after Ph.D. in APA format : (M)

[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]

SRINIVAS UNIVERSITY

Srinivas Nagar, Mukka – 574 146, Mangalore, Phone: 0824-2477456
Web: www.srinivasuniversity.edu.in, Email: info@srinivasuniversity.edu.in
Administrative Office: G.H.S. Road, Mangalore-575 001. Phone 0824-2425966

D.Sc./D.Litt./D.Ed./D.Engg./LL.D. PROGRAMME

(In all areas like Engineering, Basic Science, Management, Hotel Management & Tourism, Physiotherapy, Education, Health Science, Social Science, and also Inter-disciplinary)

DURATION OF THE PROGRAMME: 3 months to 3 years

MINIMUM QUALIFICATIONS FOR ADMISSION:

Ph.D. in a related field with minimum 5 years of teaching/research experience after Ph.D. degree and a minimum of 10 research publications as first author after obtaining Ph.D.

ADMISSION PROCEDURE:

Eligible candidates are required apply to the university along with necessary documents. URC shall scrutinize the application and call for the interview for the eligible candidates for further process and admission.

PUBLICATIONS:

Before submitting the final thesis the Candidates must have published minimum four research papersas first author in refereed indexed journals with Srinivas university affiliation.

VAUVATION OF THE THESIS:

Thesis shall forward to three examiners, one from Karnataka, one from Non Karnataka and one for foreign examiners. If all the examiner accepted the report, Degree shall be awarded after the final viva vocepresentation.

FEE STRUCTURE:

Rs.1,50,000 for the course for Indians and $ 8000 for foreigners.

CREATING INNOVATORS

SRINIVAS UNIVERSITY

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For Further Details

www.srinivasuniversity.edu.in
researchdirector@srinivasuniversity.edu.in
0824-2441022/9980951074 (Mobile)

Srinivas University

Standard Operating Procedure for Evaluation of D. Litt./D.Sc. Thesis

1. Checking Eligibility :

A committee of Vice-Chancellor, Research Director, and the Dean of the respective subject area have to check the eligibility by referring the Checklist & Application along with application fee receipt submitted by the candidate.

The committee should ensure that the (i) Candidate has completed at least 5 years after receiving Ph.D. degree by a UGC recognized - AIU member University and (ii) the candidate has published at least 10 scholarly published papers in ISBN journals as the first author. If candidate satisfy the conditions then Director shall make an arrangement for an interview of the Candidate with Chancellor for final approval.

Director shall send the consolidated report to the office of Registrar for providing D.Litt./D.Sc. Registration Certificate. Registrar will issue D.Litt./D.Sc. Registration Certificate to the candidate through Research Director.

The process should complete within 7 days after paying the application fee.

2. Submission of the Thesis :

The Research Director should ask the candidate in writing to submit the D.Litt./D.Sc. Thesis any time within one year after the registration date with payment of specified Course fees& Thesis evaluation fees. The candidate should submit 5 copies of Thesis& 5 copies of final Synopsis in the specified format along with a digital copy in a Pen Drive along with Course Fee payment receipt copy and a list of min**. Nine Adjudicators** of Professor/Directors cadre(3 from the State, 3 from other States, and 3 from other countries) in a closed envelope to Research director. The candidate also has to submit printed copy of at least one scholarly research paper published in a ISBN Journal as Post Doctoral Fellow of Srinivas University. Research Director shall give an acknowledgement for submission to the Candidate. The Research Director should check the Thesis and Final Synopsis for the format and Plagiarism and fill the **Thesis Evaluation Request format** and submit it to Registrar (Evaluation) along with Four printed copies of Thesis, four copies of Final Synopsis, one digital copy of the Thesis, and closed envelope containing **Adjudicators** list and collect a signed acknowledgement.

The process should complete within 7 days after submission of the Thesis& Final Synopsis along with necessary Course & Thesis Evaluation fee.

3. Evaluation Stage :

The Registrar (Evaluation) after receiving theThesis, Final Synopsis, list of & Research Director's Report in a specified format along with copies of Fee receipts, has to identify the evaluators with the help of the Chancellor. Director should scrutinise the Examiner panel with the help of Corresponding Dean of the College before sending to the Registrar(Evl). Chancellor will mention the sequence of evaluators from the State, Outside the State, and from foreign countries. Accordingly, the Registrar (Evaluation) will contact the marked evaluators,one from each category to get their consent for evaluation through e-mail by mentioning the remuneration to be paid for the evaluation. This process should be completed within 10 days after the Thesis forwarded to the Registrar (Evaluation office). Once evaluator

is accepted for evaluation, the Thesis can be sent to them either softcopy or printed copy. Maximum 30 days can be allocated for the submitting evaluation report in a pre- determined format. If all the evaluator recommends as commendable, the consolidated report shall be submitted for Director. The progress in evaluation should be communicated for every 40 days to the Vice-chancellor and Director after submission of Thesis for evaluation.

4. Final Presentation: Director Make an arrangement to conduct the Final Presentation by consulting with the Candidate, Corresponding Dean, Chancellor, Pro Chancellor, Vice Chancellor and Registrars. Director Send the Consolidated Report to Registrar to Take the approval in Board Of Management Meeting. Finally, Director will make the Award Notification. Registrar (Evl) shall issue the Provisional Degree Completion Report based on Notification.

5. Fee Structure:

(1) Application fee = Rs. 2,000 /$ 200

(2) Registration Fee = Rs. 20,000 / $ 1,000

(3) Course Fee = Rs. 1,00,000 / $8,000

(4) Thesis Evaluation Fee = Rs. 30,000 / $1,000

(5) Provisional Certificate Fee = Rs. 2,000/$500

(6) Convocation Certificate Fee = Rs. 10,000/ $500

(7) Special Fee for Condonation of time duration = Rs. 10,000 / $500 per year.

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SRINIVAS UNIVERSITY

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(Private University established by Karnataka State Govt. Act 42 of 2013, Recognized by UGC, New Delhi,Member of Association of Indian Universities, New Delhi)
Administrative Office Phone : 0824-2425966,Pandeshwar City Campus, Phone : 0824-2441022
E-mail – info@srinivasuniversity.ac.in, Web :www.srinivasuniversity.ac.in

APPLICATION FOR REGISTRATION FOR THE DEGREE OF DOCTOR OF LETTERS /DEGREE OF DOCTOR OF SCIENCE

Candidate should sign at the top of the photograph **Affix passport size photograph of the candidate**	**Cost of Application : Rs. 2000/- NRI Candidates: $ 200**		**Mode of Payment : Only Through "SBI Online Payment" in Registrar Account**	
	SBI Collect No		Name of Bank	
	Branch		Date:	
			Supt Signature	

Regn. Fee: Rs.20,000/-	**NRI Candidates: $ 1000**		**Mode of Payment : Online**
Name of Branch of SBI		Date	
SBI CollectNo		Name of the Bank	
Branch		Date	
Name of the Applicant (IN BLOCK LETTERS)			
Name of the Father/Husband/Guardian			
Date of Birth	**Date**	**Month**	**Year**
	Place of Birth		**Sex M / F**
Nationality		**Religion**	
		Community	
Address for Communication			

For Contact	**E-Mail**		
	Mobile No.		
	Phone with STD Code		
Educational Qualification	**Branch/ Subject**	**College University/ Institution**	**Month & Year of Passing % of Marks & Class/ Grade/Division**
UG			
PG			
M. Phil.,			
Ph. D.			
Any Other Higher Degree			
Present Occupation if engaged in teaching/ research	**Designation**		
	Institution		
	Address		
Area/Field for Ph.D.			
Is your proposed work an extension of Ph.D. research?			
Specific area of Research, for D. Litt./ D.Sc. Degree			
Proposed topic for D. Litt./ D. Sc. Thesis			

Note : Attach a detailed Bio-data as Annexure with

(i) List of Published papers in Journals
(ii) List of Papers published in Conference Proceedings
(iii) List of Books written, published or edited
(iv) Projects undertaken/completed
(v) Details of Foreign Assignments, if any

Annexure

Eligibility Check-list Format for D.Litt./D.Sc. Degree

1. Name of the Applicant : Dr. _____
2. Age :_____Years.
3. Title of Ph.D. Thesis : _____
4. Year of awarding Ph.D. Degree : _____
5. Name of the Institute /University & Country where Ph.D. was awarded : _____
6. Number of Years after obtaining Ph.D. :_____years (X)
7. Present Occupation (Name of the institution, Designation, Number of years ofService): _____
8. Number of Research papers (in refereed, peer reviewed, indexed journals preferably UGC approved) published as **first author** in the area of D.Litt./D.Sc. Thesis Topic afterPh.D. =_____(N)
9. Number of Research papers (in refereed, peer reviewed, indexed journals preferably UGC approved) published as **joint author** during/after Ph.D. = _(M)

The Eligibility conditions : (i) N >= 10; (ii) (N + M) >= [10 + (X – 6)]

10. List of Ten first Author Publications in peer reviewed journals only (with ISSN) afterobtaining Ph.D. in APA format : (N >= 10)

[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]

11. List of Joint Author Publications during/after Ph.D. in APA format : (M)

[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]

Note : Copies of the above papers should be enclosed as attachment.

Procedure :

1. After submitting the filled in application along with proof of paying Application and Registration fee, the eligible candidates get D. Litt. /D.Sc. Registration letter.

2. The candidate is supposed to submit the thesis as per the format of the Thesis provided by the University within 12 month's time to the Director, Research of Srinivas University.

3. The procedure given in the D.Litt./D.Sc. regulations and evaluation system will be followed in all cases.

4. Candidates are advised to take note of the important provisions in the regulations governing D.Litt./D.Sc. The thesis submitted for the Ph.D. degree or any other equivalent previous degree, shall not form part of the D.Litt. /D.Sc.

5. The subject of the thesis shall relate to the branch of knowledge chosen.

6. Upon receipt of the application and thesis, the Controller of Examinations shall, in the first instance, arrange to refer the thesis to the Standing Committee of the URC to make suitable recommendations as to its acceptability for valuation.

7. When the thesis is not accepted for valuation, the thesis will be returned to the candidate and the course fee paid by him/her will be refunded (after deducting a processing fee).

8. The Thesis once accepted shall be referred by the Vice Chancellor for valuation to a Board of Examiners.

9. If two of the three Examiners do not commend the thesis, the thesis shall stand rejected. In such cases the thesis is placed before a fourth examiner.

10. If the fourth examiner commends the thesis, the candidate will be declared qualified for the award of the D.Litt. /D.Sc.

Send the filled application to (1) vicechancellor@srinivasuniversity.edu.in
(2) researchdirector@srinivasuniversity.edu.in

Srinivas University

Thesis Format for

DOCTOR OF SCIENCE (D. Sc.), DOCTOR OF LETTERS (D. Litt.)

FORMAT OF THE THESIS

The following format may be normally adopted for the D. Sc./ D. Litt. thesis:

1. Cover page.
2. Inner cover page.
3. Declaration by the candidate as per the format
4. Certificate from the Director of the research Council as per the format
5. Contents.
6. An Extended Synopsis of about 2000 words, describing the research work carried out during the last 5 (five) years (before the date of submission), on the subject relevant to the discipline in which the candidate has applied for the degree, explaining how far the work is original, exemplary and is contributive to the advancement of knowledge. It shall also summarize the relevance of the publications to the specific subject of the thesis being submitted.
7. Main content of the thesis in the form of chapters from introduction to conclusion with references
8. List of publications)List of publications and attach the full length papers (Only first author papers published after Ph.D.)
9. Main content of the thesis should be in Times New roman with font 12 and 1.5 spacing. Candidates should submit both hard and soft copy of thesis with Synopsis
10. Attach the Published papers with Srinivas University affiliation
11. Cover page should be brown in color

DECLARATION

I, …..……, declare that this thesis, entitled "……
(Name of the Candidate)

…… ……
(Title of the thesis)

submitted for the award of the degree of.....of this University, has
(Name of the Degree)

not been submitted earlier for the award of any degree or diploma of this or any other University.

Date: …….. (Signature of the Candidate)

Place: Mangalore

.

SRINIVAS UNIVERSITY

(PRIVATE UNIVERSITY ESTABLISHED UNDER KARNATAKA STATE ACT NO.42 OF 2013)
Corporate Office: G.H.S.Road MANGALURU - 575 001. Karnataka State, INDIA.
Phone No.: 0824 - 2425966, 2444891, Fax: 0824-2442766
E-mail: info@srinivasgroup.com Website: www.srinivasuniversity.edu.in

CERTIFICATE

This is to certify that this thesis entitled "..... " has been
(Title of the thesis)

submitted by..... for the award of the
(Name of the Candidate)

degree of .....of Srinivas University.
(Name of the Degree)

Date: Signature of the Director

S. No.	Course	Eligibility	Course Duration	Type
1	**Post-Doctoral Fellow**	Ph.D. in a related field	Minimum 1 year to maximum 5 years	Part Time/Full Time

REGULATIONS GOVERNING THE POST DOCTORALFELLOW PROGRAM

1. PREAMBLE:

Our University is determined to promote Research and its Activates. In order to initiate and encourage continuing research among young research scholars, to pursue advanced research in their area of specialization we will have a scheme for award of Post-Doctoral Research Fellow Certificate to eligible PhD Degree holders duly guided by University Grants Commission (UGC) Guidelines in this regard.

2. ADMINISTRATION OF THEPROGRAMME:

(a) The Programme leading to Post-Doctoral ResearchFellow Certificate Program will be offered at the Colleges of SrinivasUniversity.
(b) Subject to the general guidance of the Academic Council, research work in the University leading to Post-Doctoral Research FellowCertifcate shall be overseen by the University Research Council(URC).
(c) Any candidate who fulfils the eligibility condition can seek registration according to the enrolment procedure laid downhereunder.

3. DURATION OF THEPROGRAMME:

The duration of the Program is **One year to Five years** from the date of enrolment.

4. ELIGIBILITYCONDITIONS:

The applicant for enrolment must have A Doctoral degree (Ph.D./DBA) from a recognizedIndian or foreign University in the relevant discipline provided that :
The candidate must have a doctorate degree in the relevant subject from Universities/Institutions recognized by UGC/Association of India Universities (AIU), with published research work to their credit. Those who have already submitted their PhD thesis can also enroll by giving an undertaking to the effect.

Supervision and Progress Report

The Post-Doctoral Research Fellow and his/her research project shall be mentored by a Supervisor identified by the Department and approved by the URC. The Supervisor shall be apermanent faculty member of the Department and shall have research experience in the project related disciplines. The Supervisor will oversee the Fellow in all his/her work performance and progress of research including for administrative compliances. The Post- Doctoral Research Fellow will be required to submit a Progress Report in the prescribed format and make a presentation annually as may be decided by the Supervisor in consultation with the Director of Research. Copy of the Progress Report with the comments of the Supervisor and the HOD must be sent to the URC. On satisfactory completion of the Research and subject to its due assessment and/or publications, the Scholar will be awarded the Certificate of Post-Doctoral Research indicating the specific title of the research project. All Research findings and Publications, Monographs, Patents etc relating to the Research Project must be affiliatedto and shall remain the property of the University

5. ENROLMENT & REGISTRATION FOR THEPROGRAMME:

The application form for the award of Post-Doctoral Fellow Certificate Program shall be downloaded from the University website www.srinivasuniversity.ac.in and duly filled form should be submitted to the Director - Research any time during the year with prescribed Application fee.

In addition, he/she should enclose

(1) Bio-data with 2Photos.

(2) List of his/her research publications.

(3) Google Scholar ID Details

(4) Attested copies of certificates in support of the qualifications (from matriculation to Masters, Ph.D. degree) and experience.

(5) Proposal for Post-Doctoral work.

URC shall constitute an Academic Expert Committee (AEC) of three members who shall be reputed scholars in the relevant area. The Academic Expert Committee shall consider and recommend the suitability of the applicant. The Academic Expert Committee, while considering the proposal shall invite the applicant for detailed discussion, and make a recommendation with a provisional date of registration for starting of the Post Doctoral programme by providing a provisional approval letter to thecandidate.

Registration for the Programme :

Upon receiving provisional approval letter, the candidate has to register for the program by paying the prescribed admission fee along with the Synopsis of the work.

Submission of Final Report

After registration, the candidate has to submit the final Report in prescribed format after the period of one year or subsequent years. He should publish at least two paper in refereed journal during his period.

SRINIVAS UNIVERSITY

Srinivas Nagar, Mukka – 574 146, Mangalore, Phone: 0824-2477456
Web: www.srinivasuniversity.edu.in, Email: admission@srinivasuniversity.edu.in
Administrative Office: G.H.S. Road, Mangalore-575 001. Phone 0824-2425966

POST DOCTORAL FELLOW PROGRAMME

(In all areas like Engineering, Basic Science, Management, Commerce, Hotel Management &Tourism, Physiotherapy, Education, Health Science and also Inter-disciplinary)

DURATION OF THE PROGRAMME:

1 year to 5 years

MINIMUM QUALIFICATIONS FOR ADMISSION:

The applicant for enrolment must have a Doctoral degree (Ph.D./DBA) from a recognized Indian or Foreign University in the relevant discipline provided that :

The candidate must have a doctorate degree in the relevant subject from Universities/Institutions recognized by UGC/Association of India Universities (AIU), with published research work to their credit. Those who have already submitted their Ph.D. thesis can also enroll by giving an undertaking to the effect.

ADMISSION PROCEDURE:

Eligible candidates are required to apply to the university using a standard application form along with necessary documents and prescribed application fee. URC shall scrutinize the application and call for the interview for the eligible candidate further process and admission. The selected candidate after paying prescribed Course Fee will work part time with an Advisor.

PUBLICATIONS:

The Post Doc Fellow has to submit a research proposal and work with an Advisor of Srinivas Universityand has to publish at least two scholarly research papers along with the Advisor in refereed Journals as thefirst author with Srinivas University PDF affiliation.

SUBMISSION OF THE REPORT:

After completion of a year, the PDF has to submit a Short Report signed by Candidate and the Advisor along with a copy of published scholarly papers which will be verified by the Director of Research to provide a PDF Certificate.

EVALUATION PROCEDURE:

Based on the recommendation of Director of Research, the University will provide the PDF certificate withthe seal and sign of Vice-Chancellor through the Director of Research.

FEE STRUCTURE:

□ **25,000/year for Indians and $ 5000/year for NRI/Foreigners**

CREATING INNOVATORS

SRINIVAS UNIVERSITY

Educating the Next Generation

For Further Details www.srinivasuniversity.ac.in

researchdirector@srinivasuniversity.edu.in/ 0824-2441022

SRINIVAS UNIVERSITY

Educating the Next Generation

Main Campus, Srinivas Nagar, Mukka, Mangalore – 574 146.

City Campus, Pandeshwar, Mangalore – 575 001, Karnataka State, India.

(Private University established by Karnataka State Govt. Act 42 of 2013,

Recognized by UGC, New Delhi, Member of Association of Indian Universities, New Delhi)

Administrative Office Phone : 0824-2425966

E-mail – info@srinivasuniversity.edu.in, Web :www.srinivasuniversity.edu.in

Photo

Application for Admission to Post Doctoral Fellow Programme

Full Time			Part-time			
Name of the Candidate (BLOCK LETTERS)						
Father's/ Husband Name						
Address	Present Address/ Communication Address			Permanent Address		
Phone No and Email Address						
Date of Birth	Aadhar Number	Gender	Category	Physically Challenged (Yes/No)	Nationality	Marital Status Single/ Married

Note: Please tick the appropriate Box (√)

Name of the Degree	Name of the University	Brach/Specialization	Percentage of marks/CGPA	Year of Pass
Ph.D.				
Master Degree				
Bachelor Degree				
PUC/Equivalent				
SSLC/Equivalent				

Whether Cleared GATE/NET/SLET/M.Phil./JRF
If yes, Enclose the relevant document Yes No

Part time candidates are required provide the following documents alon with NOC from the Organisation

Name of the organisation Employed	Designation	Date of Joining to the Organisation	Total Experiance

If sponsored, whether the candidate is a permanent employee of Educational/ Research Institution or Public/Private sector organization/FIP/QIP/Project Fellow?
(if yes enclose copies of the relevant certificate/s) Yes No

Whether the candidate is a foreign citizen ? If yes, specify the Citizenship
(if yes enclose copies of the relevant certificate/s) Yes No

Area of Research

Title of the Proposed Topic

Details of Application fee of Rs 1000/-
by Cash/DD/favor of Srinivas University, payable Mangaluru

Date :

Place : Signature of the Candidate

Enclosures:
10th Marks card, PUC/12th marks Card, Degree certificates and marks Card of UG and PG, Ph.D, NOC, Adhar Card Mandatory to submit three sets of application forms along with enclosures.
Proposed Synopsis (Three Sets)
In complete Application will be rejected

NOTE: Send the Filled application to : Director – Research and Innovation council, Srinivas University, Srinivas Nagara, Mangaluru- 574146, Karnataka, India

TITLE

A **Report**

Submitted in Partial Fulfilment of the Requirements for Award

of

POST DOCTORAL FELLOW

by

NAME OF THE SCHOLAR

Roll No: PXXXXXXXX

under the supervision of

Supervisor 1

NAME OF THE DEPARTMENT

SRINIVAS UNIVERSITY

NAME OF THE COLLEGE

MUKKA, KARNATAKA, INDIA

MONTH & YEAR

Declaration

I hereby declare that except where specific reference is made to the work of others, the contents of this Report is original and have not been submitted in whole or in part for consideration for any other degree or qualification in this, or any other university. This Report is my own work and does not contain any outcome of work done in collaboration with others, except as specified in the text and Acknowledgements.

Signature :

Name : AUTHOR

Roll No : XXXXXXXX

Place MUKKA

Date:

SRINIVAS UNIVERSITY

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Web:www.srinivasuniversity.edu.in, Email: info@srinivasuniversity.edu.in

Certificate

This is to certify that entitled **(Report title)** submitted by **NAME OF AUTHOR** to SRINIVAS UNIVERSITY for the award of the Post-Doctoral Fellow is a Bonafede record of the research work carried out by him under my supervision and guidance. The content of the Report, in full or parts have not been submitted to any other institute or university for the award of any degree or diploma.

Supervisor / Professor

Place : Mukka

Date :____/____/ _____

Order of the Report

1. Title page
2. **Acknowledgements:**
3. Synopsis
4. Content
5. Chapters
6. Publications from the Report

(Note: Report in Times New Format with font size 12, Main Headings 16, Sub Heading 14) References can be after each chapter or at the end of thesis

References (APA format)

1. Dangayach, G. S., & Deshmukh, S. G. (2001). Manufacturing strategy. International Journal of Operations & Production Management.

2. Schonberger, R. J. (2008). World class manufacturing. Simon and Schuster.

3. Kusiak, A. (2018). Smart manufacturing. International Journal of Production Research, 56(1-2), 508-517. (References can be either at the end of each chapter or end of thesis)

Papers List

It should be attached along with the report at the end

RESPONSIBILITIES OF RESEARCH MEMBERS

Responsibility of Supervisors

The role of a supervisor is to advise graduate students, monitor their academic progress, and act as a mentor. Supervisors not only provide guidance, instruction and encouragement in the research activities of their students, but also take part in the evaluation and examination of their students' progress, performance and navigation through the requirements of their academic program with the goal to ensure that their students are successful. . They also play an important role in providing advice about professional development and both academic and non-academic career opportunities, as they are able, and based upon the student's career interests.

Few important main points are

- He is advising to complete the coursework examination
- Play an important role in making doctoral committee
- Conduct the doctoral committee meeting with the help of Coordinator and Dean
- Conduct the regular meeting with the students
- Play an instrumental role on developing the skills on drafting the research paper and publishing these papers in suitable journals
- Teach the students to write the thesis in standard format.
- Important role during submission and awarding the degree in specified time
- Encourage the students to publish more papers and present their works in seminars/Conferences
- Attending the meeting of the university
- Maintain his students whatsapp (Social media) group
- Member of University whatsapp groups
- Overall help the sustainable development of the students

Responsibility of Research Students

Research scholars who perform on projects in a particular field. They work with professors and other professionals in the field of study and focus on discovering new information that can be produced in trade or academic journals. Also, they pursue intellectual and academic activities as well as may engage in educating other researchers.

Few important main points are

- They should abide by the rules and regulations of university
- Give the respect to the Supervisors, Deans, Coordinators and University authorities
- Attend the regular meeting conducted by University and Supervisors

- Part time students should stay in university campus as per the UGC guidelines for minimum period
- Maintain the good relationship with research colleagues and work together in competitive spirit
- Learn the writing the papers and publishing in journals with the help of Supervisors
- Pay the Course fee in the given time by the university
- Should be the member of the whatsgroup created by Supervisor, University and Institute
- Submission of the half yearly progress report regularly
- Complete the Coursework exams, DCM Meetings in specified time
- Learn the preparation of thesis with the help of Supervisor and prepare good thesis without plagiarism
- Publish more number of papers in journals
- Attend seminars/conferences and present your work in front of the committees.
- Overall became good researcher and get good name to you and University

Responsibility of Coordinators

Coordinator is the main bridge between Students, Supervisors, Director and University. He plays an important role of administrative aspects in overall research activities of the Students.

Few Main pinots are

- Help to conduct the Entrance exam and Interview
- Submission of Consolidated report of entrance exam to Director
- Preparation of Coursework syllabus
- Arrange the DCM Meetings
- Conduct the Coursework exams
- Conduct regular meeting of the students and Supervisors
- Providing Coursework marks cards
- Help to prepare the examiner panel
- Help to conduct the final Viva Exam
- Maintain of the institute level whatsapp group
- He is the main contacting person of the institute

Responsibility of Director

Director is the main person handles overall administrative work related to research activities of the university with the help of University authorities.

Few Main pinots are

- Announcement and Conduction of Entrance exams
- Issue of Registration letters with the help of Registrar
- Announcement and Conduction of coursework exams
- Issue of Marks cards with the help of Coordinators
- Issue of registration letter with confirmation of topic and Supervisor
- Conduction of regular meeting with Supervisors and Students
- Thesis evaluation and conduction of Viva with the help of Registrar (Evl)
- Maintain the main Whatsapp groups

COURSE WORK SYLLABUS FOR NURSING

(Subject code: 20SPHD NUR01)

SUBJECT 1: RESEARCH METHODOLOGY

(Common subject)

Unit 1: Introduction

- Research – definition types characteristics Terminology used in research, purpose,scope, and research.
- Types of research; Quantitative and Qualitative Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical, Some OtherTypes of Research

Unit 2: Research process Overview

- Statement of the problem and research objectives concepts and constructs, variablesassumptions.
- Hypotheses formulation and types Delimitation.
- Literature Review

Unit 3: Research approach, design and sampling, and data collection

- Historical approaches
- Survey and experimental approaches,
- Qualitative research approaches, ethnography, and phenomenology.
- Longitudinal, cross-sectional, and cohort studies-advantages and disadvantages.
- Experimental designs-Purposes, characteristics, types of design, pre-experimental and quasi and true implemented design, steps of experimentalresearch
- Sampling Methods-size, criteria's of Population, Techniques of sampling criteria,determination of sample size
- Method, techniques, and tools for data collection

Unit 4: Analysis and Interpretation of Data:

- Data Analysis- quantitative and qualitative
- Preparing data for computer analysis and presentation
- Statistical analysis
- Interpretation of data

Unit 5: Report writing and utilizing research findings

- Communication of research results
- Writing research report, purpose, methods
- Writing a scientific article for publication
- Utilization of research findings

References:

1. Kothari CR. Research Methodology. 2nd edition. New Delhi: New age International publishers; 2004
2. Nancy Burns. Susan K George. Understanding Nursing research. 2nd edition.Philadelphia: Saunders publications; 2002
3. Suresh K Sharma. Nursing Research and statistics. 2nd edition. New Delhi: ReedElsevier India Pvt Ltd; 2018
4. Kabir Singh Sindhu. The methodology of research in Education. 1st edition. New Delhi: Sterling publishers; 1990
5. Denise F Polit. Cherly tatano Beck. Nursing Research- Generating and Assessing evidence for Nursing practice. 9th edition. New Delhi; Wolter's Kluwer (India) PvtLtd: 2012
6. Basavanthappa BT. nursing research. 1st edition. Jaypee brothers medical publishers Pltd. 2005.
7. Holloway lmmy, wheeler Stephanie. Qualitative Research in Nursing. 2nd edition.Oxford: Blackwell Publishing Company; 2002

(Subject code: 20SPHD NUR02)

SUBJECT 2: NURSING CARE PRACTICE

(Common subject)

Unit 1: **Introduction to Nursing and health**

- Definition of Profession and Characteristics
- Definition, concepts, philosophy of Nursing
- Functions, qualities, categories of Nursing practice
- Ethics in Nursing
- Role of Regulatory bodies
- Quality Assurance in Nursing
- Definition of Health, determinants, Health care team, Health care services
- Hospital- types, service, function

Unit 2: **Therapeutic communication and Nurse patient relationship (NPR)**

- Communication- Levels, elements, types, process
- Communication skills- Dimensions and phases of helping relationship
- Nurse patient relationship- Dimensions and phases
- An effective way of communication with the patient, family, health team andvulnerable group
- Patient teaching- Its importance, purpose, process

Unit 3: **Nursing Process Approach**

- Critical thinking and nursing judgment
- Definition, Purpose, characteristics, and elements of the nursing process
- Health Assessment-Identification of health-illness problems by history collection, Physical examination, Nutritional assessment, related investigation, health behaviors
- Nursing diagnosis
- Planning
- Formulation of the Nursing care plan and implementation of care
- Evaluation of Nursing Care

Unit 4:Nursing care of Patient

- Basic needs- Safety devices, Hygiene, comfort, Nutrition, and elimination needs
- Care of wound
- Oxygen administration
- Administration of Medications

Unit 5: **Infection control**

- Nature of Infection, defense mechanism
- Nosocomial infection
- Barrier techniques
- Biomedical waste management

References:

1. Rebbeca Nissanka. Comprehensive textbook of Foundation of nursing. 1st edition.New Delhi: The health science publishers; 2016
2. Lynda Jual carpenito. Nursing diagnosis application to clinical practice. 9th Edition :USA: Lippincott publishers; 2010
3. Sister cecy Correia. Principles and practice of Nursing- Art of Nursing procedures. 1stedition. New Delhi: Jaypee brothers medical publishers Pvt ltd; 2013
4. Sr. Nancy. Principles and practice of nursing- senior nursing procedures and nursingadministration. 4t edition.Indore: NR publishing house; 2008
5. Lippincott Manual of Nursing Practice. 8th edition. USA: Lippincott Williams andWilkins publications; 2006
6. Patrica A Potter. Fundamentals of Nursing. 6th edition, New Delhi: Reed ElsevierIndia Pvt ltd; 2006
7. Marilyan E Doenges. Mary Frances Noorhouse. Alice C Murr. Nursing care plan guidelines for individualizing client care- Across the life span. 7th edition. New Delhi:Jaypee brothers medical publishers Pvt Ltd; 2007

(Subject code: 20SPHD NUR03)

SUBJECT 3: NURSING LEADERSHIP IN HEALTH CARE

(Common to All)

Unit 1: Health program, policies, and issues

- National health policy
- Health care delivery" system in India
- Issues relevant to Nursing practice – Social system and health policy Politics and health policy, health economics and health policy, Health insurance, Law in healthcare delivery
  Advocacy and Lobbying

Unit 2: Nursing Leadership

- Concepts, types, and theories
- Leadership styles
- Characteristics and skills of an effective leader
- Group dynamics
- Stress management

Unit 3: Human Relation

- Human Relations
- Communication Skills

Unit 4: Quality Assurance and Audit

Quality Assurance in Nursing- Code of Ethics, Professional Conduct for Nurses, NursingStandards Nursing Audit

Unit 5: Nursing informatics

- Nursing management information system-Clinical information systems, informationtechnology for nursing
- Computers in Nursing -Computer Systems, Data processing, The internet as a nursingresource
- Utilization of Nursing informatics-Practice Application, Administrative applicationEducational applications, Research applications

References:

1. Sakharkar B.M. Principles of hospital administration and planning. 2nd edition. NewDelhi: Jaypee brothers medical publishers (p) Ltd; 2009.

2. Park. K. Textbook of preventive and social medicine.20th edition. New Delhi: BBpublishers

3. Basavanthappa B.T. Nursing administration. 1st edition. New Delhi: Jaypee brothers medical publishers; 2000

4. Dr. Rebecca Samson. Leadership and management in nursing practice and education.Bangalore: Jaypee brothers medical publishers (p) Ltd; 2009

5. Robbins P.S. Fundamentals of Management Essential Concepts and Applications. 5thedition. New Delhi: published by person education; 2005

6. Sridhar S. Quality assurance in nursing. Indian Journal of Nursing and MidwiferyVol. 2 Sept 1988.

7. Neeraja K P.Textbook of Nursing Education. 3rd edition. New Delhi: JaypeePublications;2005

8. Marquis L. Bessie, Huston J. Carol. Leadership Roles and Management Functions inNursing.3rd Edition. USA: Lippincott Publishers; 2000

9. Agarwal J C. Development of Planing and modern education. 8th revised edition.Bangalore: Vikas publishing house Pvt Ltd; 2008

(Subject code: 20SPHD NUR041)

SUBJECT 4: PAEDIATRIC NURSING

Unit 1: Philosophy of Nursing Science and Theoretical Perspectives

- Nursing ethics-Code of ethics, professional conduct for nurses in India, Professionalstandards and quality assurance
- Nursing theories: Historical overview, classification, Importance of theory in nursing,Domains of nursing, Paradigms of nursing, Issues in theory development in Nursing

Unit 2: Neonatal nursing

- Assessment
- Neonatal disorders
- Care of high-risk newborn
- Immunization

Unit 3 : Growth & development in children

- Principles, assessment & theories of growth & development
- Developmental milestones from infancy to adolescent
- Behavioral problems and their management
- Child guidance clinic
- Nutritional programs, nutritional requirements

Unit 4: Childhood Disorders

- Nutritional deficiency disorders
- Disorders of the GI system
- Disorders of the Respiratory system

Unit 5: Intensive care of pediatrics

- Care of the child in ventilator
- Nutritional needs of the critically ill child
- Resuscitation
- Legal & ethical issues
- Intensive care procedures & techniques
- Care of the challenged child
- Pediatric drugs
- Education & training in pediatric nursing

References:

1. Marlow. D.R and Redding B.A. Text Book of Pediatric Nursing. .6th Edition.Philadelphia: Saunders;2006

2. Ghai.O.P. Gupta P and Paul V.K.Essential Pediatrics.6th Edition.Delhi: Dr.O.P.Ghai.2005 pg

3. Gupta.S. The Short Text Book of Pediatrics. 10th edition. NewDelhi; Jaypee Brothers;2004.

4. Singh Meharban.Care of the newborn.6th edition. New Delhi:Sagar publications;.2004

5. Wong DL and Hockenberry MJ. Wong's nursing care for infants and children.7thedition. Missouri: Mosby publications; 2006.

6. Ball. J. W, Bindler. R.C. Pediatric nursing caring for children. 4th edition. New Delhi:Pearson education; 2009

(Subject code: 20SPHD NUR042)

SUBJECT 4: COMMUNITY HEALTH NURSING

Unit 1: Philosophy of Nursing Science and Theoretical Perspectives

- Nursing ethics-Code of ethics, professional conduct for nurses in India, Professionalstandards and quality assurance
- Nursing theories: Historical overview, classification, Importance of theory in nursing,Domains of nursing, Paradigms of nursing, Issues in theory development in Nursing
- Regulatory bodies: INC, SNRC acts, constitution, functions
- Professional bodies
- Continuing nursing education

Unit 2: Introduction to Health Economics

- Concept of health economics
- The focus of health economics
- Areas of health economics
- The economics of health and health care services and economic development
- Causes of health problem in India

Unit 3: Population dynamics

- Demography
- National population programs
- Research census
- National / Family health survey
- National health and welfare programs
- Five-year plans

Unit 4: Health

- School health
- Occupational health
- Community rehabilitation
- Community mental health
- Epidemiological approach

Unit 5: Health care delivery system: Urban, Rural, tribal areas

- Health organization: National, district, state, CHC, PHC, sub-center, village-functions, staffing pattern
- The alternative system of medicine
- Health agencies
- Challenges of the health care delivery system

References:

1. Basavanthappa B.T. Community Health Nursing.1st Ed. New Delhi: Jaypee Publication ; 2003.

2. Park K. Preventive and Social Medicine. 19thedition. Jabalpur: M/s Banarsidas . Bhanot Publishers; 2007

3. Gulani K. K. Community Health Nursing.1 st Ed. New Delhi: Kumar publishers; 2005.

4. Kamalamma S. Essentials in Community Health Nursing Practice.1 st Ed. New Delhi: Jaypee publication; 2005.

COURSE WORK SYLLABUS FOR ALLIED HEALTH SCIENCE

(Subject code: 18SPHDAH01)

RESEARCH METHODOLOGY

(COMMON TO ALL STUDENTS)

MODULE 1 - Introduction to research methodology

Types of research; Descriptive vs. Analytical, Applied vs. Fundamental, Quantitativevs. Qualitative, Conceptual vs. Empirical, Some Other Types of Research

MODULE 2 – Study Designs-Observational Studies

Epidemiological study designs; Observational studies, Descriptive studies; Case reports, Case series, Analytical studies; Case control studies, Cohort studies, Cross sectional

MODULE 3- Experimental Studies

Experimental studies (Intervention studies); Randomized control trials (Clinical trials), Field trials, CommMODULEy trials.

MODULE 4- Uses of Epidemiology

MODULE 5- Application of study Designs in Medical Research

REFERENCES

1. K.R. Sundaram, S.N. Dwivedi and V Sreenivas (2010): Medical statistics, principlesand methods, BI Publications Pvt Ltd, New Delhi
2. NSN Rao and NS Murthy (2008): Applied Statistics in Health Sciences, SecondEdition, Jaypee Brothers Medical Publishers (P) Ltd.
3. J.V. Dixit and L.B. Suryavanshi (1996): Principles and practice of biostatistics, FirstEdition, M/S Banarsidas Bhanot Publishers.
4. Getu Degu and Fasil Tessema (2005): Biostatistics, Ethiopia Public Health Training Initiative.
5. Essentials of CommMODULEy Medicine for Allied Health Sciences, JSS UniversityPublications, 20

6. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: Banarsidas Bhanot Publishers; 2015. p.135-141

7. Suryakantha. Textbook of CommMODULEy medicine with recent advances. 3rd edition.

8. Bhalwar R. Textbook of Public Health and CommMODULEy Medicine.2nd Edition. Pune: Department of CommMODULEy Medicine AFMC; 2012

9. Leon Gordis. Epidemiology Fourth Edition – Elsevier Saunders Publication

Common Subject 2- HEALTH CARE

MODULE 1 - Introduction to Health

Definition of Health, Determinants of Health, Health Indicators of India, Health Team Concept. National Health Policy National Health Programmes (Briefly Objectives and scope) Population of India and Family welfare programme in India

MODULE 2 -Introduction to Nursing

What is Nursing ? Nursing principles. Inter-Personnel relationships. Bandaging : Basic turns; Bandaging extremities; Triangular Bandages and their application.

Nursing Position, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, Aids and rest and sleep.

MODULE 3 -Lifting And Transporting Patients: Lifting patients up in the bed. Transferring from bed to wheel chair. Transferring from bed to stretcher.

Bed Side Management**:** Giving and taking Bed pan, Urinal : Observation of stools, urine. Observation of sputum, Understand use and care of catheters, enema giving.

MODULE 4 -Methods Of Giving Nourishment: Feeding, Tube feeding, drips,

transfusionCare of Rubber Goods , Recording of body temperature, respiration and pulse,

Simple aseptic technique, sterlization and disinfection.

MODULE 5 - Surgical Dressing: Observation of dressing procedures

First Aid **:** Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.

Common Subject 3 - MICROBIOLOGY

MODULE 1 - Morphology Classification of microorgaisms, size, shape and structure ofbacteria. Use of microscope in the study of bacteria.

Growth and nutrition Nutrition, growth and multiplications of bacteria, use of culture mediain diagnostic bacteriology.

MODULE 2 - Sterilisation and Disinfection 4 hours Principles and use of equipments of sterlization namely Hot Air oven, Autoclave and seruminspissrator. Pasteurization, Anti septic and disinfectants. Antimicrobial sensitivity test

Immunology ImmMODULEy Vaccines, Types of Vaccine and immunization schedule Principles and interpretation of commonly done serological tests namely Widal, VDRL, ASLO, CRP, RF & ELISA. Rapid tests for HIV and HbsAg(Technical details to be avoided)

MODULE 3 - Systematic Bacteriology Morphology, cultivation, diseases caused ,laboratorydiagnosis including specimen collection of the following bacteria(the classification, antigenic structure and pathogenicity are not to be taught) Staphyloccci, Streptococci, Pneumococci, Gonococci, Menigococci, C diphtheriae, Mycobacteria, Clostridia, Bacillus,Shigella, Salmonella, Esch coli, Klebsiella, Proteus,vibriocholerae, Pseudomonas & Spirochetes

Parasitology morphology, life cycle, laboratory diagnosis of following parasites E. histolytica, Plasmodium, Tape worms, Intestinal nematodes

MODULE 4 - Mycology Morphology, diseases caused and lab diagnosis of following fungi.Candida, Cryptococcus, Dermatophytes ,opportunistic fungi.

Virology General properties of viruses, diseases caused, lab diagnosis and prevention offollowing viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.

MODULE 5 - Hospital infection Causative agents, transmission methods, investigation,prevention and control Hospital infection.

Principles and practice Biomedical waste management

(Subject code: 18SPHDAH04)

MLT Subject-BIOCHEMISTRY

MODULE 1 - Fundamental Chemistry

- Valency, Molecular weight & Equivalent weight of elements and compounds. Normality,Molarity, Molality

MODULE 2 - Acids, Bases, Salts and Indicators

- Basic concepts. Determination of pH – Henderson Hasselbalch's equation.Buffersolutions. Ph.D.etermination of buffers. Blood pH.Fluid buffers.

MODULE 3 - Introduction to General Bio-molecules:

- Chemistry of carbohydrates: Classification, Functions ofcarbohydrates
- Chemistry of amino acids: Classification–based on structure and nutritional requirement,
  Occurrence.Functions of amino acids.
- Chemistry of lipids: Classification of lipids and fatty acids. Functions of lipids
- Chemistry of nucleotides: Purine and Pyrimidine bases. Composition of nucleosides and
  Nucleotides.Occurrence of bases.

MODULE 4 - MODULEs of measurement

• Metric system. Common laboratory measurements, Prefixes in metric system

• International system of MODULEs- SI MODULEs- definition, classification, Conversion of conventional and SI MODULEs.

MODULE 5 - Solutions: Definition, use, classification where appropriate, preparation and storage

• Stock and working solutions.

• Molar and Normal solutions of compounds and acids. (NaCl, NaOH, HCl, H2SO4, H3PO4, CH3COOH etc.,)

• Preparation of percent solutions – w/w, v/v w/v (solids, liquids and acids), Conversion of a

percent solution into a molar solution

- Saturated and supersaturated solutions

- Standard solutions - Technique for preparation of standard solutions and Storage. E.g: glucose,albumin etc.
- Dilutions - Diluting Normal , Molar and Percent solutions. Preparing working standard from stock standard.

Part dilutions: Specimen dilutions. Serial dilutions, Reagent dilution,. Dilution factors

(Subject code: 18SPHDAH05)

RCT SUBJECT- RESPIRATORY CARE TECHNOLOGY

MODULE 1 - Respiratory Care Technology - Clinical

Symptoms of respiratory diseases • Cough, Haemoptysis, dyspnoea, cyanosis Concept of disease, clinical Evaluation and management of the following Respiratory Diseases • Acute Rhimitis • Acute sinusits • Acute pharynagitis • Larynogo tracheitis • Epiglotitis

Lower respiratory tract infection • Bronchietis • Pneumonia – comm MODULEy acquired, hospital acquired • Innuno comprmised host • Lung abscess • Atypical pnecemia • Common viral and fungal lower respiratory • Pulmonary tuborcuiosis • Tropical consinophelia • Acute obstructive pulmonary diseases and acute respiratory failure • Pulmonary oedema • Acute lung injury • Toxic inhalation • Bronchial asthma and other types of chronic obstructive pulmonary disease

MODULE 2 - Oxygen therapy (rationale for oxygen therapy, precautions assessment of need and adequacy and therapy and the relevant devices) • Causes and responses to hypoxemia • Clinical signs of hypoxemia • Geals of oxygen therapy • Oxygen therapy devices • Hazards of oxygen therapy • Uses of humidification • Possible of inadequate humidification • Possibleresults if leained airway • Types of humidifies (including active and passive methods of humidification) • Goals of aerosol therapy • Hazards of aerosol therapy • Assessment of aerosol therapy • Factors influencing aerosol deposition in the lungs • Particle deposition

• Aerosol generators , Nebulisers and metered dose inhaler • Types of nebulisers • Aerosol output • Small volume nebuliser therapy-definition, physiological rationale Gas Analysers (Oxygen ,Carbon - Dioxide) • Gas analysis • Transcutaneos oxygen monitors • pulse oximeters • Capnography

Manual Resuscitators • types of resuscitator bags, bruits airway • Indications • Hazards

Artificial air way (oral and Nasal Endotracheal tubes tracheostomy tubes) • Parts of airway and features • Types sizes and method of insertion • Indications for use • Care of long term airway and complications • Face mask - types sizes and its usage

MODULE 3 - Respiratory Care Technology - Applied

Principles of mechanical ventilation -Airway resistance, lung compliance, dead space Ventilation, ventilatory failure, oxygenation failure, clinical conditions leading to mechanical ventilation. Operating modes of mechanical ventilation. Monitoring in mechanical ventilation- concepts of monitoring, vital signs, chest inspection and auscultation, fluid electrolyte balance, arterial blood gases, oxygen and end tidal carbon dioxide monitoring Management of mechanical ventilation-strategies to improve ventilation, improve oxygenation, acid base electrolyte balance and their correction. Fluid electrolyte nutrition balance and management. Troubleshooting of ventilator alarms and events, care of the ventilation circuit, care of the artificial airway. Pharmacotheraphy for mechanical ventilation

MODULE 4 - This includes drugs for improving ventilation, steroids, MDI medications, neuromuscular blocking agents like nitric oxide, propafol and Anaesthetic gases Effect of PEEP- Pulmonary considerations, effects on the cardiovascular system, Haemodynamics, renal neurological considerations. Basic ventilator waveform analysis. Haemodynamics monitoring; ECG arterial catheter, CVP , pulmonary artery catheter, Cardiac output and vascular resistance calculation, Preload after load contractility assessment, calculation of haemodynamic values, monitoring of mixed venous saturation Classification of mechanical ventilators- Ventilator classification, ventilatory work, drive mechanism, control circuits, control variables, phase variables, output waveform, alarm system. Airway management in mechanical ventilation-intubation, common artificial airways, intubation procedures, management of endotracheal and tracheostomy tubes, extubation, complications of the above. Tracheostomy minitracheostomy Endotracheal intubation Humidification

MODULE 5 -Respiratory Care Technology - Advanced

Initiation of mechanical ventilation- indications, contraindication, initial Ventilator settings, Ventilator alarm settings, hazards and complications Weaning from mechanical ventilation-weaning and its failure, weaning criteria and indices, weaning procedure, signs, causes of weaning failure. Neonatal mechanical ventilation - intubation and problems inherent to the neonate, surfactant replacement therapy, basic principles of neonatal ventilation, modes, initiation and maintenance, high frequency ventilation, liquid ventilation Clinical situations with case studies of mechanical ventilation and management. Noninvasive positive pressure ventilation - introduction, terminology, indications, CPAP, bi-level PAP , Home mechanical ventilation-goals, indications, patient selection, equipment selection. Miscellaneous -

barotraumas, transport during ventilation, hyperbaric therapy, caissons disease and high altitude sickness, sleep apnea and related disorders, drug overdosaging and poisoning requiring ventilation and their therapy, pulmonary edema, drowning, oxygen toxicity.

SRINIVAS UNIVERSITY
COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Computer Science & EngineeringScheme and the Subjects of Ph.D.

Course Work

S. No.	Subject Code	Subject Title	Credits	Marks
1	18SPHDRM	Research Methodology	4	100
2	20SPHDCS01	Data Warehousing and Mining	4	100
3	20SPHDCS02	Digital Image Processing	4	100
4	20SPHDCS03	Advanced Networking	4	100
Total			**16**	**400**

Scheme of Examination

Continuous Internal Assessment: 50 Marks	Assignment (Minimum 30 pages, Hand written)
End Semester Examination: 50 Marks (5 x 10 = 50)	One question from each module with internal choice. Each question carries 10 marks.

2. DATA WAREHOUSING AND MINING
20SPHDCS01

Module 1: Data Warehousing Introduction – Definition - Architecture - Warehouse Schema - Warehouse server OLAP operations. Data Warehouse technology – Hardware and operating system - Warehousing Software - Extraction tools – Transformation tools – Data quality tools – Data loaders – Data Access and retrieval tools – Data Modeling tools – Fact tables and dimensions. Data warehousing case studies: Data warehousing in Government, Tourism, Industry, Genomics data. Information Retrieval - Introduction – Role of IR – Information Retrieval systems
- IR Applications Areas – IR Algorithms – Retrieval algorithms – Filtering algorithms – Indexingalgorithms - Evaluation in Information Retrieval.

Module 2: Data Mining definition – DM Techniques – current trends in data mining - Different forms of Knowledge – Data selection, cleaning, Integration, Transformation, Reduction and Enrichment. Data: Types of data - Data Quality - Data Preprocessing – Measures of similarity anddissimilarity. Exploration: Summary statistics – Visualization.

Module 3: Association rules: Introduction – Methods to discover association rule – Apriori algorithm Partition Algorithm – Pincher search algorithm – Dynamic Item set algorithm – FP Treegrowth algorithm. Classification: Decision Tree classification – Bayesian Classification- Classification by Back Propagation.

Module 4: Clustering Techniques: Introduction – Clustering Paradigms – Partitioning Algorithms
– K means & K Mediod algorithms – CLARA – CLARANS – Hierarchical clustering – DBSCAN
– BIRCH – Categorical Clustering algorithms – STIRR – ROCK – CACTUS. Introduction to machine learning – Supervised learning – Unsupervised learning – Machine learning and data mining. Neural Networks: Introduction – Use of NN – Working of NN Genetic Algorithm: Introduction – Working of GA.

Module 5: Web Mining: Introduction – Web content mining – Web structure mining – Web usagemining – Text mining – Text clustering, Temporal mining - Spatial mining – Visual data mining –Knowledge mining – Case Studies using R and Python - Analysis and Forecasting of House Price Indices, Customer Response Prediction and Profit Optimization, Predictive Modeling of Big Datawith Limited Memory, Twitter Information Diffusion.

Reference Books:

1. C.Charu Agarwal, "Data Mining : The Text Book ", Springer, 2015.
2. Han, Jiawei, Jian Pei, and Micheline Kamber, “Data mining: concepts and techniques”, 3rdEdition, Elsevier, 2011.
3. Margaret H. Dunham, "Data Mining: Introductory and Advanced Topics", Pearson Education,2012.
4. Bing Liu, “Web Data Mining: Exploring Hyperlinks, Content, and Usage Data”, 2nd Edition,Springer, 2011.
5. Christopher D.Manning, Prabhakar Raghavan and Hinrich Schütze, “Introduction toInformation Retrieval”, Cambridge University Press. 2008.
6. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, “Introduction to Data Mining”, 2007.
7. Stefan Büttcher, Charles L. A. Clarke, Gordon V. Cormack, "Information Retrieval: Implementing and Evaluating Search Engines", MIT Press, 2010.

3. DIGITAL IMAGE PROCESSING
20SPHDCS02

Module 1: Digital Image Processing: Origins of Digital Image Processing, Steps in Digital ImageProcessing, Digital Image Fundamentals: Elements of Visual Perception, Light and the Electromagnetic Spectrum, Image Sensing and Acquisition, Image Sampling and Quantization, Basic Relationships between Pixels, Mathematical Tools used in Digital Image Processing.

Module 2: Image Transformation & Filters: Basic Intensity Transformation Functions, HistogramProcessing, Fundamentals of Spatial Filtering, Smoothing Spatial Filter, Sharpening Spatial Filters, Combining Spatial Enhancement methods, Fuzzy techniques for Intensity Transformation and Spatial Filtering. Fuzzy Similarity Measure, Measure of Fuzziness, and Entropy, Thresholding Detection in Fuzzy Images, Fuzzy Match-based Region Extraction, Fuzzy Edge Detection, Fuzzy Content-Based Image Retrieval. Filtering in the Frequency Domain: Preliminary Concepts, Sampling and the Fourier Transforms of Sampled Functions, The Discrete Fourier Transform (DFT), Properties of the 2-D DFT, Filtering in the Frequency Domain, Image Smoothing and Sharpening using Frequency Domain Filters, Selective Filtering.

Module 3: Image Restoration, Reconstruction and Image Segmentation: Image Degradation/ Restoration process, Noise Models, Restoration in the presence of Noise only-Spatial Filtering, Periodic Noise Reduction by Frequency Domain Filtering, Linear, Position-Invariant Degradations, Estimating the Degradation Functions, Inverse Filtering, Wiener Square Error Filtering, Constrained Least Square Filtering, Geometric Mean Filter, Image Reconstruction from Projections. Image Segmentation: Point, Line and Edge Detection, Thresholding, Region-Based Segmentation, Segmentation Using Morphological Watersheds, Use of Motion in Segmentation.

Module 4: Color Image Processing: Color Fundamentals, Color Models, Pseudocolor Image Processing, Full Color Image Processing, Color Transformation, Smoothing and Sharpening, Image Segmentation Based on Color, Noise in Color Images. Wavelets and Multiresolution Processing: Multiresolution Expansion, Wavelet Transforms in One Dimension, The Fast Wavelet Transforms, Wavelet Transforms in Two Dimensions, Wavelet Packets. Image Compression: Fundamentals, Basic Compression Methods, Digital Image Watermarking.

Module 5: Morphological Image Processing: Erosion and Dilation, Opening and Closing, The Hit-Or-Miss Transformation, Basic Morphological Algorithms, Gray-Scale Morphology. Representation and Description: Representation, Boundary Descriptors, Regional Descriptors, Use of Principal Components for Description, Relational Descriptors. Object Recognition: Patterns and Pattern Classes, Recognition Based on Decision-Theoretic Methods, Structural Methods.

Reference Books:

1. Rafael C Gonzalez and Richard E. Woods, *Digital Image Processing*, PHI, 2005.
2. S. Sridhar, *Digital Image Processing*, Oxford University Press India, 2011.
3. A.K. Jain, *Fundamentals of Digital Image Processing*, Pearson, 2004.
4. Scott E. Umbaugh, *Digital Image Processing and Analysis*, CRC Press, 2014.
5. S. Jayaraman, S. Esakkirajan, T. Veerakumar, *Digital Image Processing*, McGrawHill, 2013.
6. Anthony Scime, *Web Mining Applications and Techniques*, Idea Group Publishing, 2005.

4. ADVANCED NETWORKING
20SPHDCS03

Module 1: Telecommunication systems: GSM services – subsystem – system architecture - Handover - DECT system architecture – TETRA – UMTS system architecture – UTRAN – CDMA2000 - GPRS : system architecture – 802.11 system architecture - Bluetooth system architecture – IrDa protocol – ZigBee architecture – HSPA.

Module 2: ADHOC Wireless Network : Ad Hoc Wireless Network –MAC protocol – issues in MAC protocol – Routing protocols – issues in Routing protocol - Transport Layer Protocol - issuesin transport protocol - QOS – Energy Management – Security in Adhoc network.

Module 3: Wireless Sensor Network : Architecture and Design – Medium Access Control – Routing – Transport Layer – power management – sensor localization – clock synchronization - Energy model Issues in wireless sensor network.

Module 4: LTE and Advanced LTE pro – network architecture and interface – FDD air interfaceand radio network TD LTE air interface – network sharing – MOCN – MORAN - LTE security architecture – scheduling - VoLTE –VoWifi – Mission critical communication.

Module 5: 5G Technologies – overview – Non Orthogonal Multiple Access for 5G Systems Millimeter Wave Communications for 5G Networks – Visible Light Communication in 5G – Massive MIMO Scheduling Protocols – Cellular 5G Access for Massive Internet of things.

Reference Books:

1. Jochen Schiller , *Mobile Communication*, Pearson, Second Edition, 2009.
2. Fei Hu and Xiaojun Cao, *Wireless Sensor Networks Principles and Practice*, CRC Press, 2010.
3. C. Siva Ram Murthy and B.S. Manoj, *Ad Hoc Wireless Networks – Architectures and Protocols*, Pearson Education, Second Edition
4. Martin Sauter, *From GSM to LTE Advanced PRO and 5G – An Introduction to Mobile Networkand Mobile Broadband*, Third edition, Wiley, 2017.
5. Vinod W Wrong , Robert Schober, Derrick Wing Kwanng mLi Chun Wang, *Key Technologiesfor 5G Wireless Systems*, Cambridge University Press, 2017

SRINIVAS UNIVERSITY

COLLEGE OF ENGINEERING AND TECHNOLOGY

Electronics and Communication Engineering

Scheme and the Subjects of Ph.D. Course Work

Sl.No	Subject Code	Subject Title	Credits	Marks
1	18PHDRM	Research Methodology	4	100
2	20SPHDEC01	Advanced Embedded System	4	100
3	20SPHDEC02	Automotive Electronics	4	100
4	20SPHDEC03	Cryptography And Network Security	4	100
Total				400

Scheme of Examination

Continuous Internal Assessment: 50 Marks (30 + 20 = 50)	1. Department level presentations (2): 15 + 15 = **30**, 2. Assignments (1): **20**.
End Semester Examination: 50 Marks (5 x 10 = 50)	One question from each module with internalchoice. Each question carries 10 marks.

ADVANCED EMBEDDED SYSTEM

20SPHDEC01

Module -1

Embedded System: Embedded vs General computing system, classification, application and purpose of ES. Core of an Embedded System, Memory, Sensors, Actuators, LED, Optocoupler, Communication Interface, Reset circuits, RTC, WDT, Characteristics and Quality Attributes of Embedded Systems (Selected Topics from Ch -1, 2, 3 of Text 1).

Module -2

Hardware Software Co-Design, embedded firmware design approaches, computational models, embedded firmware development languages, Integration and testing of Embedded Hardware and firmware, Components in embedded system development environment (IDE), Files generated during compilation, simulators, emulators and debugging (Selected Topics From Ch-7, 9, 12, 13 of Text 1).

Module -3

ARM-32 bit Microcontroller: Thumb-2 technology and applications of ARM, Architecture of ARM Cortex M3, Various Units in the architecture, General Purpose Registers, Special Registers, exceptions, interrupts, stack operation, reset sequence (Ch 1, 2, 3 of Text 2).

Module -4

Instruction Sets: Assembly basics, Instruction list and description, useful instructions, Memory Systems, Memory maps, Cortex M3 implementation overview, pipeline and bus interface (Ch-4, 5, 6 of Text 2).

Module -5

Exceptions, Nested Vector interrupt controller design, Systick Timer, Cortex-M3 Programming using assembly and C language, CMSIS (Ch-7, 8, 10 of Text 2).

Text Books: 1. K. V. Shibu, "Introduction to embedded systems", TMH education Pvt. Ltd. 2009.

2. Joseph Yiu, “The Definitive Guide to the ARM Cortex-M3”, 2nd edn, Newnes, (Elsevier), 2010.

Reference Book:

1. James K. Peckol, "Embedded systems- A contemporary design tool", John Wiley, 2008

Automotive Electronics

20SPHDEC02

Module -1 Automotive Fundamentals, the Systems Approach to Control and Instrumentation:

Use Of Electronics In The Automobile, Antilock Brake Systems, (ABS), Electronic steering control, Power steering, Traction control, Electronically controlled suspension. (Chap.1 and 2 of Text)

Module -2 The basics of Electronic Engine control: Integrated body: Climate controls, Motivation for Electronic Engine Control, Concept of An Electronic Engine Control System, Definition of General Terms, Definition of Engine Performance Terms, Electronic fuel control system, Engine control sequence, Electronic Ignition(Chap. 5 of Text)

Module -3 Sensors and Actuators, Applications of sensors and actuators, air flow rate sensor, Indirect measurement of mass air flow, Engine crankshaft angular position sensor, Automotive engine control actuators, Digital engine control, Engine speed sensor ,Timing sensor for ignition and fuel delivery, Electronic ignition control systems, Safety systems, Interior safety, Lighting, Entertainment systems.(Chap.6 of Text).

Module -4 Vehicle Motion Control and Automotive diagnostics: Cruise control system, Digital cruisecontrol, Timing light, Engine analyzer, On-board and off-board diagnostics, Expert systems. Stepper motor based actuator, Cruise control electronics, Vacuum – antilock braking system, Electronicsuspension system Electronic steering control, Computerbased instrumentation system, Sampling and Input\output signal conversion, Fuel quantity measurement, Coolant temperature measurement, Oil pressure measurement, Vehicle speed measurement, Display devices, Trip-Information-

Computer, Occupant protection systems. (Chap. 8 and 10 of Text)

Module -5 Future automotive electronic systems: Alternative Fuel Engines, Collision Wide Range Air/Fuel Sensor, Alternative Engine, Low Tire Pressure Warning System, Collision avoidance Radar Warning Systems, Low Tire Pressure Warning System, Radio Navigation, Advance Driver information System. Alternative-Fuel Engines, Transmission Control , Collision Avoidance Radar Warning System, Low Tire Pressure Warning System, Speech Synthesis Multiplexing in Automobiles, Control Signal Multiplexing, Navigation Sensors, Radio Navigation, Sign post Navigation , Dead Reckoning Navigation Future Technology, Voice Recognition Cell Phone DialingAutomatic Driving Control. (Chap. 11 of Text)

Text Book:

1. William B. Ribbens, "Understanding Automotive Electronics", SAMS/Elsevier publishing, 6thEdition, 1997.

Reference Book:

1. Robert Bosch Gmbh,"Automotive Electrics and Automotive Electronics- Systems and Components, Networking and

Hybrid Drive", Springer Vieweg, 5th Edition, 2007.

CRYPTOGRAPHY AND NETWORK SECURITY
20SPHDEC03

Module -1 Foundations: Terminology, Steganography, substitution ciphers and transpositions ciphers, Simple XOR, One-Time Pads, Computer Algorithms (Text 2: Chapter 1: Section 1.1 to 1.6) SYMMETRIC CIPHERS: Traditional Block Cipher structure, Data encryption standard (DES), The AES Cipher. (Text 1: Chapter 2: Section2.1, 2.2, Chapter 4)

Module -2 Introduction to modular arithmetic, Prime Numbers, Fermat's and Euler's theorem, primality testing, Chinese Remainder theorem, discrete logarithm. (Text 1: Chapter 7: Section 1, 2, 3, 4, 5) Principles of Public-Key Cryptosystems, The RSA algorithm, Diffie - Hellman Key Exchange,
Elliptic Curve Arithmetic, Elliptic Curve

Cryptography (Text 1: Chapter 8, Chapter 9:

Section 9.1, 9.3, 9.4)

Module -3 Pseudo-Random-Sequence Generators and Stream Ciphers: Linear Congruential Generators, Linear Feedback Shift Registers, Design and analysis of stream ciphers, Stream ciphers using LFSRs, A5, Hughes XPD/KPD, Nanoteq, Rambutan, Additive generators, Gifford, Algorithm M, PKZIP

(Text 2: Chapter 16)

Module -4 One-Way Hash Functions: Background, Snefru, N-Hash, MD4, MD5, Secure Hash Algorithm [SHA],One way hash functions using symmetric block algorithms, Using public key algorithms, Choosing a one-way hash functions, Message Authentication Codes. Digital Signature Algorithm, Discrete Logarithm Signature Scheme

(Text 2: Chapter 18: Section 18.1 to 18.5, 18.7, 18.11 to 18.14 and Chapter 20: Section 20.1, 20.4)

Module -5 E-mail Security: Pretty Good Privacy-S/MIME (Text 1: Chapter 17: Section 17.1, 17.2). IP Security: IP Security Overview, IP Security Policy, Encapsulation Security Payload (ESP), Combining security Associations. (Text 1: Chapter 18: Section 18.1 to 18.4). Web Security: Web Security Considerations, SSL

(Text 1: Chapter 15: Section 15.1, 15.2).

Text Books:

1. William Stallings , "Cryptography and Network Security Principles and Practice", PearsonEducation Inc., 6th Edition, 2014, ISBN: 978-93-325-1877-3
2. Bruce Schneier, "Applied Cryptography Protocols, Algorithms, and Source code in C", WileyPublications, 2nd Edition, ISBN: 9971-51-348-X

Reference Books:

1. Cryptography and Network Security, Behrouz A. Forouzan, TMH, 2007.

2. Cryptography and Network Security, AtulKahate, TMH, 2003.

Srinivas University

College of Engineering and Technology, PhD

Coursework Courses (Basic Science Board)

Mukka, Mangaluru

1. Advanced Fluid Mechanics and Magneto hydrodynamics (20SPHDMA01)	
Exam Hours: 2 hours	**Exam Marks(Maximum):50**
Module-1	
Real fluids and ideal fluids, velocity of fluid at a point, streamlines, pathlines, streamlines, velocity potential, vorticity vector, local and particle rate of change, equation of continuity, irrotational and rotational motion, acceleration of fluid, conditions at rigid boundary. Euler's equation of motion, Bernoulli's equation, axially symmetric flows, impulsive motion.	
Module-2	
Kelvin's Theorem of circulation, equation of vorticity. Three dimensional flows, sources, sinks and doublets, images in rigid planes, images in solid sphere. Stoke's stream function.	
Module-3	
Viscous Flows: Stress components, Stress and strain terror, Coefficient of viscosity and Laminar flow, Plane Poiseuille flows and Couette flow. Flow through tubes of uniform cross section in the form of circle, Ellipse, equilateral triangle, annulus, under constant pressure gradient, steady flow past a fixed sphere. Dimensional analysis, Reynolds numbers, Prandtl's boundary layer, Boundary layer	
Module-4	
Non-Newtonian fluids, rheological classification , time dependent, thyrotrophic, viscoelastic fluids, constitution of blood, viscosity of blood, steady non- Newtonian fluid flows in circular tubes, Fahraeus- Lindqvist effect, Pulsative flow in circular rigid tube, flow through artery with stenosis, Peristaltic flow in a tube, long wave lengthapproximation.	
Module-5	
Basic equations of MHD including Faraday's laws and constitutive laws. Magnetic induction equation – Lorentz force – MHD approximations. Non-dimensional numbers – velocity, temperature and magnetic field boundary conditions. Hartmann flow – isothermal boundary conditions – temperature distribution in Hartmann flow – Hartmann couette flow. Classical MHD and Alfven's wave, Alfven's theorem, Frozen – n – phenomenon and equipartition of energy by Alfven'swaves.	
Textbook/Reference Books	

Srinivas University,

College of Engineering and Technology, PhD Coursework Courses

(Basic Science Board)

Mukka, Mangaluru

1	An Introduction to Fluid Mechanics	Batchelor, G. K.	Cambridge UniversityPres	Kindle Ed.,
2	Ideal and Incompressible Fluid Dynamics	M.E. O'Neill and F. Chorlton	Ellis Horwood	Digital Ed., 2007
3	Mathematical Models in Biology and Medicine	J.N.Kapur	Affiliated East-West	1st Ed., 1985
4	An Introduction to Magnetohydrodynamics	P.A.Davidson	Cambridge UniversityPres	2nd Ed.,
5	A Text Book of Fluid Mechanics	R.K.Bansal	Laxmi Publications	1st Ed., 2008

Srinivas University,
College of Engineering and Technology, PhD
Coursework Courses (Basic Science Board)
Mukka, Mangaluru

2. Advanced Graph Theory (20SPHDMA02)

Exam Hours: 2 hours	**Exam Marks(Maximum):50**

Module-1

Varieties of graphs, walks and connectedness, degrees, intersection graphs, operations on graphs. Cut points, bridges and blocks, block graphs and cutpoint graphs.

Trees - characterization of trees, centers and centroids, block cutpoint trees, independent cycles and cocycles, Matroids.

Module-2

Connectivity and line connectivity, Graphical variations of Menger's theorem, Partitions Eulerian and Hamiltonian graphs, Line graphs, properties and characterizations of line graphs, line graphs and transversability, Total graphs.

Module-3

Coverings and independence, critical points and lines, Planes and planar graphs, outerplanar graphs, Kurtowski's theorem.

Module-4

Colorability, the chromatic number, Five color theorem, Four color conjencture,The Heawood map coloring theorem, Uniquely colorable graphs, critical graphs. The adjacency matrix, incidence matrix, cycle matrix.

Module-5

Digraphs – digraphs and connectedness, directional dualty and acyclic digraphs, digraphs and matrices.

Textbook/Reference Books

1	GraphTheory	Reinhard Deistel	Springer	5th Ed., 2017
2	GraphTheorywithApplicationstoEngineeringandComputerScience	N.Deo	PHI	1st Ed., th
3	GraphTheory	F.Harary	AdditionWesleyReadingMA	1st Ed., 1969
4	GraphTheory	J.A.Bondy & U.S.R.Murthy	North-Holland	1st Ed.,(5th Print), 1982
5	GraphTheory and Applications	G.Appasami	Sarumathi Publications	1st Ed., 2016

College of engineering and technology, PhD Coursework Courses (Basic Science Board) Mukka, Mangaluru

Advanced numerical methods (20SPHDMA03

Exam Hours: 2 hours	**Exam Marks(Maximum):50**

Module-1

High Speed Computation

Introduction, Computer arithmetic, Errors and computation in numerical techniques, General error formulaand error in series approximations. Machine computation and computer software.

Transcendental and Polynomial Equations

Introduction, Newton-Raphson method, Secant and Regula falsi method , rate of convergence, Newton- McAuleymethodformultipleroots.Birge–Vietamethod,Bairstowmethod,Graffe'srootsquaringmethod.

Module-2

System of Linear Algebraic Equations and Eigen valueProblems

Introduction. Consistency, Rank of a matrix, Gaussian elimination, LU decomposition, Gauss-Seidel and Successive Over Relaxation methods, Tri-diagonal system of equations

Module-3

Interpolation and Approximation

Introduction, Lagrange and Newton Interpolations, Interpolating polynomials - piecewise polynomial interpolation, Spline's interpolation formula, Hermite Interpolation, Bivariate Interpolation, least square approximations. **Numerical integration:**Newton's cotes formula, Simpson's rules, Weddle's rule, Gaussian

Module-4

Ordinary Differential Equations: Boundary Value Problems

Initial Value and boundary value problems, Runge – Kutta's Method of order IV for 1st and 2nd order ordinary differential equations. System of equations predictor – corrector formulae, Shooting method and

Module-5

Partial Differential Equations

Finitedifferenceapproximationtoderivatives.Laplaceequation–Jacobi,Gauss-SeidelandSORmethods,ADI

Textbook/Reference Books

1	NumericalMethodsforScientificandEngg.Computation	M.K.Jain,S.R.K.Iyengarand R.K. Jain	New Age International	6th Ed.,2012
2	Numerical Methods for Engineers	S. C. Chapra and	McGraw-Hill	7th Ed., 2015
3	Introductory Methods of Numerical Analysis	S. S. Sastry	PHI	4th Ed.,2011
4	Elements of Numerical Analysis	R.S.Gupta	Oxford Univ. Press	2nd Ed.,2015
5	Introduction to Numerical Analysis	F.B.Hilderbrand	Dover Publications	2nd Ed.,1987

SRINIVAS UNIVERSITY

Ph.D. (Physics) Course Work (2020 – 2021)

Subject (Code):	**Atomic and Nuclear Physics (20SPHDPH01)**
Time: 2 hours	Max. marks: 50

Module – 1

One electron System: Rutherford's experiment on scattering of X-ray diffraction: X-ray diffraction, Bragg's law. Concept of reciprocal lattice, Laue Equations, Brillouin Zones.

Module – 2

Properties of Nucleus: Nuclear constitution. Nuclear mass. Nuclear radius and its estimation from Rutherford's scattering experiment.
Binding energy. Binding energy curve and its characteristics. Packing fraction. Nuclear stability.
Coulomb potential inside the nucleus and the mirror nuclei. The nomenclature of nuclei, and nucleon quantum numbers. Nuclear spin and magnetic dipole moment. Nuclear electric moments and shape of the nucleus.

Module – 3

Nuclear Forces: General features of nuclear forces. Bound state of deuteron with square well potential, binding energy and size of deuteron. Deuteron electric and magnetic moments - evidence for non-central nature of nuclear forces. Yukawa's meson theory of nuclear forces.
Nuclear Energy: Fission process. Fission chain reaction. Energy released in fission reaction. Multiplication factor. Critical size and mass for maintenance of chain reaction. Fission reactor. Fusion process. Energy released in fusion reactions. Controlled thermonuclear reactions; Fusion reactor.

Module – 4

Nuclear Reactions: Types of reactions: Elastic scattering, Inelastic scattering, Radioactive capture, Disintegration, Photodisintegration.
Conservation laws: Conservation of Charge, Nucleons, Mass-Energy, Parity, Linear momentum, Angular momentum, Spin, Isotopic spin.
Energy balance in nuclear reactions and the Q-Value.
Nuclear Models: Liquid drop model, Shell model, Evidence for shell model, Magic numbers.
Detectors of Nuclear radiations: Ionization Chamber, Solid-state detectors, Proportional

Counters, Geiger-Muller Counter.
Particle Accelerators: Linear accelerator, The Cyclotron, The Betatron.

Module – 5

Nuclear Decays:
Alpha decay: Quantum mechanical barrier penetration, Gamow's theory of alpha decay.
Beta decay: Continuous beta spectrum, The neutrino theory of beta decay.
Gamma decay: Origin of gamma rays, Nuclear isomerism.
Fundamental Laws of Radioactivity: Soddy Fajan's Displacement Law, Law of Radioactive Disintegration. Half-life period and Mean-life. Measurement of decay constant. Law of Successive Disintegration.

Question paper pattern:

The question paper will have TEN questions. Each full question is for 10 marks.
There will be 2 full questions (with a maximum of four sub questions in one full question) from each module. You need to answer any one question from each module.

REFERENCE BOOKS:

Introduction to Atomic Spectra	H E White	McGraw Hill	1934 Ed
Nuclear and Particle Physics	W.E. Burcham and M. Jobes	Addison Wesley	1998 Ed
Nuclear Physics	R R Roy and B P Nigam	New Age International	2nd Ed
Introduction to Nuclear Physics	S B Patel	New Age International	2006 Ed

Subject (Code): Analytical methods and Electronics(20SPHDPH02)	
Time:2 Hours	Max. marks: 50

Module – 1

Matter waves:

DeBroglie hypothesis, Equation for matter waves. Wavelength associated with electron accelerated through potential. Davisson-Germer experiment. Electron microscopy. Principle and working of Scanning Electron Microscope (SEM) and Transmission Electron Microscope (TEM). Working of Atomic Force Microscope (AFM).

Module – 2

X-ray Diffraction (XRD):

Fundamentals of x-ray diffraction. X-Ray Fluorescence method: Principles-Characteristics. x-ray emission. Instrumentation x-ray tube, radioactive sources. Wavelength dispersive instruments. Energy dispersive instruments. Analytical Applications- Qualitative Analysis-Quantitative Analysis, Theory of x-ray diffraction, diffraction of x-rays by crystals, determination of crystal Structure (powder as well as single crystals), Instrumentation, determination of lattice parameters, x-ray intensity calculations and application of x-rays.

Module – 3

Laser Based Techniques: Atomic Fluorescent Spectrometry (AFS). Resonant Ion Spectroscopy (RIS). Laser enhanced Ionization (LEI).

Microwave (Rotational) Spectroscopy, UV Spectroscopy, Fourier Transform Infra - red Spectroscopy (FT-IR), Molecular Spectroscopy, Raman Spectroscopy, Mass spectrometry-Instrumentation, Uses.

Module – 4

Physical methods of analysis:

Thermal methods: Differential Thermal Analysis (DTA). Differential Scanning Calorimetry (DSC). Thermo Gravimetric Analyses (TGA).

Magnetic Resonance Spectroscopy: Nuclear Magnetic Resonance (NMR) - principle, spectrometer and applications.

Electron Spin Resonance (ESR) - principle, spectrometer and applications.

Vacuum Technique: Production by rotary and diffusion pumps, measurement by Pirani and Penning gauges.

Module – 5

Semiconductor Electronics:

Band theory of solids. Classification of insulators, conductors and semiconductors based on band theory. Intrinsic semiconductors. P-type and N-type extrinsic semiconductors. P-N junction. Forward and reverse bias characteristics of p-n junction diode. Full wave rectifier. Bridge rectifier. Zener diode and its reverse bias characteristics. Zener diode as voltage regulator. Transistor (n-p-n and p-n-p). Input and output characteristics of transistor. Transistor as switch and amplifier. Feedback mechanism - Oscillator.

Question paper pattern:

The question paper will have TEN questions.

Each full question is for 10 marks.

There will be 2 full questions (with a maximum of four sub questions in one full question) from each module. You need to answer any one question from each module.			
REFERENCE BOOKS:			
Introduction to Instrumental Analysis	R.D. Braun	McGraw-Hill Ryerson Limited	1st Ed, 1987
Principles of Instrumental Analysis	Skoog, Hollar and Niemann	Harcourt Asian Pvt Ltd India	5th Ed, 1998
Instrumental Methods of Analysis	Willard, Merritt, and Dean	CBS Publishers	6th Ed.
Principles of Fluorescence Spectroscopy	Joseph R Lakowicz	Plenum Press, NewYork	1986
X-ray Crystallography	Woolfson, M. M	Cambridge University Press	1978
Thermal Method	Wendlandt, W.W. John	Wendlandt, W.W. John	1st Ed.
Semiconductor Physics and Devices	Neamen	McGraw Hill	4th Ed

Subject (Code):	**Solid State Physics(20SPHDPH03)**
Time: 2 hours	Max. marks: 50

Module – 1

Crystal structure:

Lattice points and space lattice, The basis and crystal structure, Unit cells and lattice parameters, Unit cell versus primitive cell, Crystal systems, Symmetry elements in crystals, Space groups, The Bravais space lattices, Metallic crystal structures, Directions, planes and Miller indices

Atomic packing: packing fraction, Co-ordination number. Examples of simple crystal structures: NaCl, ZnS and diamond. Symmetry operations, point groups and space groups.

X-ray diffraction: X-ray diffraction, Bragg's law. Concept of reciprocal lattice, Laue Equations, Brillouin Zones.

Experimental diffraction methods: Laue method, Rotating Crystal method and Powder Crystal method.

Module – 2

Crystal binding: Types of binding. Van der Waals-London interaction, Repulsive interaction. Modelung constant. Born's theory for lattice energy in ionic crystals and comparison with experimental results. Ideas of metallic binding, Hydrogen bonded crystals.

Lattice vibrations: Vibrations of monoatomic lattices. First Brillouin zone. Quantization of lattice vibrations - Concept of Phonon, Phonon momentum. Specific heat of lattice (qualitative).

Module – 3

Energy bands in solids: Formation of energy bands. Free electron model: free electrons in one and three dimensional potential wells, electrical conductivity, heat capacity, Fermi-Dirac distribution, density of states, concept of Fermi energy. Kronig-Penny model. Nearly Free Electron Model (qualitative). Tight Binding model (qualitative).

Defects in solids: Point defects: Schottky and Frenkel defects and their equilibrium concentrations. Line defects: Dislocations, multiplication of dislocations (Frank-Read mechanism). Plane defects: grain boundary and stacking faults.

Module – 4

Magnetic materials: Classification – paramagnetic, diamagnetic and ferromagnetic materials – Properties and examples. Magnetic susceptibility and magnetic permeability. Variation of susceptibility of paramagnetic materials with temperature. Curie law. Curie temperature. Behaviour of ferromagnetic materials for $T>T_C$ (Curie-Weiss Law). Ferromagnetic domains. Antiferromagnetism, Ferrimagnetism. Hard and soft ferromagnetic materials – applications. Magnetic hysteresis.

Superconductors: Superconductivity. Zero resistance. Meissner effect. Critical field. Classification.

Module – 5

Structure of Solids: The crystalline and Non-crystalline states, Covalent solids, Metals and alloys, Ionic solids, The structure of silica and silicates

Crystal growth: Crystal growth from melt: Bridgemann technique, Crystal pulling by Czochralski's method, Growth from solutions, Hydrothermal method,

Gel method, Zone refining method of purification.

Crystal imperfections: Point imperfections, Dislocation, Edge and Screw dislocation, Concept of Burger vector and Burger circuit, Surface imperfections, Colour centers in ionic solids.

Question paper pattern:

The question paper will have TEN questions.
Each full question is for 10 marks.
There will be 2 full questions (with a maximum of four sub questions in one full question) from each module. You need to answer any one question from each module.

REFERENCE BOOKS:

Elementary Solid State Physics	M. A. Omar	Addison	3rd Ed
Introduction to Solid State Physics	C. Kittel	Wiley Eastern	8th Ed
Solid State Physics	A. J. Dekkar	Macmillan India Limited	2014Ed
Solid State Physics	S. O. Pillai	New Age Publishers	2018 Ed
Materials Science and Engineering	V. Raghvan	Printice Hall of India	5th Ed, 2009
Materials Science and Processes	S. K. Hazra Chaudary	Indian Distr Co	3rd Ed-2009
Introduction to Solids	L. V. Azaroff	Tata McGraw Hill	New Ed-2017

COMMON TO ALL ENGINEERING BRANCHES

Subject code: 18SPHDRM

RESEARCH METHODOLOGY

Module 1: Meaning, Objectives and Characteristics of research - Research methods Vs Methodology - Types of research - Descriptive Vs. Analytical, Applied Vs. Fundamental, Quantitative Vs. Qualitative, Conceptual Vs. Empirical - Research process - Criteria of good research -Developing a research plan.

Defining the research problem - Selecting the problem - Necessity of defining the problem - Techniques involved in defining the problem - Importance of literature review in defining a problem - Survey of literature - Primary and secondary sources – Development of working hypothesis.

Module -2:

Research design and methods – Research design – Basic Principles- Need of research design — Features of good design – Important concepts relating to research design – Observation and Facts, Laws and Theories, Prediction and explanation, Induction, Deduction, Development of Models - Developing a research plan - Exploration, Description, Diagnosis, and Experimentation- Determining experimental and sample designs.

Module -3:

Sampling design - Steps in sampling design - Characteristics of a good sample design - Types of sample designs - Measurement and scaling techniques - Methods of data collection – Collection of primary data - Data collection instruments

Testing of hypotheses - Basic concepts - Procedure for hypotheses testing flow diagram for hypotheses testing - Data analysis with Statistical Packages – Correlation and Regression - Important parametric test -Chi-square test - Analysis of variance and Covariance

Module -4:

IPRs- Invention and Creativity- Intellectual Property-Importance and Protection of Intellectual Property Rights (IPRs) - A brief summary of: Patents, Copyrights, Trademarks, Industrial Designs- Integrated Circuits-Geographical Indications-Establishment of WIPO-Application and Procedures.

Module-5:

Interpretation and report writing - Techniques of interpretation - Structure and components of scientific reports - Different steps in the preparation - Layout, structure and language of the report - Illustrations and tables - Types of report - Technical reports and thesis

REFERENCES:

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
2. Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p.
3. Anderson, T. W., An Introduction to Multivariate Statistical Analysis, Wiley Eastern Pvt., Ltd., NewDelhi
4. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, EssEss Publications. 2 volumes.

5. Trochim, W.M.K., 2005. Research Methods: the concise knowledge base, Atomic Dog Publishing.270p.
6. Fink, A., 2009. Conducting Research Literature Reviews: From the Internet to Paper. Sage Publications
7. Intellectual Property Rights in the Global Economy: Keith Eugene Maskus, Institute for InternationalEconomics, Washington, DC, 2000
8. Subbarau NR-Handbook on Intellectual Property Law and Practice-S ViswanathanPrinters andPublishing Private Limited.1998

NON-CONVENTIONAL ENERGY SOURCES

Sub Code:	**18SPHDME04**	**IA Marks :**	**50**
Hrs/ Week :		**Exam Hours :**	**2**
Credits:	**4**	**Exam Marks:**	**50**
		Total Hours:	**40**

Course Objectives:

- To introduce the concepts of solar energy, its radiation, collection, storage and application.
- To introduce the concepts and applications of Wind energy, Biomass energy, Geothermal energyand Ocean energy as alternative energy sources.
- To explore societies present needs and future energy demands.
- To examine energy sources and systems, including fossil fuels and nuclear energy, and then focuson alternate, renewable energy sources such as solar, biomass (conversions), wind power, geothermal, etc.

Course Outcomes:

At the end of the course, the student will be able to:

CO1: Describe the environmental aspects of non-conventional energy resources. In Comparison withvarious conventional energy systems, their prospects and limitations.

CO2: Know the need of renewable energy resources, historical and latest developments.

CO3: Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation, drying, cooking etc.

CO4: Appreciate the need of Wind Energy and the various components used in energy generation andknow the classifications.

CO5: Understand the concept of Biomass energy resources and their classification, types of biogas Plantsapplications

CO6: Compare Solar, Wind and bio energy systems, their prospects, Advantages and limitations.

CO7: Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles andapplications.

Module I

Introduction: Energy source, India's production and reserves of commercial energy sources, need for non-conventional energy sources, energy alternatives, solar, thermal, photovoltaic. Water power, wind bio-mass, ocean temperature difference, tidal and waves, geothermal, tarsands and oil shale, nuclear (Brief descriptions); advantages and disadvantages, comparison (Qualitative and Quantitative).

Energy from Bio Mass : Photosynthesis, photosynthetic oxygen production, energy plantation, bio gas production from organic wastes by anaerobic fermentation, description of bio-gas plants, transportation of bio-gas, problems involved with bio-gas production, application of bio-gas, application of bio-gas in engines, advantages.

08 Hours

Module II

Solar Radiation : Extra-Terrestrial radiation, spectral distribution of extra terrestrial radiation, solar constant, solar radiation at the earth's surface, beam, diffuse and global radiation, solar radiation data.

Measurement of Solar Radiation : Pyrometer, shading ring pyrheliometer, sunshine recorder, schematicdiagrams and principle of working.

Solar Radiation Geometry : Flux on a plane surface, latitude, declination angle, surface azimuth angle, hour angle, zenith angle, solar altitude angle expression for the angle between the incident beam and the normal to a plane surface (No derivation) local apparent time. Apparent motion of sum, day length, numerical examples.

08 Hours

Module III

Radiation Flux on a Tilted Surface: Beam, diffuse and reflected radiation, expression for flux on a tiltedsurface (no derivations) numerical examples.

Solar Thermal Conversion: Collection and storage, thermal collection devices, liquid flat plate collectors, solar air heaters concentrating collectors (cylindrical, parabolic, paraboloid) (Quantitative analysis); sensible heat storage, latent heat storage, application of solar energy water heating. Space heating and cooling, active and passive systems, power generation, refrigeration. Distillation (Qualitativeanalysis) solar pond, principle of working, operational problems.

08 Hours

Module IV

Photovoltaic Conversion: Description, principle of working and characteristics, applications.

Wind Energy : Properties of wind, availability of wind energy in India, wind velocity and power from wind; major problems associated with wind power, wind machines; Types of wind machines and their characteristics, horizontal and vertical axis wind mills, elementary design principles; coefficient of performance of a wind mill rotor, aerodynamic considerations of wind mill design, numerical examples.

08 Hours

Module V

Tidal Power: Tides and waves as energy suppliers and their mechanics; fundamental characteristics oftidal power, harnessing tidal energy, limitations.

Ocean Thermal Energy Conversion: Principle of working, Rankine cycle, OTEC power stations in the
world, problems associated with OTEC.

08 Hours

TEXT BOOKS:

1. Non-Conventional Energy Sources by *G.D Rai K*, Khanna Publishers, 2003.
2. Solar energy, by *Subhas P Sukhatme* – Tata McGraw Hill, 2nd Edition, 1996.

REFERENCE BOOKS:

1. Renewable Energy Sources and Conversion Technology by *N.K.Bansal, Manfred Kleeman & Mechael Meliss*, Tata McGraw Hill, 2001.
2. Renewable Energy Resources, *John W.Twidell Anthony D. Weir El*, BG 2001.
3. Solar Power Engineering, *P.K.Nag*, Tata McGraw Hill, 2003.

INTERNAL COMBUSTION ENGINES

Sub Code:	**18SPHDME05**	**IA Marks :**	**50**
Hrs/ Week :		**Exam Hours :**	**2**
Credits:	**4**	**Exam Marks:**	**50**
		Total Hours:	**40**

Course Objectives:

- To understand the working cycle, Engine design and operating conditions, combustion phenomena,Engine emission and control
- Use of alternate fuels in IC engines.

Course Outcomes:

CO1: The main objective of this course is to impart knowledge in automotive engine. The detailed concept, construction and principle of operation of engine and various engine components, combustion, cooling and lubrication systems will be taught to the students.

CO2: At the end of the course the students will have command over automotive engines and therecent development in the area of engines.

Module I

Construction and Operation: Constructional details of spark ignition (SI) and compression ignition (CI) engines. Working principles. Two stroke SI and CI engines - construction and working. Comparisonof SI and CI engines and four stroke and two stroke engines. Engine classification, firing order. Otto,
diesel and dual cycles. Simple Numericals.

08 Hours

Module II

Fuel Systems: Air fuel ratio requirements of SI engines, Air fuel ratio and emissions, Working of a simple fixed venturi carburetor, Constant vacuum carburetor. Diesel fuel injection systems-Jerk pumps, distributor pumps, pintle and multihole nozzles, Unit injector and common rail injection systems. Injection
pump calibration. Need for a governor for diesel engines. Description of a simple diesel engine governor.

08 Hours

Module III

Combustion and Combustion Chambers:

Introduction to combustion in SI and diesel engines and stages of combustion. Dependence of ignition timing on load and speed. Knock in SI and CI engines. Combustion chambers for SI and CIengines. Direct and indirect injection combustion chambers for CI engines. Importance of Swirl, squish and turbulence.
Factors controlling combustion chamber design.

08 Hours

Module IV

Engine emissions and their control: Air pollution due to IC engines, emission characteristics ,Euro norms, engine emissions, Hydro carbon emissions, CO emission, NOx- Photo chemical smog, Particulates, other emissions, Smoke, emission control methods – thermal converters, catalytic converters, particulate traps, Ammonia injection systems, exhaust gas recirculation, ELCD, Crank case blow by control. IC engine Noise
characteristics, types, standards and control methods, Air quality emission standards

08 Hours

Module V

Alternate fuels for I.C Engines: Vegetable oils, alcohol's, L.P.G, C.N.G, Hydrogen fuels, Bio gas ,Dualfuels, other possible fuels

08 Hours

Text Books:

1. A course in I. C. Engines – Mathur& Sharma, DhanpatRai& sons, New Delhi,1994.
2. Internal Combustion Engines Fundamentals – John B. Heywood, McGraw Hill InternationalEdition,
3. Ganesan.V., Internal Combustion Engines, Tata McGraw Hill Publishing Co., New York,1994

Reference Books:

1. John,B., Heywood, "Internal Combustion Engine Fundamentals", McGraw Hill Publishing Co.,New York, 1990.
2. Benson,R.S., Whitehouse,N.D., "Internal Combustion Engines", Pergamon Press, Oxford, 1979.
3. C.R. Fergusan, "Internal Combustion Engines: Applie d Thermo sciences", John Wiley & Sons
4. Richard stone ''Introduction to IC Engines'' Palgrave Publication 3rd edition
5. Charles Fayette Taylor '' The Internal-Combustion Engine in Theory and Practice'' MIT Press, 2nd edition

ALTERNATE FUELS FOR I C ENGINE APPLICATION

Sub Code:	**18SPHDME06**	**IA Marks :**	**50**
Hrs/ Week :		**Exam Hours :**	**2**
Credits:	**4**	**Exam Marks:**	**50**
		Total Hours:	**40**

Course Objectives:

- To understand different alternative fuels used for IC engine application.
- To study different standards used for pollution control
- To predict the performance of an engine for different alternative fuels
- To appreciate use of fuel cells for engine application

Course Outcomes:

CO1: To select suitable fuel for different types engines.

CO2: To analyse the performance of an engine for particular fuel.

CO3: Appreciate use of alternative fuels for emission reduction

Module I

Need for Alternative Fuels: Effects of constituents of Exhaust gas emission on environmental condition of earth (N_2, CO_2, CO, NO_x, SO_2, O_2) Pollution created by Exhaust gas emission in atmosphere. Greenhouse effect, Factors affecting greenhouse effect. Study of Global Carbon Budget, Carbon foot printand Carbon credit calculations. Emission norms as per Bharat Standard up to BS – IV and procedures for
confirmation on production.

08 Hours

Module II

Alcohols: Sources of Methanol and Ethanol, methods of its production. Properties of methanol & ethanolas engine fuels, Use of alcohols in S.I. and C.I. engines, performance of blending methanol with gasoline. Emulsification of alcohol and diesel. Dual fuel systems. Improvement / Change in emission characteristics
with respect to % blending of Alcohol.

08 Hours

Module III

Biodiesel: Raw materials used for production of Bio Diesel (Karanji oil, Neemoil, Sunflower oil,
Soyabeen oil, Musturd oil, Palm oil, Jatropha seeds). Process of separation of Bio Diesel. PropertiesDiesel blended with vegetable oil, Performance and emission characteristics of using biodiesel blend.

08 Hours

Module IV

Gaseous alternative fuels:

Hydrogen: Hydrogen as a substitute fuel. Study Properties, Sources and methods of Production of Hydrogen, Storage and Transportation of hydrogen. Also, the economics of Application and Advantagesof hydrogen (Liquid hydrogen) as fuel for IC engine/ hydrogen car. Layout of a hydrogen car.

Biogas: Introduction to Biogas system, Process during gas formation, Factors affecting biogas formation.Usage of Biogas in SI engine & CI engine.

LPG & CNG: Properties of LPG & CNG as engine fuels, fuel metering systems, combustioncharacteristics, effect on performance, emission, cost and safety.

08 Hours

Module V

Fuel cell and solar powered vehicles:

Fuel cell:

Concept of fuel cells based on usage of Hydrogen and Methanol. Power rating, and performance. Heat dissipation, Layout of fuel cell vehicle. Working principle, Different types of fuel cells used for IC engineapplication, Advantages and limitations.

Solar cells for energy collection. Storage batteries, layout of solar powered automobiles. Advantages andlimitations.

08 Hours

Text Books:

1. Gerhard Knothe, Jon Van Gerpen, Jargon Krahl, The Biodiesel Handbook, AOCS PressChampaign, Illinois 2005.
2. Richard L Bechtold P.E., Alternative Fuels Guide book, Society of Automotive Engineers, 1997ISBN 0-76-80-0052-1.

Reference Books:

1. Transactions of SAE on Biofuels (Alcohols, vegetable oils, CNG, LPG, Hydrogen, Biogas etc.
2. Automotive Emission Control" by Crouse, AND Anglin – McGraw Hill
3. Kordesch, K and G.Simader, Fuel Cell and Their Applications, Wiley-Vch, Germany

COURSE WORK SYLLABUS FOR CIVIL ENGINEERING

Subject code:18SPHDCV01
STRUCTURAL ENGINEERING

Module 1

Concrete as construction material, mix design of light weight concrete, Ferro cement, crackingmoment and design of Ferro cement elements under tension, Fibre reinforced concrete,polymers in concrete, RPC,SCC,FRSCC and whisper concrete. High density and high strengthconcrete. --8 hrs

Module 2

Review of design philosophy, properties of structural concrete, behavior of members in flexure,axial load, shear and torsion, bond and anchorage, cracking, codal provisions, ductility, detailingprocedure,Prestressed concrete, ultimate strength in flexure, shear, torsion and combined loading,deflections and crack widths. Continuous beams and portal frames. --12 hrs

Module 3

Analysis of stresses, analysis of strain, stress-strain relations, extension, torsion and flexure ofbeams, Principal stresses and strains, two & three dimensional elasticity problems, theory of plasticity, yield criteria, Prandtl-Reuss Equation, --8 hrs

Module 4

Matrix formulation in structural dynamics, lumped and consistent mass matrices, condensation
of stiffness matrices. Analysis of normal modes. Modal superposition and direct integration for
dynamic response. Transfer matrices. --11 hrs

Module 5

Discrete and continuous structures, Force and displacement method of structural analysis, Different types of finite elements in elasticity, beams, plates and shells. Application to dynamic
and nonlinear problems. Discussion of matrix manipulations and accuracy --11 hrs

References:

1. "**Concrete Technology**" - Theory and Practice, M.S.Shetty, S.Chand and Company, NewDelhi

2. "Properties of Concrete"-Neville, A.M. : , ELBS, London

3. "Reinforced concrete Design"-by Pallai and Menon, TMH Education Private Limited

4. "Reinforced Concrete Structures", Volume 1, Dr. B. C. Punmia, Ashok Kr. Jain, ArunKr. Jain,

5. "Pre-stressed Concrete"- N. Krishna Raju - Tata Mc. Graw Publishers

6. "Pre-stressed Concrete"- P. Dayarathnam : Oxford and IBH Publishing Co.

7. "Design of pre-stressed concrete structures"- T.Y. Lin and Ned H. Burns - John Wiley& Sons, New
York.

8. "Structural Dynamics of Earthquake Engineering", S Rajashekharan, CRC Press

9. "Structural Dynamics: Theory and Computation", By Mario Paz, William E. Leigh,Kluver Academic
Publishers

10. "Structural Dynamics"- Clough &Penzen : TMH.

11. "Theory of Elasticity" - International Students-Timoshenko. S.P. and Goodier. J.N. -Edition, McGraw
Hill Book Co. Inc., New Delhi.
12. Advanced Mechanics of Solids- Srinath.L.S. : Tata McGraw Hill Publications Co.Ltd.,New Delhi.
13. "Finite Element Analysis for Engineering and Technology"- Chadrupatla, TirupathiR., University
Press, India
14. "The Finite Element Method"- Zienkeiwicz. O.C. - Tata McGraw Hill Co. Ltd., NewDelhi.

Subject code:18SPHDCV02

GEOTECHNICAL ENGINEERING

Module-I:

Basics of Soil Mechanics

Origin of soils, soil classification, three-phase system, fundamental definitions, relationship andinterrelationships, permeability & seepage, effective stress principle, Stability of slopes by variousapproaches, Compaction of soils: , methods of compaction (static, kneading, impact andvibration). IS light and heavy compaction tests. . Factors affectingcompaction.Fieldcompaction equipment and their suitability.Control of field compaction. Consolidation ofsoils,Terzaghi's theory of one dimension consolidation with final solution form Coefficient ofconsolidation and factors affecting it. Degree and rate of consolidation. Approximate theoreticalrelation between degree of consolidation and time factor, consolidation test as per latest relevantIS code. Shear strength of soils **–10hours.**

Module-II:

Analysis and design of Foundations: Shallow Foundation: proportioning anddesign of strip, spread, rectangular, trapezoidal, combined footings, raftfoundation& pile and raft foundation,modulus of subgrade reaction.

Deep foundation: classifications, load carrying capacity, static method for driven piles in sand and clay, negative skin friction, dynamic formulae, pile group, group efficiency, under reamedpiles, pile load test (static, dynamic), Pile integrity test, concept of batter piles.Drilled pier, Caissons, well foundation **– 12 hours**.

Module-III:

Earth retaining structures:

Introduction, Active and passive earth pressures, earth pressure at rest. Rankine's theory for the determination of active and passive earth pressure, coefficient of earth pressure, earth pressure distribution, total earth pressure and its point of application, , Coulombs theory of Active and Passive earth pressure, Culman's and Rebhann's graphical methods Stability of slopes, Factor of safety, slope, toe and base failure of finite slopes, Analysis of stability of slopes by method of slices, Taylor's stability number. N Effective, neutral and total stresses inhomogeneous soils - – **10 hours.**

Module- IV:

Reinforced soil structures and geotextiles:

Introduction to reinforced soil structures, comparison with reinforced cement concrete structures.Principles, concepts and mechanisms of reinforced earth. Materials used, properties, laboratory testing and constructional details, metallic strips, metallic grids, geotextiles, geogrids, geomembranes and geocomposites, their functions and design principles. Design applications of reinforced soil structures in pavements. Embankments, slopes, retaining walls and foundations. Reinforced soil structures for soil erosion control problems. Case studies of reinforced soil structures, discussion on current literature.

– 10 hours.

Modules-V:

Soil Dynamics

Single degree, Two degree and Multi degree of freedom system, Free and forced vibration, Transient response, Resonance and its effects, wave propagation – theory and application to dynamic problems. Dynamic soil properties – General, laboratory and field methods, factors affecting different properties, vibration inducing and measuring instruments. Shear strength and Liquefaction of soils – Stress – Strain and Strength characteristics of soils underdynamic loads, factors affecting, Resonance column test, Triaxial tests under dynamic loads,

Liquefaction of soils and factors influencing liquefaction, Dynamic earth pressure, retainingwall problems under dynamic loads. General principles of Machine foundation design – Introduction, Design criterion, types and requirements of Machine foundation.

-08hours

References:

1. Soil mechanics and foundations by B.C. Punmia, Laxmi publications Ltd. New Delhi.
2. Soil mechanics in engineering practice by Terzhaghi and Peck
3. Bowles. J. E. "**Foundation Analysis and Design**", 5th edition, The McGraw-HillCompanies, Inc, New York, 1996.
4. Koerner, R.H. Designing with geosythetics, Prentice Hall Inc, 1994.
5. Jones, C.J.E.P. Reinforcement and soil structures, Butterworth Publications, 1996.
6. Jewel, R.A. Soil reinforcement with geotextiles, CIRIA, 1996.
7. Ingold, J.S. and Miller, K.S., Geotextiles hand book, Thomas Telford Ltd, 1988
8. Swami Saran " Soil dynamics and Machine foundation" Golgotia (1999)
9. Kramer, S.L. (1996), "**Geotechnical Earthquake Engineering**", Prentice Hall, NewYork

Subject code:18SPHDCV03

Environmental Engineering and Management

Module - I

ENERGY & ENVIRONMENT- Global energy, Environmental resources, Energy consumption, needs, and crisis.Energy production, utilization, Laws and Principles, Renewable sources &Non renewable sources of energy, Concerns about change in global temperature, Regional impacts of temperature change.

ENVIRONMENTALIMPACT ASSESSMENT-Developmental Activity and Ecological factors. EIA, EIS, FONSI, Base line information, Frame work of Impact Assessment, development projects in environmental setting. Objective,limitations, methodologies & techniques of EIA. Assessment and Prediction of impacts, Public participationsystem, Environmental parameter – Activity relationships – matrices. EIA for various projects. 08 Hrs

Module - II

ENVIRONMENTAL PLANNING AND MANAGEMENT

Concept of Carrying capacity, Carrying capacity based regional planning, Engineering Methodology in Planningand its Limitations, Environmental Protection, Engineering Economics, Cleaner Technologies and their roles inEnvironmental Protection. TQM in Environmental Management and Protection – ISO 14000 Series of Standards.Environmental Audit.

TRANSPORT PROCESS AND MODELING IN AQUATIC SYSTEMS

Models as Comprehensive tools in Environmental Management Diffusion and dispersion – Molecular turbulent andshear diffusion, Fick's laws of diffusion and convective – diffusion equations flow regimes. Water qualitymodeling. Models for decaying pollutants in rivers. Streeter- phelps equation, Data collection. Estimation ofparameters. Calibration and verification of 1-D Oxygen model. Error measures. Mixing Zones in rivers.

Parameterestimation, Mixing coefficient. Dissolved Oxygen models for lakes , Ocean disposal of wastewater. Ground waterquality modeling concepts, Non point sources of pollution, Field data gathering and parameter estimation. Ecosystem model. 12Hrs

Module - III

WASTEWATER TREATMENT ENGINEERING

Determination of kinetic coefficients. Fundamentals of process analysis, Mass balance analysis, Reactors and theirhydraulic characteristics, Reaction Kinetics & Reactor selection, . Physical, Chemical & Biological treatment of wastewater, Treatment & disposal of sludge, Advanced wastewater treatment process, Waste treatability studies.

INDUSTRIAL WASTEWATER TREATMENT

Effects of Industrial Wastes, Effluent standards and stream standards.. Industrial Waste survey. Material balance, Sampling, Biomonitoring. Pretreatment of Industrial Wastewater-Wastewater Treatment in industries, Ultimatedisposal of Industrial Wastewater, effects of waste additions on physical and chemical properties of soil, Design of complete treatment system, Environmental Auditing, Financial and Managerial opportunities. 10 Hrs

Module - IV

ATMOSPHERIC ENVIRONMENTAL POLLUTION AND CONTROL

Different Classification of air pollution sources, Characterization and sampling of atmospheric pollutants, Analytical methods, Effects of Air Pollutants, Smog, National ambient Air quality standards, criteria and indices, Air Pollution laws. Meteorology, General Characteristics of stack emission, plume behavior, Heat island effect, Air Quality Modeling: Particulates: Collection mechanism and efficiency, Particulate Pollution Control equipment, General Control of gases and vapours. Noise pollution.

ENVIRONMENTAL GEO-TECHNIQUES

Source, Production and Classification of Wastes; Soil Pollution Processes Physical-chemical and Biological Interaction in Soil, Effects on geotechnical Properties, Waste Disposal Facilities, Barrier systems-Basic concepts, design and construction, stability, compatibility and performance; contaminant Transformations and Transport in subsurface, Reuse of waste Materials, Contaminated site remediation. 12 Hrs

Module - V

REMOTE SENSING & GIS IN ENVIRONMENTAL ENGINEERING

Remote sensing in Environmental Engineering Basics of Remote sensing Techniques – Data Acquisition andInterpretation – Visual and digital interpretation – Application of remote sensing techniques to management ofWater resources. Monitoring of quality of environment, land use pattern studies. GIS – Concepts and spatialMethods. GIS, Data acquisition, Data processing, storage and retrieval, Computer Fundamentals of GIS and datastorage character files and binary files, file origination liked list, chains trees. GIS and Remote sensing data integration techniques in spatial Decision support system, land suitability, New work analysis virtual GIS. GIS insolid waste transport, re-modelling of distribution systems and Groundwater, Vulnerabilty. 8 Hrs

REFERENCES:

1. Rao and Parulekar B.B., (1977), Energy Technology–Non-conventional, Renewable andConventional", 2nd Edition, Khanna Publishers.
2. Wilber, L.C., (1989), "Handbook of Energy Systems Engineering", Wiley and Sons.
3. Nemerow N.N., (1971) – "Liquid Waste of industry theories, "Practices and Treatment.Addison Willey New York.
4. Ross R.D. (1968)– "Industrial Waste Disposal", Reinhold Environmental Series – NewYork.
5. Mahajan (1984) –" Pollution control in Process industries". TMH, New Delhi.
6. Eckenfelder(2000)- "Industrial Water pollution Control"- McGraw hill Company, NewDelhi American Chemical Society, Washington D.C. USA
7. Jacobson. Z. A.(1999), Fundamental of Atmospheric modeling, Cambridge UniversityPress, Cambridge.
8. Krogstad and Jacobsen, Dispersion of heavy gases, in encyclopedia of environmental control technologies, edited by Cheremioinoff, Volume-2, Rulf publishing company, Houston.
9. Crawford Martin, "Air pollution control theory", Tata McGraw- Hill publishing companyLtd. New Delhi, 1980.
10. Wark K., Warner C.F., and Davis. W.T., Air Pollution,(1998) "its origin and control",Third Edition, Harper and Row Publication.
11. Environment Impact Assessment – Larry W. Canter – McGraw Hill Publication.
12. Water and Wastewater Engineering Vol-II :- Fair, Geyer and Okun : John Willey Publishers, New York.
13. Waste Water Treatment, Disposal and Reuse : Metcalf and Eddy inc : Tata McGraw HillPublications.

14. Thoman R. V. – Systems Approach to water quality management McGraw Hill –1980.
3.Biswas A. K. – Models for water quality management – McGraw Hill 1980.
15. Rinaldi S. D.andSoncini, R- Modelling and Control of river water quality McGraw Hill –1979.

16. Thomann and Mueller 1986., Principles of water quality management and control –Harper and Row pubs. Perkins – Air Pollution
17. Kenneth Wark and Cecil F Warner – Air Pollution – its origin and control, Harper andRow, Publishers, New York.
18. Odum – Fundamentals of Ecology – Addition Co. Canter L – Environmental Impact Assessment McGraw Hill 1977.
19. Mall C.A.S. and Day J.W – Ecosystem modeling in theory and practice: An introductionwith case NI stories – John Willey.
20. Heer and Hagerty, Environmental Impact Assessment and statements. Van Nostrand andReinhold Co. 1977.
21. Pater A BurraughRachalA Mc Donnas "Principle of GIS" (Oxford)
22. Christopher Jones "GIS and Computer Cartography"

COURSE WORK SYLLABUS FOR CHEMISTRY
Subject code: 18SPHDCH01

ORGANIC CHEMISTRY
ORGANIC REACTIONS AND MECHANISM

Module-1

Substitution reactions – Kinetics, mechanism and stereo chemical factor affecting the rate ofSN1, SN2, SRNi, SNi , SN1, SN2, SN1i, reactions, neighbouring group participation. Electrophilic substitution reactions – Kinetics, mechanism and stereo chemical factor affecting the rate of SE1& SE2.

Module -2

Aromatic electrophilic substitution reactions: Mechanism of nitration, halogenation, sulphonation, Friedel-Crafts alkylation and acylation, Mannich reaction, chloromethylation, Vilsmeier Haack reaction, Diazonium coupling, Gattermann–Koch reaction, Mercuration reaction.

Module-3

Addition reactions: Addition to C-C multiple bonds involving electrophiles, nucleophiles and free radicals. Markownikoff's rule and anti Markownikoff's rule, Hydroboration. Typical additions to carbonyl compounds: Addition of hydride, water, alcohol, HCN, Grignard reagents and amino compounds to carbonyl compounds.

Module -4

Mechanism of ester formation and their hydrolysis, formation and hydrolysis of amides, decarboxylation mechanisms. Elimination reactions: Mechanism and stereochemistry of eliminations– E1, E2, cis-elimination, Hofmann and Saytzeff eliminations, competition between Elimination and substitution, Chugaev reaction. Rearrangement reactions: Inter and Intra molecular.

Module-5

Aromatic nucleophilic substitution reactions: SN1, SN2 and benzyne mechanism, Bucherer reaction, von Richter reaction. **Aldol and related reactions:** Keto-enoltautomerism, mechanism and synthetic applications of aldol condensations, Claisen reaction, Schmidt reaction, Perkin reaction, Knoevenogel, benzoin, Stobbe and Darzen's glysidic ester condensation, Cannizaro reaction, Michael addition, Robinson's annulation reactions.

REFERENCES:

1) I. L. Finar, Organic Chemistry, ELBS Longmann, Vol. I & II, 1984
2) J. March Advanced Organic Chemistry, Wiley Interscience, 1994.
3) E. S. Gould, Mechanism and Structure in Organic Chemistry, Halt, Rinhart& Winston, New York,1964.
4) F. A. Carey and Sundberg, Advanced Organic Chemistry – Part A & B, 3rd edition, Plenum Press,New York, 1990.
5) Comprehensive Organic Synthesis – B. M. Trost and I. Fleming series, Pergamon Press, NewYork, 1991.
6) A Guide book to mechanism in organic chemistry – Petersykes.
7) S. K. Ghosh, Advanced General Organic Chemistry, Book and Alleied (P) Ltd, 1998

Subject code : 18SPHDCH02

PHYSICAL CHEMISTRY
ELECTROCHEMISTRY AND TECHNIQUES

Module -1:

Electrochemistry: Introduction, Derivation of Nernst equation for electrode potential. Reference electrodes: Introduction, construction, working and applications of calomel and Ag / AgCl electrodes. Measurement of electrode potential using calomel electrode. Ion selective electrode: Introduction; Construction and working of glass electrode, determination of pH using glass electrode. Concentration cells: Electrolyte concentration cells, numerical problems.

Module -2:

Electronic Properties and Band Theory: Metals, insulators and semiconductors, electronic structureof solids-band theory, band structure of metals, insulators and semiconductors. Intrinsic and extrinsic semiconductors, doping semiconductors, p-n junctions, super conductors. Optical properties- Optical reflectance, photoconduction. Magnetic Properties- Classification of materials: quantum theory of paramagnetic cooperative phenomena-magnetic domains, hysteresis.

Module -3:

Electrode Kinetics: Metal/solution interface- Dependence of electrochemical reaction rate on over potential-current density for single step and multi-step processes-Influence of electrical double layer on rate constants. Activation and diffusion controlled processes- Marcus kinetics and quadratic dependence of Gibbs free energies-electron transfer processes involving organic and inorganic compounds. Different types of over potentials- polarization behaviour. Mechanism of hydrogen evolution and oxygen reduction in acid and alkaline media. Experimental methods for elucidation of reaction mechanism.

Module -4:

Metal Finishing: Introduction, Technological importance. Electroplating: Introduction, principles governing-Polarization, decomposition potential and overvoltage. Factors influencing the nature of electro deposit-current density, concentration of metal ion & electrolyte; pH, temperature & throwing power of plating bath; additives- brighteners, levellers, structure modifiers & wetting agents. Electroplating of Nickel (Watt's Bath) and Chromium (decorative and hard).

Electro less plating: Introduction, distinction between electroplating and electro less plating, electro less plating of copper & manufacture of double sided Printed Circuit Board with copper.

Module-5

Electrochemical Techniques: Polarography; Chronopotentiometry; Chronoamperometry, Chronocoulometry, Linear Potential Sweep Voltammetry; Cyclic Voltammetry, Impedance measurements; AC Voltammetry.

REFERENCES:

1. B.S.Jai Prakash, R.Venugopal, Sivakumaraiah&PushpaIyengar., "Chemistry for Engineering Students", Subhash Publications, Bangalore.
2. R.V.Gadag&A.Nityananda Shetty., "Engineering Chemistry", I K International Publishing HousePrivate Ltd. New Delhi.
3. P.C.Jain& Monica Jain., "Engineering Chemistry", DhanpatRai Publications, New Delhi.
4. A. J. Bard and L. R. Faulkner, Electrochemical Methods: Fundamentals and Applications, 2nd Ed.,John Wiley & Sons, New York, 2001. ISBN: 0-471-04372-9.
5. Gurdeep and Rajesh : Thermodynamics, Goel Publishing House, Meerut.
6. Barrow G M : Physical Chemistry, 5th Ed, Mcgraw Hill Co. (1968).
7. Chemical Kinetics and Dynamics; Jeffrey I Steinfeld, Joseph S. Francisco and William L. Hase.Prentice Hall, 2nd edition, 1998.
8. Laidler, K. J.; "Chemical Kinetics", 3rd Edition 1997 , Benjamin-Cummings. Indian reprint - Pearson 2009.
9. W.J.Albery; Electrode kinetics Clarendon Press, Oxford 1975.

Subject code:18SPHDCH03

ANALYTICAL CHEMISTRY & ALLIED SUBJECT NANO TECHNOLOGY

Module -1

Introduction to Nano science:

Introduction to Nano science; History and Scope, Interdisciplinary nature, Structure of nanomaterials, Quantum wells, quantum wires, quantum dots, fullerenes, graphite, carbon nanotubes, inorganic nanowires, nanoparticles. Nano-optoelectronic materials and devices, medicine and pharmacology applications, thin-films, One Dimensional Nanostructures, Nano wires and nano rods, Spontaneous growth: Evaporation and condensation growth, vapor-liquid-solid growth.

Module-2

Template based synthesis: Electrochemical deposition, Electro-phoretic deposition. Two dimensional nano-structures, Fundamentals of film growth. Physical vapour Deposition (PVD): Evaporation molecular beam epitaxy (MBE), Sputtering, Comparison of Evaporation and sputtering. Chemical Vapour Deposition (CVD). Wet chemical synthesis methods: sol-gel, hydrothermal, co-precipitation and solution combustion methods.

Module -3

Nanomaterials and composites:

Introduction, Nylon 6-clay hybrid (NCH) - Synthesis, Characterization; Epoxy nanocomposites, Epoxy layered silicate nanocomposites, Epoxy-nanocomposites based on other Nano fillers, Biodegradable polymer/layered silicate nanocomposites, Polymer/layered silicate nanocomposites technology, structure-property relationships, polypropylene layered silicate nanocomposites, Nanotubes, nanoparticles and inorganic organic hybrid systems, Single-walled carbon nanotubes in epoxy, Fullerene/carbon nanotube (CNT) composites, Filled polymer nanocomposites containing functionalized nanoparticles, Magnetic polymer nanocomposites, Polymer/graphite nanocomposites.

Module -4

Nano magnetic Materials:

Basics of ferromagnetism, Effect of bulk structuring of Magnetic properties, Dynamics of Nano magnets, Nano pore containment of magnetic properties, Nano carbon Ferro magnets, Giant Magneto resistance, Applications in data storage, Ferro fluids, Band structure in magnetic fields, Parallel and perpendicular field. Thin films, Atomic layer deposition (ALD), electrochemical deposition (ECD), Sol-Gel films.

Module -5

Characterization of Nano-structured materials:

Principle, instrumentation and applications of Powder X-ray diffraction, Fourier transform infrared spectroscopy, Scanning electron microscopy(SEM), tunneling electron microscopy(TEM), atomic force microscopy(AFM), magnetic-force microscopy (MFM), scanning near-field optical microscopy (SNOM).

REFERENCES:

1) Nanomaterials – AK Bandyopadhyay, Newage International (p) limited publishers.
2) Nanomaterials- J Dutta and H Hofmann
3) Nanostructured materials processing, properties and applications- Carl C Koch, Jaicopublishinghouse.
4) Nanotechnology- William Illsey Atkinson, Jaico publishing house.

Srinivas University

Course work Syllabus for Nano-technology

Nanomaterials Characterization techniques: 19SPHDNT01

Module 1

Introduction to characterization techniques: types of characterization techniques, Basics, Importance. Structural and compositional characterization tools, resolution, resolving power-abbecriterion, Rayleigh criterion. Different types of sources used, electron lenses, scan coils, lens aberrations. Electron diffraction-interference. Types of detectors.

Module 2

Basic characterization studies: Refractive index measurements. Photovoltaic cell - efficiency of a solar cell. Magnetic susceptibility studies. X-ray techniques: Laue, rotating crystal, Powder method. Density measurements, Viscosity measurements, Poiseullis equation. Laser diffraction analysis, Particle size analyzers, dynamic light scattering, CONTIN algorithm. Electro resistance particle size analyzers.

Module 3

Mechanical characterization techniques: micro and nanoindentation, Corrosion studies, tafel plots, cathodic and anodic polarization, corrosion rate, wear and friction studies, coefficient of friction (COF).

Module 4

Optical microscopy techniques: Optical microscopy, polarized light microscopy, Phase contrastmicrocopy, Interference Microscopy, hot stage microscopy, surface morphology, Etch pit densityand hardness measurements

Module 5

Electron microscopic techniques: SEM - EDX, TEM, STEM, AFM. **Thermal analysis methods**: TGA, DTA, and DSC.

References:

1. D. John Thiruvadigal, S. Ponnusamy, C. Preferencial Kala, M. Krishna Mohan, “MaterialScience” Vibrant Publications, 2014.

2. Callister’s “Materials Science and Engineering” Adapted by R, Balasubramaniam, Wiley IndiaPvt. Ltd, New Delhi, 2011.

3. Dr. M. K. Muralidhara, “Material Science and Metallurgy”, Subhas Stores, 2011.

4. Edward L. Wolf, "Nanophysics and Nanotechnology - An Introduction to Modern Concepts inNanoscience" Second Edition, John Wiley & Sons, 2006.

Applications of Nanoscience and Nanotechnology - 19SPHDNT02

Module 1

Photovoltaics: Ultrathin nanotechnology solar cells (plastic solar cells; Applications of CNTs in:photovoltaic diode, photo-active layer, transparent electrode, and dye-sensitized solar cells. Batteries, and Fuel cells: Nanobatteries; Applications of NT in Hydrogen fuel cells, DMFC, and SOFC. Energy transmissions: General energy applications: lighting, heating, transportation, capacitors, power chips; NT for energy transmission development, transformers, substations, andsensors.

Module 2

Water purification: Nanooligodynamic metallic particles; Photocatalysis; Desalination: nanofiltration, NT in membrane process. NT in Defense: Smart helmets; Smart suits; Smart equipments. NT in agriculture applications: Nanoscale carriers, Microfabricated xylem vessels, Nanolignocellulosic materials, Clay nanotubes, Nanobarcode technology, Quantum dots for staining bacteria, Biosensors.

Module 3

Nanotechnologies in animal production and health care: Improving feeding efficiency and nutrition, Zoonotic diseases, Animal reproduction and fertility.

Module 4

NT in food processing applications: Nanofood, nanoencapsulation, nanocomposites in food packaging, smart food packaging. NT in civil engineering applications: NT for green building; Coatings: self-cleaning coatings, anti-stain coatings, De-polluting surfaces, Scratch-resistant coatings, Anti-fogging and anti-icing coatings, Antimicrobial coatings, UV protection, Anti-corrosion coatings, and Moisture resistance. NT in automobile applications: Functionalities (mechanical, geometric effect, electronic/magnetic, optical, and chemical); Applications of NT towards: car body shell, car body, car interior, chasis and tyres, electrics and electronics, engine and drive train. NT in aerospace applications: Potential space benefits: resources in space, technical difficulties, Space elevator.

Module 5

NT in Electronics, Computer Engineering, & Photonics: MOSFET, CMOS, DRAM, SRAM, FIFO, EPROM, and PROM. SETs, Coulomb blockade, miniature flash memory, and Yano type memory. Quantum mechanical tunneling: RTDs and Esaki diodes. Introduction to spintronics, molecular nanoelectronics, fault tolerant designs, quantum cellular automata, and quantum computing, MEMS and MOEMS, Introduction to: nanotechnology in photonics, photonic crystals,plasmonics, and spray-on nanocomputers.

References

1. Nanotechnology – Basic Science & Emerging Technologies: 2002 by Michael Wilson, KamaliKannangara, Geoff Smith, Michelle Simmons, and Burkhard Raguse.

2 Nanoparticles technology: Masuo Hosokawa, Kiyoshi Nogi, Makio Naito, Toyokazu Yokoyama,First edition, 2007, ISBN: 978-0-444-53122-3.

3 Nanotechnology, Importance & Applications, M.H. Fulekar, I.K. International Publishing House, New Delhi, 2011.

4. Nanotechnology Applications to Telecommunications and Networking, Daniel Minoli, WileyInterscience, John Wiley & Sons, 2006, ISBN: 13-978-0-471-71-63-9-6.

5. Nanotechnology, Fundamentals and Applications, Manasi Karkare, I. K. International Publishing, New Delhi, 2008, ISBN: 978-81-89866-99-0.

Nanotechnology – 19SUPHDNT03

Module -1

Introduction to Nano science: Introduction to Nano science; History and Scope, Interdisciplinary nature, Structure of nanomaterials, Quantum wells, quantum wires, quantum dots, fullerenes, graphite, carbon nanotubes, inorganic nanowires, nanoparticles. Nano-optoelectronic materials and devices, medicine and pharmacology applications, thin-films, One Dimensional Nanostructures, Nano wires and nano rods, Spontaneous growth: Evaporation and condensation growth, vapor-liquid-solid growth.

Module-2

Template based synthesis: Electrochemical deposition, Electro-phoretic deposition. Two dimensional nano-structures, Fundamentals of film growth. Physical vapour Deposition (PVD): Evaporation molecularbeam epitaxy (MBE), Sputtering, Comparison of Evaporation and sputtering. Chemical Vapour Deposition(CVD). Wet chemical synthesis methods: sol-gel, hydrothermal, coprecipitation and solution combustion methods.

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Module -4

Nano magnetic Materials: Basics of ferromagnetism, Effect of bulk structuring of Magnetic properties, Dynamics of Nano magnets, Nano pore containment of magnetic properties, Nano carbon Ferro magnets, Giant Magneto resistance, Applications in data storage, Ferro fluids, Band structure in magnetic fields, Parallel and perpendicular field. Thin films, Atomic layer deposition (ALD), electrochemical deposition (ECD), Sol-Gel films.

Module -5

Characterization of Nano-structured materials: Principle, instrumentation and applications of Powder X-ray diffraction, Fourier transform infrared spectroscopy, Scanning electron microscopy(SEM), tunneling electron microscopy(TEM), atomic force microscopy(AFM), magnetic-force microscopy (MFM), scanningnear-field optical microscopy (SNOM).

REFERENCES: 1) Nanomaterials – AK Bandyopadhyay, Newage International (p) limited publishers.

2) Nanomaterials- J Dutta and H Hofmann

3) Nanostructured materials processing, properties and applications- Carl C Koch, Jaicopublishing house.

4)Nanotechnology- William Illsey Atkinson, Jaico publishing house.

Institute of Physiotherapy

PART-- A

EXERCISE THERAPY

Exercise intervention for women's health

Over view of pregnancy labor and related condition, physiological effects of aerobic exercises during pregnancy, exercise of uncomplicated pregnancy and post partum, significance of physical therapist caesarean child birth and activities suggested for patients following caesarean section

Breathing exercise and chest wall mobility exercise

Types of breathing exercise- diaphragmatic breathing exercise , Apical breathing , costal breathing, posterior basal, glosso- pharyngeal breathing, pursed lip breathing , inspiratoryhold

Hydrotherapy

principles of hydrotherapy – buoyancy, hydrostatic pressure, hydrodynamic pressure , turbulence, indication, precautions and contraindications physiological & Therapeutic effects

Methods of joint mobilisations & Manipulation

Introduction, definition, joint range- outer range , middle range, inner range, causes of joint range limitation, effect of prolonged immobilization , indication & contraindication . Principle

Muscle strength & endurance training & re-education of Muscle

Definition of strength , power & work, endurance , muscle actions. Physiology of muscle performance : structure of skeletal muscle, chemical & mechanical events during contraction & relaxation, Muscle fiber types, motor unit, force gradating, resistance training

Assessment of muscle shortness & stretching

Definition, Purpose of stretching, Physiological changes in muscle to stretch , Neurological changes in muscle to stretch , tissue response towards immobilization and elongation , determinants of stretching exercise, Inhibition and relaxation

Applied Bio- mechanics

Types of Kinematic chain – open and closed chain. Active and passive insufficiency. Parallelogram law of forces. Centre of gravity, line of gravity. Stable, Undtable, Neutral – Equilibrium . Fixed and Movable pulleys. Springs- series and parallel. Levers- 1 st order ,2nd order, and 3rd order

BIOMECHANICS

Gait

Determinants
Kinetics and kinematics
Analysis of common pathological gaits

Knee complex

Kinetics and kinematics of tibiofemoral & patellofemoral
jointPathomechanics of common condition of knee complex.

Ankle & foot complex

Kinetics and kinematics of hind foot mid foot and fore foot
jointsArches of foot
Pathomechanics of common condition of ankle complex.

Hip complex

Stability of hip complex
Hip abduction mechanism
Pathomechanics of common condition of hip complex.

Vertebral Column

Arthrology of cervical, thoracic, lumbar and sacroiliac regions including kinetics,
kinematicsand their muscle actions.
Lumbo- pelvic, rhythm.
Rib cage mechanics during ventilation.
Spinal coupling of craniocervical, thoracic , lumber and sacroiliac regions.
Introduction of pathomechanics of common condition of vertebral column

Temporomandibular joint

Kinetics and kinematics of Mastication.
Introduction of pathomechanics of common condition of Temporomandibular joint.

Wrist and hand complex

Prehension and precision activities and Interaction of extrinsic and intrinsic muscles in
various functions of hand.
Functional position of wrist and extensor mechanism of
hand.Architecture of hand
Introduction of pathomechanics of common condition of wrist and hand complex.

Shoulder complex

Stabilizers of
shoulderForce
couples
Pathomechanics of common condition of shoulder complex

ELECTROTHERAPY

Basic electricity
TENS
parameters
Principles of IFT
Parameters of ultrasound
therapyElectrodiagnosis
SD curve
NCV, EMG
Cryotherapy

EXERCISE PHYSIOLOGY

Hormonal and neural control during
exerciseEnergy expenditure and fatigue
Cardiovascular responses and adaptations to
exercisesExercise testing and training
Environmental influence on body and exercise performance

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PART--B

PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS

Manual therapy
approachesDifferential
diagnoses
Pain science
Physical
fitness
ICF model and rehabilitation
Mechanics and pathomechanics of common musculosketal and sports injuries

PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Growth and development of nervous
systemMotor control and learning
Neurophysiology of balance and
coordinationNeuroimagings
Electrodiagnosis

PHYSIOTHERAPY IN CARDIOPULMONARY CONDITIONS

Anatomy, physiology, biomechanics, pathomechanics & applied
anatomyrelated to Cardiovascular & Pulmonary System
Development of the Cardio Vascular, Pulmonary systems
Body positioning and various systemic changes respiratory muscle physiology, fatigue andtraining
Normal and abnormal responses of Cardiovascular & Pulmonary System during exerciseBreathing mechanism in normal and diseased individuals

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SRINIVAS UNIVERSITY

Mukka, Mangaluru – 574146

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COURSE WORK SYLLABUS OF Ph.D. PROGRAMME IN EDUCATION

COLLEGE OF EDUCATION

City Campus, Pandeshwar,
Mangaluru – 575 001.

Ph.D Programme-2019

SYLLABUS OF COURSE WORK

A. COURSE WORK PATTERN

SL. NO.	Subject Code	Subjects	Exam (Hours)	Credits	Internal marks	Externa lmarks	Total marks
1.	PHDED01	Qualitative and Quantitative research methods in Education	2	4	50	50	100
2.	PHDED02	Educational Psychology	2	4	50	50	100
3.	PHDED03	Action Research in Education	2	4	50	50	100
4.	PHDED04	Research and Publication Ethics and Review of Literature	2	4 (1+3)	50	50	100
		Total		**16**	**200**	**200**	**400**

Minimum criteria to pass: 50% marks per subject in both internal & external.

B. COURSE WORK SYLLABUS

PHDED01: Qualitative and Quantitative research methods in Education 100 marksInternal marks: 50 University Examination marks: 50

Unit 1: Educational research- Meaning, characteristics, scope and importanceUnit 2: Educational research problems, statements, variables and hypotheses

Unit 3: Types of Educational research: Historic method, Descriptive Method (Surveys) &Experimental method.

Unit 4: Techniques and tools of research

Unit 5: Statistical data and Measurement scales

References:

- Educational Research – Introduction by Aggarwal J.C
- Fundamentals of Educational Research by Sharma. R.A
- Understanding Educational research by Willium. J Meyer
- Statistics in Psychology and Education by Henry E. Garrett

Distribution of Marks:

- 4 Assignments on 4 Chapters given in the Syllabus (10 -20pages each in handwritten format ina100 Page Long Book . **- 40 marks**
- Online Course Certificate on Research Methodology or Research Techniques in your Subjectfrom SWAYAM or Any other Authentic Agency with Online Exam. – **10 marks**
- For Coursework Exam Descriptive Questions for 50M (5 Qs of 10 Marks will be asked withchoices) - 2 hour duration **- 50 marks**

PHDED02: Educational Psychology **100 marks**

Internal marks: 50 **University Examination marks: 50**

Unit 1: Teaching in the Real world: Development of Cognition, personal, social and emotional development

Unit 2: Behaviourism and Social cognitive theories: Classical and operant conditioning, Modelingtheory, Piaget, Bruner and Vygotsky`s theories of learning.

Unit 3: Cognitive processes: Information Processing, Constructivism, Problem solving, Transfer oflearning and strategic learner

Unit 4: Teachers and Learners: Learners differences, inclusive education, Gender

sensitizationUnit 5: Guidance and Counselling in Education.

References:

- Educational Psychology by Paul Eggen & Don Kauchak
- Educational Psychology by S.K Mangal
- Psychology of Learning And Instruction by N.K. Arjunan
- Educational Psychology by Aggarwal J.C

Distribution of Marks:

- 4 Assignments on 4 Chapters given in the Syllabus (10 -20pages each in handwritten format ina100 Page Long Book .

OR

Prepare 50 Multiple Choice Questions with Answers 10 from each Unit using Any Text Editor.Total number of MCQs with Answers = 10 x 5 units = 50.

- 40 marks

- Online Course Certificate on Educational Psychology from SWAYAM or Any other AuthenticAgency with Online Exam .– **10 marks**
- For Coursework Exam Descriptive Questions for 50M (5 Qs of 10 Marks will be asked withchoices) - 2 hour Duration- **50 marks**

PHDED03: Action research in Education **100 marks**

Distribution of Marks:

Analysis and Interpretation of Issues related to Education (Action research topics should be relatedto the research topic will be chosen by the candidate)

• Case Studies -2 **- 50 marks**

• Journal Publications : 02 with Copy write IPR in Your Name or 02 Conference Presentations +Publications in Proceedings (ISBN) **- 50 marks**

PHDED04: Research and Publication Ethics and Review of Literature **100 marks**

Unit 1: Philosophy andethics

Unit 2: Scientific Conduct

Unit 3:Publication Ethics

Unit 4: Open Access Publishing

Unit 5: Database and Research Metrics

Distribution of Marks:

For Coursework Exam Descriptive Questions (5 Qs of 10 Marks will be asked with choices) - 2 hour duration **- 50 marks**

Review of literature on the search topic selected

(1) Gathering the Information on identified Research Topic,
(2) Systematic Review
(3) Identification of Research gap & Development of Research Agenda

Identification of the research topic with minimum 10 book references, 50 research article references &20 website references. Publication of the article based on the references made with presentation & Bibliography**.** **– 50 marks**

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SRINIVAS UNIVERSITY

Srinivas Nagar, Mukka, Mangalore – 574 146, Phone :0824-2477456
(State Private University Established by Karnataka Govt. ACT No.42 of 2013 empowered to award degrees under Section 22 of UGC Act of UGC, New Delhi, &
Member of Association ofIndian Universities, New Delhi)
Web :www.srinivasuniversity.ac.in, Email:
info@srinivasuniversity.edu.in

ACADEMIC SYLLABUS PERTAINING TO PH.D. COURSE WORK

SRINIVAS UNIVERSITY

(2021 ONWARDS)

PH.D. COURSE WORK

CONTENTS

SRINIVAS UNIVERSITY
COLLEGE OF SOCIAL SCIENCE AND HUMANITIES
PH.D. PROGRAMME – 2021SOCIAL WORK

COURSEWORK SYLLABUS

COURSEWORK PATTERN:

SL. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1.	**SUPHDSW 01**- Qualitative and Quantitative Research & SWAYAM Online Certificate on Research Methodology	2	4	50	50	100
2	**SUPHDSW 02-** Development of Social Work Profession	2	4	50	50	100
3.	**SUPHDSW 03**- Two Case Studies on NGO's Intervention. (Two research Publications)	2	4	50	50	100
4.	**SUPHDSW 04**- Research and Publication Ethics & Literature Review on the Research Topic selected- (One Research Publication)	2	4	50	50	100
Total			16	200	200	400

Note: Total Three Research Publications

Paper 1 **Qualitative and Quantitative Research: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Social Work Research: Definition, Meaning, Scope, Uses of social work research
Unit 2. Sampling Meaning of 'Population', Sampling, Need, Sampling methods and Techniques.
Unit 3. Data Processing and Research Reporting: Methods and techniques of data processing.
Unit 4. Social statistics: Mean, Median, and Mode
Unit 5. SWAYAM Online Certificate on Research Methodology
(Unit 1 to Unit 4 – Handwritten Assignment Based)

Paper 2 **Development of Social Work Profession**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Evolution of Social Work
Unit 2. Social Work Methods
Unit 3. Labour Welfare and Human Research Management
Unit 4 Medical and Psychiatric Social Work
Unit 5 Community Development
Book References:
(1) Popular Master Guide UGC NET/SET Social Work: R. Guptha
(2) Research Methodology: Methods and Techniques: C. R. Kothari
Note: (Prepare 250 MCQ with Answers & submit as Assignment).

Paper 3 **Case Studies on NGO's intervention**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Case Study 1: on a NGO in Community Development -1 - 25 M
Case Study 2: on a Social Problem –2 - 25M
(Convert in to Two Publishable papers related to your respective Subjects)

Paper 4 **Research and Publication Ethics & Literature Review on the Research Topic selected: Internal = 50 Marks, University Examination Marks:50 Total :100 Marks**

Research Publication Ethics &Literature Review on the Research Topic selected. Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 20 website reference. PPT Presentation & Publication of Review Article: 50 M

Paper 1: Qualitative and Quantitative Research

Unit I

Social Work Research: Definition, Meaning, Scope, Uses of social work researcRole and responsibilities**:** Social welfare agencies, social workers in conducting and using social work research. An overview of Research process**:** Identification and formulation of research problem,Definition of problem, Concepts, Variables, Measurement of variable properties. Preparation ofresearch Proposal.

UNIT II

Sampling: Meaning of 'Population', Sampling, Need for sampling, Sampling methods and techniques. Probability Methods: Simple Random, Systematic Random, Stratified Random, Clustered Random. Non – Probability method**:** Accidental, Quota sampling, Purposive sampling, Snow ball sampling.

Data Collection: Primary, Secondary. Tools of Data Collection: Observation, Participant Observation, Non – Participant Observation, Interview Techniques and uses

UNIT – III

Data Processing and Research Reporting: Methods and techniques of data processingManual and Mechanical Procedure, Editing, Classification, Coding, Tabulation,

Data Analysis: Organizing data for analysis: Graphs, Charts, Frequency tablesData analysis, uni – variate, bi- variate, Multi – variate, Qualitative Analysis

Research Reporting: Purpose of research report, Principles, Procedure to be followed in writing areport, Research abstracts

UNIT IV

Social Statistics: Meaning of Statistics

Definitions of Statistics, Characteristics of Statistics, Functions of Statistics, Limitations of statistics, Application of social statistics, Social statistics for social workers. Measures of centraltendency or Averages: The Arithmetic Mean, The Median, The Mode.

UNIT V

Correlation: Meaning of Correlation, Types of correlation, Measures of simple correlation, KarlPearson's coefficient of correlation. Role of computers in research, use of computers in data processing, important characteristics, Limitations of computer based analysis

REFERENCE:

1. Bogdan R &Maylor S J 1975: Introduction to qualitative research methods, New York,John Wiley and Sons, Inc.
2. Filstead W J (Edn.) 1975: Qualitative Methodology, first hand involvement with the SocialWork, Chicago Markam publishers.
3. Gupta S.P 1985: Statistical Methods, New Delhi Sultan Chand & Co.
4. Kothari C.R. 1986: Research Methodology Methods and Techniques, Wiley EasternLimited, New Delhi.
5. Pattern Shetty C.C 1986: An Introduction to research methods in Social Sciences. Coimbatore.
6. Saravanvel P 1989: Research Methodology, Kitab Mahal. Allahabad.
7. Ramachandran P. 1993, Survey Research for Social Work, A. Primer Bombay.

Paper II: Subject Title- Development of Social Work Profession

UNIT I: Introduction to Social Work: Meaning and Definition of Social work
Social work Profession: Attributes of a profession, Social work as a profession and social worker as a professional, Emergence of Social Work Profession in India. Evolution of Social Work from charity to profession, Challenges of Social Work profession in India

UNIT II: Ideology and practice models of Social work: Contribution of religion and religious ideologies, Gandhian philosophy of Social work, Current Ideologies: Relief model,Welfare model, Clinical model, Radical model.

UNIT III: Fields of Social Work: Application of social work in different settings: Industrial settings, Correctional settings, Medical and Psychiatric settings, Rural and urban development settings, Family and Child welfare, Youth welfare, Women welfare and Welfare of the Personswith Disabilities.

UNIT IV – Social work Values and Ethics: Functions: Restoration, provision of resources, prevention. Values of Social work: Relating to individual, problem, relationship, agency, practice. Need and importance of Code of Ethics for Social workers. National and International

Code of Ethics. Field work and importance of Field work supervision. Voluntary Social work: Role of government and voluntary organizations in promoting social welfare Training in Socialwork education, Uses of supervision, meaning and importance. Role of faculty and agency supervisor

REFERENCE:

1. Bradford S W & Others (1988): Techniques and Guidelines for social work practice. Allynand Bacon Inc,, Massachusetts.
2. Briscoe C and Thomas D.N (1977) community work: Learning and Supervision, GeorgeAllen and Unwin Ltd,, London.
3. Butrym Z T (1979) The Nature of Social work. The MacMillan Press Ltd,, London.
4. Gangrade K D (1986) Social Work and Development, Northern Book Centre, New Delhi2.
5. Goel and Jain (1988) Social Welfare Administration, Northern Book center, New Delhi.
6. Gore M S (1965) Social Work and Social Work Education, National Printing House, NewDelhi.
7. Jacob K K (1994) Social Work Education in India, Himanshu Publications, Delhi.
8. Johnson L C (1986) Social Work Practice Generalist Approach, Allen and Bacon Inc.,London.

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PH.D. PROGRAMME – 2021

PSYCHOLOGY COURSEWORK SYLLABUS

COURSEWORK PATTERN:

SL. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1.	**SUPHDP 01-** Qualitative and Quantitative Research & SWAYAM Online Certificate on Research Methodology	2	4	50	50	100
2	**SUPHDP 02** : Psychology and Counseling	2	4	50	50	100
3.	**SUPHDP 03**: Two Case Studies on NGO's Intervention. (Two Research Publications)	2	4	50	50	100
4.	**SUPHDP 04-** Research and Publication Ethics & Literature Review on the Research Topic selected (One Research Publication)	2	4	50	50	100
Total			16	200	200	400

Note: Total Three Research

PublicationsDETAIL SYLLABUS

Paper 1 **Qualitative and Quantitative Research: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1.: Definition, Meaning, Scope, Uses of social work research
Unit 2. Sampling Meaning of 'Population', Sampling, Need, Sampling methods and Techniques.
Unit 3. Data Processing and Research Reporting: Methods and techniques of data processing.
Unit 4. Social statistics: Mean, Median, and Mode
Unit 5. SWAYAM Online Certificate on Research Methodology

(Unit 1 to Unit 4 – Handwritten Assignment Based)

Paper 2 **Psychology and Counseling: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Fundamentals of Human Behavior

Unit 2. Social Psychology
Unit 3. Family Counseling Skills
Unit 4. Positive Psychology
Unit 5. Child Psychology
Book References: (1) Popular Master Guide UGC NET/SET Social Work: R. Guptha
(2) Research Methodology: Methods and Techniques: C. R. Kothari
Note: (Prepare 250 MCQ with Answers & submit as Assignment).

Paper 3 **Case Studies on NGO's intervention**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Case Study 1: on a Psychological Disorders -1 - 25 M
Case Study 2: on a Psychological Assessment Scales –2 - 25 M
(Convert in to Two Publishable papers related to your respective Subjects)

Paper 4 **Research and Publication Ethics & Literature Review on the Research Topic selected: Internal = 50 Marks, University Examination Marks:50 Total :100 Marks**

Research Publication Ethics &Literature Review on the Research Topic selected. Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 20 website reference. PPT Presentation & Publication of Review Article: 50 M

REFERENCES:

1. Bogdan R &Maylor S J 1975: Introduction to qualitative research methods, New York, JohnWiley and Sons, Inc.
2. Filstead W J (Edn.) 1975: Qualitative Methodology, first hand involvement with the SocialWork, Chicago Markam publishers.
3. Gupta S.P 1985: Statistical Methods, New Delhi Sultan Chand & Co.
4. Kothari C.R. 1986: Research Methodology Methods and Techniques, Wiley EasternLimited, New Delhi.
5. Pattern Shetty C.C 1986: An Introduction to research methods in Social Sciences. Coimbatore.
6. Saravanvel P 1989: Research Methodology, KitabMahal. Allahabad.
7. Ramachandran P. 1993, Survey Research for Social Work, A. Primer Bombay.
8. Robert S Feldman (2004). 'Understanding Psychology', Tata McGraw Hill PublishingCompany Limited, New Delhi, Sixth Edition.
9. Robert A Baron (2003). 'Psychology', Prentice Hall of India Private Limited, New Delhi,Fifth Edition.
10. Benjamin B (2003). 'Psychology an Introduction", Tata McGraw Hill Publishing CompanyLimited, New Delhi, Sixth Edition

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COLLEGE OF SOCIAL SCIENCE AND HUMANITIES
PH.D. PROGRAMME – 2021

ENGLISH COURSEWORK SYLLABUS

COURSEWORK PATTERN:

SL. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1.	**SUPHDE 01**- Qualitative and Quantitative Research & SWAYAM Online Certificate on Research Methodology	2	4	50	50	100
2	**SUPHDE 02** : Literature and Related Theories	2	4	50	50	100
3.	**SUPHDE 03**: Literature/Book Review and Publication (Two Research Publications)	2	4	50	50	100
4.	**SUPHDE 04**- Research and Publication Ethics & Literature Review on the Research Topic selected (One Research Publication)	2	4	50	50	100
Total			16	200	200	400

Note: Total Three Research

PublicationsDETAIL SYLLABUS:

Paper 1 **Qualitative and Quantitative Research: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Meaning of Research Choosing a topic, Research proposal and Defining dissertation
Unit 2. Thesis, hypothesis, anti-thesis, thesis statement and types of paragraphs
Unit 3. Structure of a Ph.D. dissertation
Unit 4. Various types of style sheets and their use, Use of online sources, library sources,
plagiarism and academic Integrity intellectual copy rights
Unit 5. SWAYAM Online Certificate on Research Methodology
(Unit 1 to Unit 4 – Handwritten Assignment Based)

Paper 2 **Literature and Related theories: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Indian Writing in English
Unit 2. Comparative literature
Unit 3. Cultural Studies
Unit 4. Translation studies
Unit 5. Introduction to Literary theories
(MCQ 250 Questions (50 MCQ/Unit) with Answer in Softcopy form)

Paper 3 **Literature/Book Review and Publication**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

The Candidate is expected to systematically review two books/ Literatures and publish them in the form of Articles - 25 M each.
(Convert in to Two Publishable papers related to your respective Subjects)

Paper 4 **Publication Ethics Literature Internal = 50 Marks, University Examination Marks:50 Total :100 Marks**

UGC Curriculum on Publication Ethics (20 M)
Literature Review on Research Topic Selected with research gap and research agenda. (80 M)
The details of this paper are to be worked out between the research supervisor and the candidate.

Details of paper SUPHDE 02: Subject Paper: Literature and Related theories.

1. Indian Writing in English
2. Comparative literature
3. Cultural Studies
4. Translation studies.
5. Introduction to Literary theories

Indian Writing in English

1. Who's Imagined Community? : Partha Chatterjee
2. Texts, Histories, Geographies: Reading Indian Literature: P Raveendran
3. Contemporary Indian Poetry in English: An Assessment and Selection: M K Naik
4. Critical Response to Indian Literature in English: Shyam Asnani M
5. A concise History of Indian Literature in English: A K Mehrotra.

Comparative Literature

1. Comparative Literature: A Critical Introduction: Susan Bassnett
2. Comparative Literature in the Age of Multiculturalism: Charles Bernheimer
3. Death of a Discipline: Gayathri Spivak
4. The Challenge of Comparative Literature: Claudio Guillen
5. Comparative Literature: Theory and Practice: Amiya Dev and Sisir Kumar Das

Cultural Studies

1. Culture and Society,1780-1950: Raymond Williams
2. The Dialogic Imagination: Bhaktin

3. The Fashion System: Roland Barthes.
4. The Location of Culture: Homi K Bhabha
5. Gender Trouble: Feminism and The Subversion of Identity: Judith Butler

Translation studies

1. Translation Studies: Susan Bassnett
2. On Linguistic Aspects of Translation: Roman Jackobson
3. The Translation Studies Reader: Laurence Venuti
4. Translation as Discourse: Sujith Mukherjee.
5. Linguistic Theory of Translation: J C Catford

Introduction to Literary theories

1. Gender Trouble: Judith Butler
2. The Commitment to Theory: Homi K Bhabha
3. Introduction to the Power of Forms in the English Renaissance: Stephen Greenblatt
4. Can The Subaltern Speak?GayathriSpivak
5. Of Grammatology: Jacques Derrida
6. An Image of Africa:Racism in Conrad's Heart of Darkness: Chinua Achebe
7. What is an author: Michael Foucault?

Reference:

1. Whose Imagined Community?: Partha Chatterjee
2. Texts, Histories, Geographies: Reading Indian Literature: P Raveendran
3. Contemporary Indian Poetry in English: An Assessment and Selection: M K Naik
4. Critical Response to Indian Literature in English: Shyam Asnani M
5. A concise History of Indian Literature in English: A K Mehrotra.

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JOURNALISM COURSEWORK SYLLABUS

COURSEWORK PATTERN:

SL. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1.	**SUPHDJ 01**- Qualitative and Quantitative Research & SWAYAM Online Certificate on Research Methodology	2	4	50	50	100
2	**SUPHDJ 02** : Advance Media and Communication	2	4	50	50	100
3.	**SUPHDJ 03**: Case Studies on Media (Two Research Publications)	2	4	50	50	100
4.	**SUPHDJ 04**- Research and Publication Ethics & Literature Review on the Research Topic selected (One Research Publication)	2	4	50	50	100
Total			16	200	200	400

Note: Total Three Research Publications

Paper 1 **Qualitative and Quantitative Research: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Definition, Meaning, Scope, Uses of social work research
Unit 2. Sampling Meaning of 'Population', Sampling, Need, Sampling methods and Techniques.
Unit 3. Data Processing and Research Reporting: Methods and techniques of data processing.
Unit 4. Social statistics: Mean, Median, and Mode
Unit 5. SWAYAM Online Certificate on Research Methodology

(Unit 1 to Unit 4 – Handwritten Assignment Based)

Paper 2 **Advance Media and Communication**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Communication Theory
Unit 2. History, Practices, Values of Mass Media
Unit 3. Mass Communication and Society
Unit 4. Mass Media, Culture and Development
Unit 5. Information Technology, Telecommunication and Internet.
Book References: (1) Popular Master Guide UGC NET/SET Journalism: R. Guptha
(2) Research Methodology: Methods and Techniques: C. R. Kothari
Note: (Prepare 250 MCQ with Answers & submit as Assignment).

Paper 3 **Case Studies on Media**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Case Studies on Media and Entertainment, Advertisement, Social Media, And Social Networking
(Two Research Publications)

Paper 4 **Research and Publication Ethics & Literature Review on the Research Topic selected: Internal = 50 Marks, University Examination Marks:50 Total :100 Marks**

Research Publication Ethics &Literature Review on the Research Topic selected. Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 20 website reference. PPT Presentation & Publication of Review Article: 50 M

REFERENCES:

1. Bogdan R &Maylor S J 1975: Introduction to qualitative research methods, New York, JohnWiley and Sons, Inc.
2. Filstead W J (Edn.) 1975: Qualitative Methodology, first hand involvement with the SocialWork, Chicago Markam publishers.
3. Gupta S.P 1985: Statistical Methods, New Delhi Sultan Chand & Co.
4. Kothari C.R. 1986: Research Methodology Methods and Techniques, Wiley EasternLimited, New Delhi.
5. Pattern Shetty C.C 1986: An Introduction to research methods in Social Sciences. Coimbatore.
6. Saravanvel P 1989: Research Methodology, KitabMahal. Allahabad.
7. Ramachandran P. 1993, Survey Research for Social Work, A. Primer Bombay.
8. News Reporting and Editing. K.M.Shrivastava Revised Edition 2003
9. Mass communication in India Keval.J. Kumar Fourth edition revised and updated
10. The Elements of Journalism. Bill Kovach and Tom Rosenstiel

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PH.D. PROGRAMME – 2021

SOCIOLOGY

COURSEWORK SYLLABUS

COURSEWORK PATTERN:

SL. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1.	**SUPHDS 01-** Qualitative and Quantitative Research & SWAYAM Online Certificate on Research Methodology	2	4	50	50	100
2	**SUPHDS 02** : Emerging Sociology	2	4	50	50	100
3.	**SUPHDS 03**: Case Studies on Media (Two Research Publications)	2	4	50	50	100
4.	**SUPHDS 04-** Research and Publication Ethics & Literature Review on the Research Topic selected (One Research Publication)	2	4	50	50	100
Total			16	200	200	400

Note: Total Three Research Publications

Paper 1 **Qualitative and Quantitative Research: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Definition, Meaning, Scope, Uses of social research
Unit 2. Sampling Meaning of 'Population', Sampling, Need, Sampling methods and Techniques.
Unit 3. Data Processing and Research Reporting: Methods and techniques of data processing.
Unit 4. Social statistics: Mean, Median, and Mode
Unit 5. SWAYAM Online Certificate on Research Methodology

(Unit 1 to Unit 4 – Handwritten Assignment Based)

Paper 2 **Emerging Sociology**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Sociological Theory
Unit 2. Basic Concepts and Social Institutions
Unit 3. Social Stratification and Social Change
Unit 4. Rural and Urban Transformation
Unit 5 Economy and Society
Book for References
(1) Popular Master Guide UGC NET/SET Sociology: R. Guptha
(2) Research Methodology: Methods and Techniques: C. R. Kothari
Note: Prepare 250 MCQ with Answers & submit as Assignment (2)

Paper 3 **Case Studies on Media**: **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Case Studies on Media and Entertainment, Advertisement, Social Media, And Social Networking
(Two Research Publications)

Paper 4 **Research and Publication Ethics & Literature Review on the Research Topic selected: Internal = 50 Marks, University Examination Marks:50 Total :100 Marks**

Research Publication Ethics &Literature Review on the Research Topic selected. Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 20 website reference. PPT Presentation & Publication of Review Article: 50 M

Detail syllabus for paper 2
Unit -1: Sociological
Theory
Classical Sociological Traditions: Emile Durkheim, Max Weber, Karl
Marx Structure- Functionalism and Structuralism: Talcott Parsons, Robert
K.Merton
Post Modernism, Post Structuralism and Post Colonialism: Michel Foucault, Jurgen Habermas
Indian Thinkers: M.K.Gandhi, B.R.Ambedkar

Unit -2: **Basic Concepts and Institutions**
Sociological Concepts: Social Structure, Culture, Status and Role, Identity, Values, Norms andRules, Personhood, Bureaucracy, Power and Authority
Social Institutions: Marriage, Family and Kinship, Economy, Polity, Religion, Education, Lawand Customs.

Unit 3: Social Stratification and Social Change
Social Difference, Hierarchy, Inequality and Marginalization, Caste and Class, Gender, Sexualityand Disability, Race, Tribe and Ethnicity
Social Change and Processes: Evolution and Diffusion, Modernization and
DevelopmentSocial Transformations and Globalization

Unit – 4 :Rural and Urban Transformations

Rural and Peasant Society, Caste-Tribe Settlements, Agrarian Social Structure, Decline of Agrarian Economy, Migration, Agrarian Unrest and Peasant Movements, Changing Inter-Community Relations and Violence

Urban Society: Urbanism, Urbanity and Urbanization, Towns, Cities and Mega-Cities

Industry, Service and Business, Slums, Urban Movements.

Unit – 5: Economy and Society

Exchange, Gift, Capital, Labour and Market, Mode of Production Debates

Property and Property Relations, State and Market: Welfarism and

Neoliberalism

Models of Economic Development, Poverty and Exclusion, Factory and Industry Systems

REFERENCES:

1. Bogdan R &Maylor S J 1975: Introduction to qualitative research methods, New York, JohnWiley and Sons, Inc.
2. Filstead W J (Edn.) 1975: Qualitative Methodology, first hand involvement with the SocialWork, Chicago Markam publishers.
3. Gupta S.P 1985: Statistical Methods, New Delhi Sultan Chand & Co.
4. Kothari C.R. 1986: Research Methodology Methods and Techniques, Wiley EasternLimited, New Delhi.
5. Pattern Shetty C.C 1986: An Introduction to research methods in Social Sciences. Coimbatore.
6. Saravanvel P 1989: Research Methodology, KitabMahal. Allahabad.
7. Ramachandran P. 1993, Survey Research for Social Work, A. Primer Bombay.
8. Sociological theory- George Ritzer
9. Sociology, Principles of sociology with an Introduction to Sociological thought. CN shankarRao

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PH.D. PROGRAMME – 2021

ECONOMICS COURSEWORK SYLLABUS

COURSEWORK PATTERN:

SL. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1.	**SUPHDEC 01-** Qualitative and Quantitative Research & SWAYAM Online Certificate on Research Methodology	2	4	50	50	100
2	**SUPHDEC 02** : Advance Economics	2	4	50	50	100
3.	**SUPHDEC 03**: Case Studies on Media (Two Research Publications)	2	4	50	50	100
4.	**SUPHDEC 04-** Research and Publication Ethics & Literature Review on the Research Topic selected (One Research Publication)	2	4	50	50	100
Total			16	200	200	400

Note: Total Three Research Publications

Paper 1 **Qualitative and Quantitative Research: Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Definition, Meaning, Scope, Uses of social research
Unit 2. Sampling Meaning of 'Population', Sampling, Need, Sampling methods and Techniques.
Unit 3. Data Processing and Research Reporting: Methods and techniques of data processing.
Unit 4. Social statistics: Mean, Median, and Mode
Unit 5. SWAYAM Online Certificate on Research Methodology

(Unit 1 to Unit 4 – Handwritten Assignment Based)

Paper 2 **Advance Economics** : **Internal Marks: 50, University Examination Marks:50 Total :100 Marks**

Unit 1. Micro Economics

Unit 2. Macro Economics
Unit 3. Public Economics
Unit 4. Money and Banking
Unit 5. Growth and Development Economics

Book References:

1. Indian Economy by Ramesh Singh.
2. Popular Master Guide UGC NET/SET Economics: R. Guptha
3. Research Methodology: Methods and Techniques: C. R. Kothari

Note: Prepare 250 MCQ with Answers & submit as Assignment (2)

Paper 3 **Macro Economics : Internal Marks 50, University Examination Marks:50 Total :100 Marks**

Macro Economics- inflation, Rate of economic growth, Gross Domestic Product, Price Level, Unemployment, Savings, investment, International trade and International Finance.
(Two Research Publications)

Paper 4 **Research and Publication Ethics & Literature Review on the Research Topic selected: Internal = 50 Marks, University Examination Marks:50 Total :100 Marks**

Research Publication Ethics &Literature Review on the Research Topic selected. Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 20 website reference. PPT Presentation & Publication of Review Article: 50 M
(One Publishable Paper)

Note: Total Three Research Publications

Economics Syllabus

Unit-1: Micro Economics

Theory of Consumer Behavior, Theory of Production and Costs, Decision making under uncertainty Attitude towards Risk, Game Theory – Non-Cooperative games, Market Structures, competitive and non-competitive equilibrium and their efficiency properties, Factor Pricing General Equilibrium Analysis, Efficiency Criteria: Pareto-Optimality, Kaldor – Hicks and Wealth Maximization, Welfare Economics: Fundamental Theorems, Social Welfare Function, Asymmetric Information: Adverse Selection and Moral Hazard

Unit-2 : Macro Economics

National Income: Concepts and Measurement, Determination of output and employment: Classical& Keynesian Approach, Consumption Function, Investment Function, Multiplier and Accelerator, Demand for Money, Supply of Money, IS – LM Model Approach Inflation and Phillips Curve Analysis, Business Cycles, Monetary and Fiscal Policy, Rational Expectation Hypothesis and its critique Tariff and Non-Tariff barriers to trade; Dumping GATT, WTO and Regional Trade Blocks;Trade Policy Issues, IMF & World Bank

Unit-3: Public Economics

Market Failure and Remedial Measures: Asymmetric Information, Public Goods, Externality Regulation of Market – Collusion and Consumers' Welfare Public Revenue: Tax & Non-Tax Revenue, Direct & Indirect Taxes, Progressive & non-Progressive, Incidence & Effects of Taxation,Public expenditure, Public Debt and its management, Public Budget and Budget Multiplier, FiscalPolicy and its implications.

Unit-4: Money, Banking and Development Economics

Components of Money Supply, Central Bank, Commercial Banking, Instruments and working of Monetary Policy, Non-banking Financial Institutions, Capital Market and its Regulation

Economic Growth and Economic Development, Theories of Economic Development: Adam Smith, Ricardo, Marx, Schumpeter, Balanced & Unbalanced growth. Models of Economic Growth: Harrod- Domar, Solow, Robinson, Kaldor Technical progress – Disembodied & embodied; endogenous growth Indicators of Economic Development: PQLI, HDI, SDGs Poverty and Inequalities – Concepts and Measurement, Social Sector Development: Health,Education, Gender

REFERENCES:

Bogdan R &Maylor S J 1975: Introduction to qualitative research methods, New York, John Wileyand Sons, Inc.

Filstead W J (Edn.) 1975: Qualitative Methodology, first hand involvement with the Social Work,Chicago Markam publishers.

Gupta S.P 1985: Statistical Methods, New Delhi Sultan Chand & Co.

Kothari C.R. 1986: Research Methodology Methods and Techniques, Wiley Eastern Limited, NewDelhi.

Pattern Shetty C.C 1986: An Introduction to research methods in Social Sciences. Coimbatore.

Saravanvel P 1989: Research Methodology, Kitab Mahal. Allahabad.

Ramachandran P. 1993, Survey Research for Social Work, A. Primer

Bombay.Micro Economic Theory Andrew Mas Colell

Principles of Economics- N. Gregeory Mankiw, 7th EditionInternational Economics 11th edition Willey

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Mukka, Mangaluru – 574146

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[In compliance of University Grants Commission (Minimum Standards and Procedures for Award of M.Phil./Ph.D. Degree) Regulations, 2016]
Effective from 2017

SYLLABUS & COURSE WORKOF M . P H I L / PH.D. PROGRAMME IN ELECTRONICS & ENGINNERING FROM JUNE 2019

COLLEGE OF COMPUTER SCIENCE & INFORMATION SCIENCE

City Campus, Pandeshwar,
Mangaluru – 575 001.

SRINIVAS UNIVERSITY

COLLEGE OF COMPUTER SCIENCE & INFORMATION SCIENCE

PH.D. PROGRAMME – June-2019

SYLLABUS OF COURSE WORK

A. COURSE WORK PATTERN 400 M

Sl. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1	Qualitative & Quantitative Research in Electronics	2	4	50	50	100
2	Advanced Topics in Electronics	2	4	50	50	100
3	Publication and Presentation on Research topic, Review of Literature (1 paper)	2	4	50	50	100
4	Publication and Presentation of Industry Analysis (1 paper) Publication and Presentation of Company Analysis (1 paper)	2	4	50	50	100
Total			**16**	**200**	**200**	**400**

B. COURSE WORK SYLLABUS

I. Qualitative & Quantitative Research Methods 100 M

Internal Marks: 50 **University Examination Marks: 50**

Unit 1: Research Methodology
Unit 2: Probability and Statistics.
Unit 3:Scripting Languages:
Unit 4: Technical writing using LaTeX:
Unit 5: Research Methods & Techniques Certification:

Note : Submit hand written Assignment for Unit 1 to Unit 4 (4 Assignments). Submit OnlineCertificate obtained from NPTEL or Swayam.

Examination Pattern: Answer any 5 questions from 6, each carries 10 Marks. These questionsshould cover all four units.

2. Subject Paper: Advanced Topics in Computer Science and Information

Science 100 MInternal Marks : 50University Examination Marks : 50

Unit 1. Basics of Electronics
Unit 2. Amplifiers
Unit 3. Boolean Algebra and Logic Gates
Unit 4. Sequential Circuits and microprocessors
Unit 5. Introduction to Communication

Note : Prepare and submit Assignment in electronic format and also submit 250 MCQs Questions and answers (From each unit 50 Questions).

Examination Pattern: Answer all 50 questions, each carries 1 mark.

3. IT Case Studies 100 Marks

Internal Marks: 50 University Examination Marks: 50

Publication and Presentation of Industry Analysis (1 paper) Publication and Presentation of Company Analysis (1 paper)

a. Industry Analysis, Publication and Presentation - 1
b. Company Analysis, Publication and Presentation – 2

Examination pattern: Answer any 5 Questions from 6, each carries 10 marks (Guide will prepare 3 Questions From Industry Analysis paper, and 3 Questions from Company Analysis paper)

4. Literature Review on Research Topic 100 M

Internal Marks: 50 University Examination Marks: 50

Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 10 website reference. PPT Presentation & Publication of Review Article with research gap, and research agenda.

Examination pattern: Answer any 5 Questions from 6, each carries 10 marks (Guide willprepare 6 questions from Literature Review Article)

Minimum for Pass required: 50% Marks in each individual subject.

Detailed Syllabus of Qualitative & Quantitative Research in CS & IS

UNIT I

Research Methodology: Introduction to Scientific Research, Meaning, Objectives and Significance of Research Motivation in Research, Types of research approaches, Quantitative research methods, Research methods versus methodology, Research process, Criteria of good research, Research problems, Necessity of defining the problem, Technique involved in defining the problem, Design and Development Research Methods, Meaning of research design, Need for research design, Features of a good design, Different research designs, Basic principles of experimental designs, Ethics in research, Building expertise in the areas of interest, generating the base content in the selected area, literature survey for research work, arriving at directions of research, Formulation of research title, development of criteria based research proposal.

UNIT II

Probability and Statistics: Probability as a measure of uncertainty, probabilities for events, axioms, probability rules, Fail time data analysis, Hazard models, conditional probability, Bayes' rule, random variables, probability distributions, discrete and continuous distributions, univariate and multivariate distributions, joint, marginal, conditional distributions, expected values (mean, variance, covariance), sampling/simulation, study of a population or distribution, System reliability, Stochastic process, Software tools for Mathematical and statistical analysis, Scilab/SPSS.

UNIT III

Scripting Languages: Overview: The nature of scripting languages, scripting v/s programming, Python Programming. Regular expressions, Network programming, Internet client programming, Multithreaded programming, GUI programming, Database programming, Web clients and servers, Web programming: CGI and WSGI, Web frameworks : Django, web services.

UNIT IV

Technical writing using LaTeX: Scientific Writing : Significance of report writing, Structure and Components of Research Report, Types of Report: research papers, thesis, Research Project Reports, Precautions for writing research reports, Pictures and Graphs, Citation Styles, Oral presentation, Exposure to LaTeX, Installation, MikTeX, TeXnicCenter, Creating reports and articles, Text environment, Math environment, Figures, Tables, BibTeX - reference manager, Camera Ready Preparation. Statistics. Interpretation – Meaning,Technique, Precaution. Report Writing – Significance, Different Steps. Layout of the Research Report, Types of Reports, Oral Presentation, Research Report Writing – Mechanics,Precautions.

UNIT V

Online Certification Course based on research methodology from NPTEL, Swayam or any other online course providers.

REFECENCES:

1. C. R. Kothari, *Research Methodology Methods & Techniques*, 2nd Edition, WishwaPakashan Publishers.
2. Misra R.P, *Research Methodology – A Hand Book*, Concept publishing Company, NewDelhi 1988
3. Kai Lai Chung, *A Course in Probability Theory*, Third Edition, Academic Press.
4. Gilbert Strang, *Introduction to Linear Algebra*, 3rd edition, Wellesley-Cambridge Pressand SIAM
5. David Barron, *The World of Scripting Languages*, Wiley Publications.
6. *Core Python application programming*, Third edition Wesley J Chun, PEARSON.
7. Leslie Lamport, *LaTeX: A Document Preparation System*, Second Edition.

Detailed Syllabus of Subject Paper in Advanced Topics in Electronics

Unit 1-Basics of Electronics Resistors, Inductors, Capacitors, PN Junction diode, biasing, characteristics, types of diodes, Transistors, characteristics, types of transistors, FETs, UJT

Unit II- Amplifiers: Theory of amplification, Basic CE amplifiers, Different types of Amplifiers, Operational Amplifiers, Inverting and Non Inverting Amplifiers, Differential Amplifiers, Adder, Differentiator, Voltage to current and current to voltage converter

Unit III-Boolean Algibra and Logic Gates: Number system, Conversion to different bases, binary algebra, Number representation (single precission, double precission), Basic Logic gates, Universal gates, Boolean Postulates, Simplification of SOP using Boolean Algibra, Design of Expressions using basic logic gates, K-Map 3 and 4 variables

Unit IV: Sequential Circuits and Microproocessors: Flip Flops, Various Types of Flip Flops, Assynchronous Counters, Synchronous counters, Design of Mod 10 counter, Ripple Counter, Registers, Different types of Registers, Comparators, Introduction to Microprocessor 8086, Architercture of 8086 Processors, Programming of 8086 Processors, Different types of Interrupts

Unit V: Introduction to Communication:
Basics of Communication, Basics of Modulation, Different types of Modulation, Frequency Modulation, Pulse Amplitude Modulation, Pulse Width Modulation, Pulse Position Modulation, Demodulation, Introduction to TV Communication, Composit TV signal Analysis, Antenna- Different btypes and Uses

Reference Books

(1) Basic Electronics: AP Godse, U A Bhakshi
(2) Basic Electronics Solid State : B L Thereja
(3) Analog and Digital Electronics : U A Bhakshi and A P Ghodse
(4) Digital Logic and Computer Design: Moris M Mano
(5) Architecture, Programming and Interfacing: Lyla B Das
(6) Fundamentals of Electronic Communication System :Wayne Tomasi
(7) Television Engineerindg and Video Systems:R G Gupta

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SRINIVAS UNIVERSITY

Mukka, Mangaluru – 574146

Web : www.srinivasuniversity.ac.in

[In compliance of University Grants Commission (Minimum Standards and Procedures for Award of M.Phil./Ph.D. Degree)Regulations, 2016]
Effective from 2017

REVISED COURSEWORK SYLLABUS OF M . P H I L / PH. D. PROGRAMME IN COMPUTERSCIENCE / COMPUTER SCIENCE & ENGINEERING FROM JANUARY 2020

COLLEGE OF COMPUTER SCIENCE & INFORMATION SCIENCE

City Campus,
Pandeshwar,
Mangaluru – 575 001.

SRINIVAS UNIVERSITY
COLLEGE OF COMPUTER SCIENCE & INFORMATION

SCIENCEPH.D. PROGRAMME – JANUARY-2020

SYLLABUS OF COURSE WORK

A. COURSE WORK PATTERN 400 M

Sl. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1	Qualitative & Quantitative Research in CS & IS	2	4	50	50	100
2	Advanced Topics in CS & IS	2	4	50	50	100
3	Publication and Presentation of Industry Analysis (1 paper) Publication and Presentation of Company Analysis (1 paper)	2	4	50	50	100
4	Research and Publication Ethics and Research topic, Review of Literature (1 paper)	2	4 (2+2)	50	50	100
Total			**16**	**200**	**200**	**400**

B. COURSE WORK SYLLABUS

1. Qualitative & Quantitative Research Methods 100 M

Internal Marks: 50 **University Examination Marks: 50**

Unit 1: Research Methodology
Unit 2: Probability and Statistics
Unit 3: Scripting Languages
Unit 4: Technical writing using LaTeX
Unit 5: Research Methods & Techniques Online Certification:

Note : Submit hand written Assignment for Unit 1 to Unit 4 (4 Assignments). Submit Online Certificate obtained from NPTEL or Swayam.

Examination Pattern: Answer any 5 questions from 6, each carries 10 Marks. These questionsshould cover all four units.

2. Subject Paper: Advanced Topics in Computer Science and Information Science

100 MInternal Marks : 50 **University Examination Marks : 50**

Unit 1: NoSQL Databases
Unit 2: Artificial Neural Networks
Unit 3: Cloud Computing
Unit 4: Data Science
Unit 5: Blockchain

Note : Prepare and submit Assignment in electronic format and also submit 250 MCQsQuestions and answers (From each unit 50 Questions).

Examination Pattern: Answer all 50 questions, each carries 1 mark.

3. IT Case Studies **100 Marks**

Internal Marks: 50 **University Examination Marks: 50**

Publication and Presentation of Industry Analysis (1 paper) Publication and Presentation of Company Analysis (1 paper)

(1) Industry Analysis, Publication and Presentation - 1

(2) Company Analysis, Publication and Presentation – 2

Examination pattern: Answer any 5 Questions from 6, each carries 10 marks (3 Questions fromResearch and Publication Ethics and 3 Questions from Literature Review Article)

4. Research and Publication Ethics and Literature Review on Research Topic 100

MarksInternal Marks: 50 **University Examination Marks: 50**

Research and Publication Ethics Syllabus (As per latest UGC norms)

Theory:

RPE 01: Philosophy and Ethics: Introduction to philosophy: definition, nature and scope, conceptbranches, Ethics: definition, moral philosophy, nature of moral judgements and reactions.

RPE 02: Scientific Conduct: Ethics with respect to science and research, intellectual honesty, and research integrity, Scientific misconducts: Falsification, Fabrication, and Plagiarism (PFP), RedundantPublications: duplicating and overlap publications, salami slicing, Selective reporting and misrepresentation of data

RPE 03: Publication Ethics: Publication ethics: definition, introduction and importance, Best Practices and standard setting initiatives and guidelines, COPE, WAME etc., conflicts of interest, Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types, Violation of publication ethics, authorship and contributor ship, Identification of publication misconduct, complaints and appeals, Predator Publishers and journals.

Practice:

RPE 04: Open Access Publishing: Open access publication and initiatives, Software tool to identify predatory publication developed by SPPU, Journal finder and journal suggestion tools,

RPE 05: Publication Misconduct: Group Discussion on Subject specific ethical issues, FFP authorship, Conflict of interest, Complaints and appeals: examples and fraud from India and abroad. Use of plagiarism software like urkund, Turnitin, Drillbit and other open source software tools.

RPE 06: Database and Research Metrics: Indexing databases, citation databases: Web of science, Scopus etc. Research Metrics: Impact factor of Journal Citation Report, SNIP, SJR, IPP, Cite Score, Metrics: h-index, g index, i10 index, altimetric.

Literature Review on Research Topic

Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 50 research article reference, & 10 website reference. PPT Presentation & Publication of Review Article with research gap, and research agenda.

Examination pattern: Answer any 5 Questions from 6, each carries 10 marks (Guide will prepare 3 Questions from Research and Publication Ethics any 6 RPE sections without any conditions like it should cover all 6 RPE sections and 3 Questions from Literature Review Article).

Minimum for Pass required: 50% Marks in each individual subject.

Detailed Syllabus of Qualitative & Quantitative Research in CS & IS

UNIT I

Research Methodology: Introduction to Scientific Research, Meaning, Objectives and Significance of Research Motivation in Research, Types of research approaches, Quantitative research methods, Research methods versus methodology, Research process, Criteria of good research, Research problems, Necessity of defining the problem, Technique involved in defining the problem, Design and Development Research Methods, Meaning of research design, Need for research design, Features of a good design, Different research designs, Basic principles of experimental designs, Ethics in research, Building expertise in the areas of interest, generating the base content in the selected area, literature survey for research work, arriving at directions of research, Formulation of research title, development of criteria based research proposal.

UNIT II

Probability and Statistics: Probability as a measure of uncertainty, probabilities for events, axioms, probability rules, Fail time data analysis, Hazard models, conditional probability, Bayes' rule, random variables, probability distributions, discrete and continuous distributions, univariate and multivariate distributions, joint, marginal, conditional distributions, expected values (mean, variance, covariance), sampling/simulation, study of a population or distribution, System reliability, Stochastic process, Software tools for Mathematical and statistical analysis,Scilab/SPSS.

UNIT III

Scripting Languages: Overview: The nature of scripting languages, scripting v/s programming, Python Programming. Regular expressions, Network programming, Internet client programming, Multithreaded programming, GUI programming, Database programming, Web clients and servers, Web programming: CGI and WSGI, Web frameworks : Django, web services.

UNIT IV

Technical writing using LaTeX: Scientific Writing : Significance of report writing, Structure and Components of Research Report, Types of Report: research papers, thesis, Research Project Reports, Precautions for writing research reports, Pictures and Graphs, Citation Styles, Oral presentation, Exposure to LaTeX, Installation, MikTeX, TeXnicCenter, Creating reports andarticles, Text environment, Math environment, Figures, Tables, BibTeX - reference manager, Camera Ready Preparation. Statistics. Interpretation – Meaning, Technique, Precaution. Report Writing – Significance, Different Steps. Layout of the Research Report, Types of Reports, Oral Presentation, Research Report Writing – Mechanics, Precautions.

UNIT V

Online Certification Course based on research methodology from NPTEL, Swayam or any other online course providers.

REFECENCES:

1. C. R. Kothari, *Research Methodology Methods & Techniques*, 2nd Edition, WishwaPakashan Publishers.
2. Misra R.P, *Research Methodology – A Hand Book*, Concept publishing Company, NewDelhi 1988
3. Kai Lai Chung, *A Course in Probability Theory*, Third Edition, Academic Press.
4. Gilbert Strang, *Introduction to Linear Algebra*, 3rd edition, Wellesley-Cambridge Press andSIAM

5. David Barron, *The World of Scripting Languages*, Wiley Publications.
6. *Core Python application programming*, Third edition Wesley J Chun, PEARSON.
7. Leslie Lamport, *LaTeX: A Document Preparation System*, Second Edition.

Detailed Syllabus of Advanced Topics in Computer Science and Information Science

Unit 1: NoSQL Databases: Storage architecture, CRUD operations, Querying NoSQL stores, Modifying stores, Managing evolution, Indexing & Ordering data sets, Managing transactions, Choosing among NoSQL flavors, Coexistence, Performance tuning, Tools and utilities.

Unit 2: Artificial Neural Networks: Introduction, Fundamental concepts, Basic models of artificial neural network, Important terminologies of ANN, Perceptron networks, Back-Propagation network, Kohonen Self-Organizing feature maps, Learning vector quantization, Convolutional neural networks.

Unit 3: Cloud Computing: Fundamentals, Deployment models, Service models, Cloud platforms, Challenges, Security issues, Business value of cloud computing.

Unit 4: Data Science: Introduction, Terminologies, Basic framework and architecture, difference between data science and business analytics, importance of data science in today's business world, primary components of data science, Overview of different data science techniques, Industrial applications.

Unit 5: Blockchain: Overview of block chain, Block in a block chain, Public ledgers, Cryptocurrency, Bitcoin, Smart contracts, Transactions, Distributed consensus, Public vs Private block chain, Understanding crypto currency to Block chain, Overview of security aspects of block chain, Cryptographic hash Function, Properties of a hash function, Hash pointer and Merkle tree, Digital signature, Public key cryptography.

Reference Books:

1. Shashank Tiwari, Professional NoSQL, Wiley, 2011.
2. Gaurav Vaish, Getting Started with NoSQL, Packt Publishing, 2013.
3. Sivanandam SN, Deepa SN, Principles of Soft Computing, Wiley, 2018.
4. Simon Haykin, Neural Networks & Learning Machines, Pearson, 2016.
5. Thomas Erl, Cloud Computing: Concepts, Technology & Architecture, Pearson Education, 2014.
6. Srinivasan, Cloud Computing: A Practical Approach for Learning and Implementation PearsonEducation, 2014.
7. Foster Provost, Tom Fawcett, Data Science for Business: What You Need to Know about DataMining and Data-Analytic Thinking, O'Reilly Media, 2013.
8. John W. Foreman, Data Smart: Using Data Science to Transform Information into Insight, WileyPublication, 2015.
9. Melanie Swan, Block Chain: Blueprint for a New Economy, O'Reilly, 2015.
10. Anshul Kaushik, Block Chain and Crypto Currencies, Khanna Publishing House, 2019.

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[In compliance of University Grants Commission (MinimumStandards and Procedures for Award ofPh.D. Degree) Regulations, 2016]

COURSEWORK SYLLABUS OF Ph.D. PROGRAMME IN MANAGEMENT ANDCOMMERCE

COLLEGE OF MANAGEMENT AND COMMERCE

City Campus, Pandeshwar,
Mangaluru – 575 001.

SRINIVAS UNIVERSITY
COLLEGE OF MANAGEMENT & COMMERCE

Ph.D. PROGRAMME

SYLLABUS OF COURSEWORK

A. COURSEWORK PATTERN 400 M

Sl. No.	Subjects	Exam (Hours)	Credits	Internal Marks	External Marks	Marks
1	Qualitative & Quantitative Research Methods in Business Management / Commerce	2	4	50	50	100
2	Advanced Topics in Business Management / Commerce	2	4	50	50	100
3	Publication and Presentation of Industry and Company Analysis	2	4	50	50	100
4	Research and Publication Ethics and Review of Literature	2	4 (1+3)	50	50	100
Total			**16**	**200**	**200**	**400**

B. COURSEWORK SYLLABUS

1. Qualitative & Quantitative Research Methods in Business Management & Commerce 100 M

Internal Marks : 50 University Examination Marks : 50

Unit 1:Various Research methods & Methodologies & Their Applications.
Unit 2:Empirical Research, Hypothesis Testing, Data Collection, Analysis & Interpretation.
Unit 3:Focus Group Interactions & Model Building.
Unit 4.:Data Analysis using MS Excel.
Unit 5:Online course Certification on Research Methodology or Research Techniques from,SWAYAM /SWAYAM ARPIT.

Note: Submit Hand written Assignment for Unit 1 to Unit 4 (4 Assignments).
Submit Online Certificate obtained SWAYAM/SWAYAM ARPIT Refresher Programme inResearch Methodology.
Examination Pattern: Answer any 5 questions from 6, each carries 10 Marks. These questionsshould cover all four units.

2. Subject Paper :Advanced Topics in Business Management / Commerce 100 M

Internal Marks : 50 University Examination Marks : 50

Unit 1. People, Management, and Policy.
Unit 2.Money : Economics, Finance, and Accounting .
Unit 3. Markets & Strategy.
Unit 4. Systems & Processes .
Unit 5.Organizational Behaviour.

Note : Prepare and submit 250 MCQs Questions with answer in electronic format (From each unit 50 Questions).
Examination Pattern: Answer all 50 questions, each carries 1 mark.

3. Publication and Presentation of Industry and Company Analysis 100 M

Internal Marks : 50 University Examination Marks : 50

Case Study on a Company/Organisation/Industry – 1 - 25 M
Case Study on a Company/ Organisation/Industry – 2 - 25 M

Examination pattern: Answer any 5 Questions from 6, each carries 10 marks (3 Questions from Industry Analysis Paper and 3 Questions from Company Analysis Paper)

4. Research and Publication Ethics and Review of Literature 100 M

Internal Marks : 50 University Examination Marks : 50

Research and Publication Ethics Workshop Syllabus (As per latest UGC norms)Theory: *RPE 01: Philosophy and Ethics:* Introduction to philosophy: definition, nature and scope, concept branches, Ethics: definition, moral philosophy, nature of moral judgements and reactions.
RPE 02: Scientific Conduct: Ethics with respect to science and research, intellectual honesty, and research integrity, Scientific misconducts: Falsification, Fabrication, and Plagiarism (PFP), Redundant *Publications:* duplicating and overlap publications, salami slicing, Selective reporting and misrepresentation of data
RPE 03: Publication Ethics: Publication ethics definition, introduction and importance, Best Practices and standard setting initiatives and guidelines,: COPE, WAME etc., conflicts of interest, Publication misconduct: definition, concept, problems that lead to uetical behavior and vice versa, types, Violation of publication ethics, authorship and contributor ship, Identification of publication misconduct, complaints and appeals, Predator Publishers and journals.
Practice:
RPE 04: Open Access Publishing: Open access publication and initiatives, Software tool to identify predatory publication developed by SPPU, Journal finder and journal suggestion tools,*RPE 05: Publication Misconduct:* Group Discussion on Subject specific ethical issues, FFP authorship, Conflict of interest, Complaints and appeals: examples and fraud from India and abroad. Use of plagiarism software like urkund, Turnitin, Drillbit and other open source software tools.
RPE 06: Database and Research Metrics: Indexing databases, citation databases: Web of science, Scopus etc. Research Metrics: Impact factor of Journal Citation Report, SNIP, SJR, IPP, Cite Score, Metrics: h-index, g index, i10 index, altimetric.

Review of Literature on Research Topic

Topic Identification, preparing a Review Article on the identified topic with minimum 10 book reference, 75 research article reference, & 10 website reference, PPT Presentation & Publication of Review Article

Examination pattern: Answer any 5 Questions from 6, each carries 10 marks (Guide will prepare 2 Questions from Research and Publication Ethics and 4 Questions from LiteratureReview Article).

Minimum for Pass Required: 50% Marks in each Individual Subject.

Detailed Syllabus for Qualitative & Quantitative Research Methods in Business Management & Commerce

Unit 1: Various Research methods,Methodologies,Their Applications.
Research Methodology: Introduction to Scientific Research, Meaning, Objectives and Significance of Research Motivation in Research, Types of research approaches, Quantitative research methods, Research methods versus methodology, Research process, Criteria of goodresearch, Research problems, Necessity of defining the problem, Technique involved indefining the problem, Design and Development Research Methods, Meaning of research design, Need for research design, Features of a good design, Different research designs, Basicprinciples of experimental designs, Ethics in research, Building expertise in the areas of interest, generating the base content in the selected area, literature survey for research work, arriving at directions of research, Formulation of research title, development of criteria based research proposal.

Unit 2: Empirical Research, Hypothesis Testing, Data Collection, Analysis &Interpretation.
Sampling Fundamentals, Basic Concepts Concerning Testing of Hypotheses, Collection of Primary Data ,Collection of Secondary Data , Selection of Appropriate Method for Data Collection. Measurement in Research, Measurement Scales, Processing Operations, Some Problems in Processing Elements/Types of Analysis ,Statistics in Research, Report Writing.

Unit 3:Focus Group Interactions & Model Building
Focus Group Interaction, Types, Guidelines for focus group interaction, Advantages and criticism, Data analysis of Focus Group .The need for Model Building, Modelling Exercise Types of Models, Probability Models Model s Based on Differential Equations, The ANOVA Model, Regression Models, Structural Equation Modelling, Glimpses of Some Other Models.

Unit 4 : Data Analysis using MS Excel
Introduction to Spreadsheets Spreadsheet Functions to Organize Data, Introduction to Filtering,Pivot Tables, and Charts, Advanced Graphing and Charting.
Unit 5:
Online Certification Course based on Research Methodology from SWAYAM/SWAYAM ARPIT Refresher Programme.

References

1.C. R. Kothari, Research Methodology Methods & Techniques, 2nd Edition, Wishwa Pakashan Publishers.
2. Misra R.P, Research Methodology – A Hand Book, Concept publishing Company, NewDelhi 1988
3. Grey Harvey,*Excel for Dummies*,Wiley Publising Inc
4. Yogesh Kumar Singh,*Fundamentals of Research Methodology* and Statistics,New AGEInternational Publishers

5. Ranjit Kumar,*Research Methodology ..a step by step guide for beginners*,Sage Publications6.Shyama Prasad Mukerjee,*A Guide to research Methodology*,Taylor and Francis .
7.Donald R.Cooper,*Business Research Methods*, McGraw-Hill

Detailed Syllabus for Advanced Topics in Business Management /

CommerceUnit 1. People, Management, and Policy
Human resourse Management,Strategic Management, Leadership and team building, Ethicsand Negotiation.

Unit 2. Money : Economics, Finance, and Accounting
Accounting , Finnace, International National and Local Economics.

Unit 3. Markets & Strategy
Marketing, Strategy,Competive Analysis, Advertising and Promotion,Communication and Presentations

Unit 4. Systems & Processes
Project Management, Management Information systems,E-Commerce,Quality ManagementSystems.

Unit 5. Organizational Behaviour
Overview, Individual and group Process, Enhancing individual and interpersonal process goalsetting and reward, Integrating individual, Groups and Organisaton, Personality and Attitudes.

(1) Steven Stralser,*MBA in a Day*,John Wiley and Sons
(2) P.S.Aithal, *Organizational Behaviour*
(3) Stephen p. Robbins. *Fundamentals of Management*,Pearson Publishers
(4) Garry Desseler *Human Resource Management*,Pearson Publishers
(5) Prassana Chandra,*Financial Management,Theory and Practice*,McGraw-Hill
(6) Jay Heizer,*Operations Management* Pearson Publishers
(7) Fred R. David, *Strategic Management Concepts and Cases*,Prentice Hall

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