

BUNDELKHAND UNIVESITY, JHANSI



**Revised
Ph.D. Orinance**

October, 2013

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2013



PREAMBLE

Bundelkhand University (BU) offers Ph.D. programs leading to the award of Ph.D. degree through its Departments / Research Centres. The award of Ph.D. degree is in recognition of high academic achievements, independent research and application of knowledge to the solution of problems in Basic & Applied Sciences, Engineering, Medicine, Technology, Computer Applications and Management or in recognition of high academic achievements, independent research in Arts, Social Science, Humanities or other branches of knowledge as prescribed by the University from time to time. Creative and productive inquiry is the basic concept underlying the research work.

The academic programme leading to the Ph.D. degree is broad-based and involves a minimum course work requirement and a dissertation. The University also encourages interdisciplinary areas through a system of co-supervision through its academic departments and research centres and provides excellent opportunities for such Programmes. The University undertakes sponsored research and development projects from industrial and other organizations in the public as well as private sector.

The degree of Doctor of Philosophy shall be abbreviated as Ph.D. The degree of Doctor of Philosophy is granted for research work in areas recognized by the Academic Council of the University, subject to the conditions and regulations contained in the Ordinances hereinafter.

The research work shall be an original work characterized either by the discovery of facts, or by a fresh approach towards the interpretation and application of facts, or development of equipment making a distinct advance in instrument technology or a critical analysis towards a topic or problem in any field of knowledge in which a department/ research centre is recognised. It shall evince the candidate's capacity for critical examination and sound judgment and shall represent original contribution to the existing knowledge.

The degree of Doctor of Philosophy (Ph.D.) of the Bundelkhand University (BU) shall be conferred on a candidate who fulfills all the requirements specified in the relevant Ordinance. The degree of Doctor of Philosophy will be awarded on the research work carried out by the candidate as per the evaluation process described in this Ordinance / regulation.

In exercise of the powers conferred by sub-section (3) of Section 52 of the Uttar Pradesh State Universities Act, 1973 (President's Act No. 10 of 1973), as re-enacted and amended by Uttar Pradesh State Universities (Re-enactment and Amendment) Act, 1974 (UP Act No. 29 of 1974), and in supersession of all the previous ordinances on the subject, the Executive Council of Bundelkhand University, hereby makes the following ordinances in order to regulate minimum standards and procedures for award of Ph.D. degree as recommended by Academic Council of Bundelkhand University in its meeting dated 27th August, 2013 in consonance with the University Grants Commission (Minimum Standards and Procedures For Award of Ph.D. Degree) Regulations, 2009 and G.O. No. - 643/ 2013 I 2013-16(74)/2011 dated June 14, 2013 for submission to Chancellor.

1.01 These Ordinances shall be called "The Bundelkhand University, Jhansi, Doctor of Philosophy (Ph.D.) Degree Ordinance, 2013."

1.02 They shall come into force from the session 2013-2014

ENUMERATION OF Ph.D. SEATS

2.01 At any point of time, total number of Ph.D. Seats (including those for D.Sc., D.Litt. and LL.D.) shall not exceed 08 for a Professor, 06 for a Reader/Associate Professor and 04 for a Lecturer/Assistant Professor, approved as Supervisor.

2.02 Based on the above norm and number of Ph.D. Scholars already registered for Ph.D., with all supervisors, a pre determined and manageable number of feasible vacancies available for new Ph.D. candidates shall be counted on annual basis and communicated by the Registrar. Updated status of vacancy shall be published on University website as soon as any vacancy arises after

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- the submission of thesis under any supervisor, on a regular basis.
- 2.03 The subject wise number of seats for Ph.D shall be decided well in advance and displayed in the University website and advertisement. The University shall widely advertise the number of available seats for Ph.D. studies and conduct admission on regular basis.
- 2.04 These vacant positions shall be divided as per Reservation Policy of the State Vertical & Horizontal categories into unreserved, reserved for OBC and reserved for SC/ST and so classified for each subject.
- 2.05 The procedure for admission, evaluation and award concerning pursuit of Ph.D. in multi-departmental inter-disciplinary Institutes of the University, duly established under section 44, shall be same as specified for regular departments.
- 2.06 There shall be no additional Ph.D. seats in Multi-departmental interdisciplinary institutes unless regular whole time teachers are appointed in the institutes themselves. For teachers otherwise associated with these Institutes, the number of Ph.D. students shall have to be adjusted against the seats for the associated teachers of these institutes in their parent departments with no more than two for Professor and one each for Reader/Associate Professor and Lecturer/Assistant Professor respectively.

ELIGIBILITY

- 3.01 A candidate for pursuing research for a Doctor of Philosophy Degree of the University must hold a Post-Graduate Degree with minimum percentage of marks in the subject concerned and must fulfill other conditions of eligibility (good academic record, and other stipulations, if any) prescribed in the statutes for the recruitment to the post of Lecturer/Assistant Professor. *Provided* that in exceptional cases a candidate holding a Master's degree in an allied subject may also be considered for admission to Ph.D. Degree by the Research Degree Committee (RDC). *Provided* further that the students appearing for final year or final semester of their postgraduate degree examination will also be eligible to appear for the admission process subject to the fulfillment of minimum eligibility criteria in the final result thereof.
- 3.02 In Faculty of Ayurveda (Institute of Ayurveda and Alternate Medicine), however, a candidate having M.D. (Ayurveda) degree with 55% marks in the subject concerned or equivalent degree of another University recognized by this University shall be eligible for admission to the Ph.D. Programme in Ayurveda.
- 3.03 In Faculty of Medicine, a candidate having M.D./ M.S./M.D.S./M.Sc. and equivalent degrees recognized by MCI in the subject concerned with 55% marks, shall be eligible for admission to the Ph.D. Programme in Medical Science.
- 3.04 Notwithstanding anything contained in abovementioned rules, the eligibility criteria/ guidelines prescribed and/or issued by statutory regulating authorities such as UGC, and/or All India Council for Technical Education (AICTE), BCI, PCI, MCI, NCTE etc from time to time shall also be applicable for the purpose of CET.
- 3.05 The teaching Department of an affiliated/constituent college may seek recognition as an approved centre to facilitate research leading to Ph.D. degree at its premises. Such applications shall be notified by the University and will be considered only for further consideration if it satisfies all the following minimum requirements:
1. At least two faculty members having Ph.D. in the Department or one full fledged Professor or Associate Professor (Reader) as full time faculty on the date of consideration/renewal actively

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engaged in research (with at least five publications in peer reviewed/reputed National/ International Journals) in last five years.

2. A score of at least eighty (80) and One hundred twenty(120) by the Department / Research centre (proposed) as a whole in last five/ ten years respectively when determined in accordance by the provisions provided in Appendix 2.

The affiliated/constituent college seeking status as a research centre must have a full time Principal at the time of application, who shall be Ex officio in charge of the Research centre, if approved.

On preliminary scrutiny of the applications received by a committee appointed by the University for the purpose for assessing the application for such centre, the matter shall be referred to Vice Chancellor for appointing an inspection team for ascertaining the ground situation. The inspection report shall include videography of the infrastructural facilities including the laboratories, computational facilities, library and software details etc. Such inspection report shall be evaluated by appropriate authority such as Board of Inspection or Academic Council before granting the approval by Vice Chancellor.

3. Such centers once recognized shall be approved only for three years. The suitability shall be assessed every year on the lines provided as above. In case, if they do not satisfy the infrastructure and academic requirements, no further admission of Ph.D. student shall be permitted at the centre for at least next three years, after which a fresh application may be entertained for grant of approval of the centre.

PROCEDURE FOR ENTRANCE TEST

4.01 The University or its constituent/affiliated/ associated colleges/Institutes shall not conduct Ph.D. Programmes through distance education mode.

4.02 The University shall admit Ph.D. students only through an entrance test named as "Common Eligibility Test for Ph.D."(CET).

4.03 Subject to the provisions contained in clause (B) of section 7 of the Uttar Pradesh State Universities Act, 1973 a "Common Eligibility Test for Ph.D." (hereinafter referred to as the CET) shall be conducted in specified subjects/disciplines by a University to be selected by a committee constituted for the purpose by State Government.

Where it seems that the CET is not likely to be organized by any other University in a given session or consecutively for another session and the academic environment is likely to suffer, the University shall conduct its own entrance test following the norms prescribed as above.

The subjects that are not covered in CET, University shall organize its own entrance test following the same provisions as mentioned above.

4.04 The university selected for conducting CET shall publish a public notification through its website and in at least three issues of the daily news papers already earmarked.

4.05 The said advertisement will contain the salient features necessary for the purpose. i.e. eligibility criteria, subjects, fee and mode of its payment, reservation, syllabus, scheme, centre, submission of application, other relevant instruction and anticipated date of the declaration of results thereof.

4.06 A candidate for admission to the Ph.D. degree shall apply to the University conducting the CET on a prescribed form.

4.07 The syllabus of the CET will be the same as prescribed for NET/JRF examinations conducted by the University Grants Commission/Council of Scientific and Industrial Research/Indian Council of

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- Agricultural Research which may be seen from their websites.
In case, if any subject is not covered in the examination conducted by UGC/CSIR/ ICAR etc for NET/JRF, then the University shall frame its syllabus for the entrance test, to be conducted by University separately.
- 4.08 A written test shall be based on questions with short answers; containing two question papers. First paper will contain multiple choice objective type 100 questions with short answers of 100 marks of two hours duration and will be for assessing general awareness, academic aptitude and subject proficiency. The Second paper will contain 200 questions of 200 marks of three hours duration for assessing subject expertise, research aptitude and subject knowledge. There shall be no negative marking.
- 4.09 The question papers shall be prepared in two sets by the university conducting CET in collaboration with other State universities, if necessary.
- 4.10 The Test fee including Application Form, prescribed for different categories for CET shall be as determined by the Committee mentioned in Ordinance 4.03.
- 4.11 The Test shall be conducted in campus of the University.
- 4.12 There shall be minimum qualifying marks for the test, i.e. 50 percent marks on the aggregate but minimum 40 percent marks separately in Each paper.
Provided that a relaxation of 5 percent marks (on the aggregate and in each paper as well) will be provided to the candidates belonging to the Scheduled Castes/Scheduled Tribes/ Differently abled (Physically and visually differently abled);
Provided further that the average percentage of marks shall not be rounded off to the next higher integer.
- 4.13 Based on the marks obtained in the entrance test category wise merit list shall be prepared and the category wise result of the successful candidates will be displayed on the website of the coordinating university and will be sent through email to all the participating State university with its hardcopy also. On the next date, a notice of this effect shall be published in those daily news papers in which the advertisements were published earlier.
- 4.14 A category wise Merit Score Certificate will be awarded and dispatched to the candidate by Speed/ Registered Post and through his/her email address, if provided. This certificate will be effective for next two years from the date of issue.
- 4.15 The successful candidate will be free to apply for registration to Ph.D. programme to any State university of Uttar Pradesh within two years in accordance with his choice, as he/she deems suitable.

EXEMPTIONS FROM THE ENTRANCE TEST

- 4.16 The following categories of candidates shall be exempted from the CET for admission to Ph.D. programme.
- 4.16(a) Regular teachers of the University, its constituent college or a college affiliated/associated to the University, who have completed their probation period successfully.
- 4.16(b) International students (including NRIs) shall be subject to the general rules framed by the Government of India from time to time and as applicable to the University with regard to the admission, fees etc.
- 4.16(c) All candidates selected by the UGC/CSIR/ICAR or other central regulatory bodies for their fellowships, subject to the validity norms of the respective fellow ship. UGC/NET qualified

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- candidates shall also be exempted.
- 4.16(d) Candidates who have GATE Score of not less than 75%, and
- 4.16(e) Serving Commissioned Officers of Army, Navy and Air force with not less than 15 years of Service applying for Ph.D. in Defence and Strategic Studies/Military Science.
- 4.17 All the candidate desirous of seeking admission to Ph.D. programme whether exempted or not shall have to apply for CET.

PROCEDURE FOR ADMISSION

- 5.01 Candidates having Merit Score Certificate, as mentioned in ordinance 4.14, with duly attested photo copies of Certificates and Degrees shall apply to the university of his/her choice and other candidates mentioned in ordinance 4.16 on a prescribed Application Form with prescribed processing fee preferably ONLINE as announced from time to time for admission to the Ph.D. Degree in pursuance of ordinance 4.17.
- 5.02 The categories of candidate exempted for the Eligibility Test (CET) will be given preference over the candidates qualifying through CET. A candidate shall ordinarily be permitted to work for the Ph.D. degree in the subject in which he/she holds Master's degree:
Provided that such research work leading to Ph.D. degree in allied subject in the same or other faculty may also be allowed if the Research Degree Committee concerned on recommendation of the concerned Dean of the faculty or the Director of Institute and the Head of Department is satisfied that the candidate possesses the requisite qualification/capabilities to take up the proposed work in multi-disciplinary areas.
- Note:
- The Director of Archive, Government of India is eligible for being appointed as Supervisor.
 - Research on living authors is not permissible.
 - A candidate holding M.D. Degree in Psychological Medicine (in the Faculty of Medicine) is eligible to supplicate for Ph.D. degree in Sociology.
- 5.03 A Screening Committee shall be constituted by the Vice Chancellor comprising of Dean of Faculty and two other members. While preparing the merit, candidates selected by the UGC/CSIR/ICAR or other central regulatory bodies for their fellowships and UGC/NET qualified candidates shall be placed above the CET qualified candidates.
- 5.04 The shortlisted candidates shall be called for Counseling. The Counseling committee shall comprise of members of RDC as defined in 7.02 including
- Any Professor nominated by the Vice Chancellor as Convenor of Counseling Committee and 5 Prospective supervisors of the concerned subject.

COURSE WORK

- 6.01 Each student shall pay a sum of Rs. 25,000/- (Rupees Twenty Five Thousand Only) (Rupees 12,500/- in case of SC/ST candidate) as a fee for Course Work.
- 6.02 All admitted candidates shall undergo a Course Work for a minimum period of one semester of six months as prescribed by the University.
- 6.03
- The Course Work shall be conducted at various Nodal Study Centres approved by the university. The Nodal Study Centre Coordinator shall be the Principal, in case of affiliated colleges and Head of Department, in case of university campus.
 - The frame work and outline of pre-Ph.D courses shall be as annexed as Appendix 1.
- 6.04 The Coordinators of Nodal Study Centres shall prepare the time table, for the course work,



- 6.05 teaching, continuous evaluation and internal tests and shall conduct the same under the overall supervision of a Professor nominated by the Vice Chancellor.
Minimum attendance required to become eligible to appear in the qualifying examination for each paper shall be 75% of all class lectures (separately in theory and practical). In case a student is short of attendance due to illness, participation in sports, extra curricular activities etc., the following rules may be applied:-
- Shortage up to 5% may be condoned by the Co-ordinators of Nodal Study Centres/Head of the Department (in case of University campus)/Convener/Dean.
 - ~~(b)~~ A shortage up to a maximum of 10% may be condoned by the Vice Chancellor on the specific recommendations of the Coordinator of Nodal Center/ Head of Department in case of University Campus/ Convener/Dean. Minimum 65% attendance is required even after such condonation.
- In case a student is not able to fulfil the maximum attendance requirement of the course work while enrolling in it for the first time, he/she shall be permitted to complete the shortage of attendance by enrolling in the immediately next course work programme. No further chance shall be given to such students for completion of course work attendance.
- 6.06 The University shall conduct a semester end qualifying examination at par with other university examinations, based on the course work. The pass marks in the Course Work (including internal assessment based on Multiple Choice Objective Type Questions (MCOT)) shall be 50 percent for all students in each paper and in aggregate as well.
- 6.07 If a candidate fails to qualify the course work examination in first attempt, he/she will be given only one additional chance to clear the Course Work examination along with the next regular batch to qualify this examination.
- 6.08 If found necessary, Course Work may be carried out by doctoral candidates in sister Departments/ Institutes either within or outside the University on the approval of the Vice Chancellor.

SUBMISSION OF SYNOPSIS:

- 7.01 On successful completion of course work, the student shall interact with Ph.D. supervisors and shall submit a synopsis for Ph.D. work.
- 7.02 The synopsis shall be placed before a Research Degree Committee (hereinafter referred to as the RDC), which shall be separate for each subject and shall consist of:-
- the Vice Chancellor as Chairman,
 - the Dean of the faculty or the Director of the Institute.
 - Convener of the concerned subject and
 - two experts nominated by the Vice Chancellor in consultation with the conveners for three years.
- The Vice Chancellor may invite a person(s) of repute as member(s) of the Committee.
- 7.03 The Research Degree Committee (RDC) shall arrange for an assessment of the synopsis which may include Presentations, or other modes of appraisal.
- 7.04 The candidates, who have successfully completed their course work, shall be required to be present before the RDC for presentation of synopsis. The supervisors may also attend the RDC meeting. The committee shall satisfy itself that topic/synopsis submitted is such on which research work can properly be pursued under the guidance of a supervisor and that the



	candidate possesses the requisite qualifications and the adequate facilities and equipment for work exist at the department/ research centre or Institution concerned.
7.05	The RDC will approve those synopses which are found suitable and recommend them for approval to the Academic Council through the Dean concerned. The Vice Chancellor may accord approval on behalf of Academic Council, in anticipation.
7.06	In case, the RDC finds that the synopsis is not up to the mark, it shall make specific suggestions for improving the synopsis. The candidate after making the necessary improvement shall re submit his/her synopsis for approval. The revised synopsis shall have to be submitted within 45 days from the date of the RDC Meeting. Such revised synopsis be sent to the RDC members by circulation for approval. If RDC members are satisfied, it shall be reported to the Academic Council.
7.07	In case, the synopsis is rejected, the candidate may submit the new synopsis within two months to be placed before the next meeting of the RDC. No further chance will be given after this submission.
7.08	Only the predetermined number of students shall be admitted to Ph.D. programme.
7.09	While granting admission to candidates, the University will pay due attention to the State Reservation Policy.
7.10	A candidate may be allowed to pursue his/her research work at one of the Government aided affiliated/associated/constituent colleges in the regular departments having PG course with 10 years of standing or at already approved research centres of the university as recognized by the process enumerated in 3.05 and 8.02 and scores obtained as mentioned in Appendix 2.
7.11	The Dean shall forward all the synopses approved by the RDC to the Registrar who shall place the same before Vice Chancellor for final approval for being registered as a Ph.D. student of the University.
7.12	Duties and powers of RDC RDC shall perform the following functions: (i) Examine the summary of the proposed Ph.D. work for provisional registration of a candidate and provide its recommendation. The committee shall satisfy itself that the proposed topic is one on which the Ph.D. work can profitably be pursued under the guidance of the proposed supervisor(s), that the candidate possesses the requisite qualifications and that the adequate facilities and equipments for the work do exist at the proposed place of work. (ii) The RDC of a subject will meet at least twice in each academic session at regular intervals (March and September). (iii) Half of the members of the RDC shall form the quorum for the meeting. However, presence of one external expert is essential in the meeting. (iv) The minutes of the RDC meeting shall be reported to the next meeting of the Academic Council for approval. The implementation of the recommendations of RDC shall come into force after Vice Chancellor's anticipatory approval on behalf of the Academic Council. (v) If Convener is unable to attend the meeting, the senior most member present in the meeting shall act as the convener. (vi) A candidate shall have to submit six monthly progress reports to the University through the supervisor with a recommendation that he / she is satisfied with the progress of the candidate before scheduled presentation in the RDC meeting. The candidate is also required to present progress in the scheduled RDC meetings. If the candidate is unable to present the progress due

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to genuine reasons in the RDC meeting, but the progress report sent by the supervisor is satisfactory, he / she will be permitted to continue, otherwise, the RDC may recommend cancellation of the registration. In case, the candidate does not turn up twice for presentation in the RDC meeting, his / her registration shall be cancelled.

(vii) In case of change in topic (major/minor) or modification of Synopsis, the decision of the RDC shall be communicated to the concerned student within 10 days after the RDC meeting.

(viii) In case of complaints against any supervisor for not adhering to ethical practices, the Vice Chancellor may constitute a fact finding committee and if the supervisor is found guilty, he/she shall be derecognized as supervisor for five years by the RDC.

ELIGIBILITY CRITERIA AND ALLOCATION OF SUPERVISOR

8.01 The University shall lay down and decide on annual basis, a predetermined and manageable number of Ph.D. students depending on the number of the available eligible Faculty Supervisors. A Supervisor shall not exceed the number of scholars mentioned in ordinance 2.01:

8.02 Regular whole time teachers of the University or its affiliated/associated/constituent colleges in the subject concerned holding Ph.D. degree, with:

8.02 (a) at least five years of Post Graduate teaching experience or eight years of Under Graduate teaching experience with at least two research papers published in referred journals and periodicals to their credit and working in approved Research Center with adequate facilities.

OR

8.02 (b) at least five years to the credit of post Ph.D. experience as Research Scientist in a research organization recognized as such by the University Grants Commission, subject to the condition that number of registered scholars shall not exceed four for a Professor level Scientist, three for Reader/Associate Professor level Scientist and two for Lecturer/Assistant Professor level Scientist with at least two research papers published in referred journals and periodicals to their credit.

OR

Teachers of the Constituent Medical College having 5 years of PG teaching experience with two research papers published in referred journals to their credit.

OR

The whole-time teachers of university teaching departments established under SFS, who are already approved Ph.D degree supervisor, shall continue to be the research supervisor subjected to the provisions mentioned above. Provided that all such departments are approved as research centers (based on the research facilities) by the concerned RDC. Provided further that all such departments should be offering postgraduate degree in the respective discipline.

In special circumstances, if RDC deems it fit, it may appoint supervisors amongst the whole-time teachers in the Departments/Centers under Self Financing Scheme of B.U. campus/recognized Research Centres. In such cases the following must be observed strictly, in addition to above:

(c) he/she holds Ph.D. degree with at least five years of Post Graduate teaching experience, or eight years of Under Graduate teaching experience

(d) The concerned teacher must have published, two research papers or articles as first author, in International journal of high impact factor

and/or

(e) must have received grants from National and International funding agencies as Principal Investigator for a period of not less than three years

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Provided also that a retired teacher of the university or its affiliated/associated/constituent colleges, may be permitted to remain as supervisor of his/her Ph.D. student during the remaining tenure of Ph.D. studentship of the student(s) already registered with him/her. If the research scholar is unable to submit the thesis within the regular studentship period, the change of supervisor may be considered as per provisions.

ALLOCATION OF SUPERVISOR

- 8.03 In pursuance of 5.03 and 5.04, the allocation of the supervisor for a selected student shall be decided by the Counseling Committee in a formal manner depending on the number of student per faculty member, the available specialization among the faculty supervisors, and the research interest of the student as indicated during interview by the student. The allocation of supervisor shall not be left to the individual student or teacher.
Ordinarily, a Research Supervisor may not be permitted to take more than two research scholars in a session.
- 8.04 (a) The Vice Chancellor in consultation with the Dean of the Faculty and Convener of the subject shall approve a list of qualified supervisors in accordance with the aforesaid ordinances and may add or delete names accordingly.
- 8.04(b) A supervisor shall not be allowed to supervise a candidate who is his/her relative whether by blood or by marriage,
Explanation- In this ordinance "relative" means the relations provided in the Explanation to Section 20 of the U.P. State Universities Act, 1973.
- 8.05 On recommendation from the RDC through the Dean of the faculty or the Director of Institute concerned, the Vice-chancellor may allow a candidate to have co-supervisor for his/her thesis from an allied Department or Institution recognized by the University for this purpose, if the research is of an inter-disciplinary nature. The Supervisor shall be from the Department where the candidate is registered:
provided that if a Supervisor is not available in the Department in inter-disciplinary area, RDC may appoint Supervisor from the other concerned department of the University.
- 8.06 The allocation of the supervisor for an eligible student shall be decided by the Counseling Committee as defined in 5.04 and in pursuance of 5.05.
- 8.07 No change of supervisor shall ordinarily be allowed, but in special cases, where the Head of the Department/Convener/ Dean is satisfied that the research work of a scholar will suffer -
(f) on account of migration, retirement, long leave, or for any other reason the supervisor may not be available to guide the scholar, or
(g) as the supervisor is not willing to, or not in a position to supervise a scholar,
(h) due to existence of extra ordinary situations necessitating such a change.
In such cases, the RDC may recommend a change of supervisor to the Vice Chancellor through the Dean of faculty or the Director of Institute who may allow change of the supervisor.
In case the new supervisor/co-supervisor has full quota of registered candidates, he/she shall be allowed to guide such additional number of students (Not more than three for Professor, two for Reader/Associate Professor, and one for Lecturer/ Assistant Professor). Such additional students shall be adjusted against the seats of respective supervisors falling vacant in the future.
- 8.08 The RDC, at its discretion may also decide whether change of supervisor will require fresh registration of the scholar.
- 8.09 Regular whole time teachers of the University and its Affiliated/Associated/Constituent colleges

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may be permitted to pursue research work for the degree of Doctor of Philosophy under the guidance of a supervisor.

They may be permitted to attend the Course Work without affecting their normal assigned duties.

Whole-time teachers in the Departments/Centers under Self Financing Scheme(SFS) of the university who have qualified the CET or are exempted from CET as per clause 4.16 may be permitted to pursue research work for the degree of Doctor of Philosophy after two years of continuous teaching as full time SFS teachers.

They may be permitted to attend the Course Work without affecting their normal assigned duties preferably after their assigned teaching classes.

All the rules and regulations shall be the same for such teachers as that of those for other regular Ph.D. candidates.

- 8.10 A person, who is registered for a Ph.D. degree shall not be permitted to act as a supervisor in any subject of the University.

SUBMISSION OF THESIS

- 9.01 A candidate registered as per 7.11 for the Ph.D. Degree shall be required to pursue his/her research at the head quarter of the University/Nodal Research Centre under the supervisor and on the subject approved for not less than eighteen months excluding the six months period of Course Work commencing from the date of approval by RDC and must put in at least 180 days attendance at the Research Centre concerned after the completion of the Course Work.

- 9.02 Continuation of the registration of candidate in the Ph.D. programme shall depend on his/her satisfactory progress and good conduct. The University reserves the right to cancel the registration of any candidate in the event of his/her conduct and progress being found otherwise as stated below:

CANCELLATION OF STUDENTSHIP

The PhD studentship is liable to be cancelled for any of the following reasons:

- i. Giving false information at the time of application/admission.
- ii. Not conforming to the regulations of the programme.
- iii. Failure in coursework requirement.
- iv. Failure in Comprehensive Examination.
- v. Consistent lack of progress in research.
- vi. Violation of discipline and conduct rules of the University/College.
- vii. Not submitting a thesis within the stipulated period.
- viii. Not enrolling for a semester within stipulated dates.
- ix. Remaining absent for more than 6 (six) weeks in a semester, without sanctioned leave as prescribed in 9.04.

- 9.03 The candidate shall be required to submit a progress report every six months to the University through Supervisor.

- 9.04(a) A candidate registered for the Ph.D. Degree shall be required to pursue his/her research at the head-quarter of the University/College under the supervisor and on the subject approved for not less than twenty four months including the period of Course Work commencing from the date of approval by RDC and must put in at least 180 days attendance in the department concerned after the completion of the course work:

Provided that the Vice Chancellor, on the recommendation of the Supervisor/Convener, the



Head of the Department, and the Dean, grant permission to candidate to reside outside for purpose of collection of research material for his/her thesis or doing experimental research work for a total period of not more than one year provided that such exemption shall not be granted in the first six months.

Provided further that the Vice Chancellor on the recommendation of the Supervisor/Convener/, the Head of the Department, and the Dean, may allow a candidate to work at such centers of research with in area of its jurisdiction or such research centers of repute outside its jurisdiction with which a memorandum of Understanding (MOU) has been signed by the University for this purpose and as may be approved by the Academic Council in this regard in which case the candidate can have a co supervisor who shall be not below the rank of accomplished Scientist of equivalent rank from the research centre concerned.

9.04(b) **LEAVE RULES FOR REGISTERED CANDIDATES**

Ordinary Leave

A fulltime PhD student is eligible for 30 days leave for every completed year (calculated in terms of two consecutive semesters, from the time of his/her joining the programme) Sundays or holidays during the leave period are counted towards leave, except for prefixed or suffixed holidays. Of the 30 days leave, a maximum of 15 days of leave is permitted in a semester. However, a maximum of 5 days of such leave is allowed to avail at a stretch if student having any teaching assignment.

However, a student can accumulate leave, and avail a maximum of 30 days' leave at a time in a year. The maximum number of carried over leave, from one completed year to another, is 15 days. Head of the Department/Convener may sanction leave on recommendation of the Supervisor.

Maternity/Paternity Leave

A student is eligible for 4 months maternity leave or 15 days of paternity leave as applicable only once during the PhD Programme.

The Convener/Head of the Department/Centre sanctions maternity/paternity leave on recommendation of the Supervisor and submission of a certificate from Senior Medical Officer.

Academic leave

Academic leave is permitted on the following grounds:

To attend conferences / seminars / workshops / trainings / short-term courses. A maximum of 15 days of leave is permissible in a calendar year.

A maximum of 30 days of leave in a calendar year is permissible for field trips such as data collection, survey work, etc. The Convener/Head of the Department/Centre sanctions academic leave on recommendation of the Supervisor.

Academic leave exceeding 30 days but up to a maximum of 60 days in a calendar year is approved by the Vice Chancellor on recommendation of the Supervisor and the Convener/Head of the Department/Centre. Academic leave of more than 60 days but up to a maximum of 12 months is also permissible to carry out part of the research in another institute/R&D Lab/industry in India or abroad. For sanction of such a leave, a letter of consent from the host institute is required. This leave is permissible only after the student has passed the Course Work and has done part of the research work at University.

On recommendations of the Supervisor, Vice Chancellor/the Chairman, RDC approves such an academic leave.

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- Such cases are also to be reported to the Academic Council. A student granted academic leave for one or more semesters, pays prescribed fees in every semester. If a registration date falls during the period of academic leave, a student completes the registration procedures at the expiry of his/her academic leave.
- 9.04(c) These Leaves shall not be counted towards minimum 180 days required for the attendance after the completion of Course work.
- 9.05 In special circumstances, a candidate may, not later than one year from the date on which approval was granted to him, modify the scheme of the topic with the approval of the Vice Chancellor on the recommendation of the Supervisor, the Head of the Department /Convener and the Dean.
- 9.06 In case, a candidate fails to submit his/her thesis within four calendar years from the date of approval of his/her synopsis by the RDC he/she shall cease to be a bonafide student of the University and shall not be entitled to the rights and facilities extended to a regular students. Provided that such a candidate may, under special circumstances, be permitted by the Vice Chancellor, on collective recommendations of the Supervisor, Convener/ the Head of Department and the Dean of the Faculty concerned, to submit his/her thesis within a maximum period of six years including the four years period of his/her studentship.
- 9.07 A candidate submitting his/her thesis after the expiry of four years period shall have to pay additional fee of Rs. Two Thousand only to the University per year.
- 9.08 The registration of the candidate who does not submit his/her thesis within six years from the date of his/her RDC approval shall be deemed to be cancelled automatically.
- 9.09 Prior to submission of the thesis, the student shall make a pre-Ph.D. presentation in the concerned Department that will be open to all faculty members and research students, for getting feedback and comments, which may be suitably incorporated into the draft thesis under the advice of the supervisor. The supervisor shall provide a certificate to this effect.
- 9.10 The research scholar shall publish at least one research paper in refereed journal or in any of the journals having ISSN where refereed journal with impact factor are not available before the submission of the thesis for evaluation and produce evidence for the same in the form of acceptance letter or the reprint.
- 9.11(a) A Scholar may be permitted to make minor modifications in the title of his/her thesis by the Vice Chancellor on recommendation of the supervisor, Head of the Department/Convener and Dean but not later than six months before the submission of his/her thesis.
- 9.11(b) In case of major modifications or Topic change the scholar will be treated as a fresh case and shall not be allowed to submit the thesis before two years.
- 9.12 A thesis already presented for the Master of Philosophy (M.Phil) Degree shall not again be accepted for the degree of Doctor of Philosophy. However, some portion of it may be utilized in the Ph.D. thesis. The thesis should make substantive contribution to the discipline concerned, as evinced by discovery of new facts, or a fresh interpretation of facts or theories and should be so certified by the scholar and the supervisor.
- 9.13 (i) When the thesis is ready for submission, the scholar shall apply through his/her supervisor stating therein that the thesis is on the point of completion. Such a report be received at least one month before the completion of the thesis.
- 9.13 (ii) The Convener of Board of Studies (in case of non-PhD, then the next senior most teacher of the subject having PhD) concerned shall recommend a panel of three external experts preferably of



- Professor level, along with their email address, postal address, fax and contact number along with the area of expertise as evinced by web page, CV etc. The supervisor shall also recommend a panel of three experts. The supervisor shall be co-opted as a member of the Board of Studies for this purpose. The Vice Chancellor may add more names to these panels. From these two panels at least three experts shall be appointed by the Vice Chancellor. The convener and the supervisor shall annex the consent obtained from the proposed examiners prior to the submission of their panels. It is to be ensured that at least one examiner expert shall be from outside the State. It shall be up to the University to have one examiner from outside the Country. In case the Convener is the supervisor the Panel of experts shall be obtained from the next senior member of Board of Studies/RDC having PhD degree.
- 9.13 (iii) In case, the thesis is not submitted within the stipulated time of three months, the panel may stand lapsed and a fresh panel may have to be recommended as above. After the pre Ph.D submission presentation, the candidate shall submit the summary of the thesis in a CD and six (06) hard copies. After submission of the summary the panel of examiners may be drawn as per 9.13 (ii) and the copy of summary may be sent/mailed to the examiners for acceptance. The consent of the examiner(s) shall be obtained before the dispatch of the thesis.
- 9.13 (iv) Every effort should be made to ensure that the Panel of examiners shall not have more than one examiner from one University.
- 9.14 The research scholar shall submit the thesis in four printed or type written, with a declaration that the same has never been published earlier, copies of his/her thesis, and two CDs containing the thesis in PDF format along with the scanned images of certificates and declarations etc for sending the thesis electronically to examiners, if desired by them, along with the three copies of summary and approved synopsis. Published matters may also be incorporated mentioning the sources as part of the thesis.
The medium of expression of every thesis shall be either English or Hindi(written in Devanagari Script) except in the case of subject related to any of the oriental language where the thesis, may at the option of the candidate be presented in that language. The title, synopsis and thesis shall be in the same language.
- 9.15 The thesis shall comply with the following Conditions:
- 9.15 (i) It must be a piece of research work characterized either by the discovery of facts or theories. In either case it should reflect the candidate's capacity for critical examination and sound judgment. The candidate shall communicate, how far the thesis embodies the result of candidate's own observations and in what respects his investigations may advance knowledge in the subject.
- 9.15 (ii) It shall be satisfactory so far as its literary presentation is concerned and must be in a form suitable for publication.
- 9.15 (iii) The thesis shall be accompanied by a certificate from the supervisor stating:
- 9.15(iia) that the thesis embodies the work of the candidate himself/herself.
- 9.15(iib) that the candidate worked under him/her for the period required under Ordinance, and
- 9.15(iic) that he/she has put in the required attendance in the department during that period.
- 9.15(iid) That he has completed pre-Ph.D. course work satisfactorily as per ordinance 6.06-6.08
- 9.15 (iv) The candidate shall also remit, with thesis, Rs. 20,000/ (Rupees Twenty Thousand Only) Rs.10,000/ (Rupees Ten Thousand in case of SC/ST candidates) as the evaluation and viva-voce examination fee for Ph.D. degree

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EVALUATION AND ASSESSMENT METHODS:-

- 10.01(i) On receipt of the thesis, along with the certificates and the fee mentioned above, the thesis shall be sent within two weeks to examiners selected for the purpose after receiving their consent as stated in 9.13(iii). In no case, the maximum time for all this process shall exceed two months.
- 10.01(ii) In case, if the evaluation report is not sent by the examiner within three months of the dispatch of the thesis, a copy of the thesis shall be sent to new examiner. Consideration of the reports sent by the examiners after three months of the dispatch of the thesis shall be at the discretion of the Vice Chancellor.
- 10.02(i) If the examiners consider the thesis to be of sufficient merit, they may recommend that the thesis be accepted for the award of the degree of Doctor of Philosophy.
- 10.02(ii) On receipt of satisfactory evaluation reports thesis shall be laid before the Vice Chancellor.
- 10.02(iii) If the majority of reports are positive and definite, the candidate shall be required to undergo a Viva Voce examination to be conducted by three examiners of whom one shall ordinarily be the supervisor and the other one from amongst the two external examiners, who have evaluated the thesis. If the external examiners evaluating the thesis are from outside the country, another external examiner may be specially appointed for the purpose.
- 10.02(iv) The Head of the Department in case of University Campus/Convenor in case of colleges shall preside and conduct the proceedings of the Viva-Voce examination, but he/she shall not be party to the decision. In case of non-availability of either of them the Vice Chancellor may nominate a Professor to preside and conduct the proceedings of the Viva-Voce examination.
- 10.02(v) In case the supervisor is not available, the Head of the Department or any senior teacher of Department, recommended by the Convenor and approved by Vice Chancellor may act as internal examiner.
- 10.02(vi) The Viva-Voce examination shall be held at the University Headquarter and will be open to all interested in the subject, where the candidate shall be required to present the main findings of his/her thesis and defend the same. Examination board shall conduct the Viva-Voce. Academic Council members can also attend Viva-Voce, however, no TA/DA shall be paid to them for this purpose. After satisfactory Viva Voce, the Vice Chancellor may approve the recommendations of Examination Board and the result of the candidate be declared provisionally on behalf of RDC. After the approval of Executive Council provisional certificate shall be issued to the candidate from the date of Viva-Voce.
- 10.03(i) If the majority of examiners recommend that the candidate be asked to improve his thesis, the Executive Council/Vice Chancellor may permit the candidate to re-submit his thesis, not earlier than six months and not later than the date to be fixed by the Executive Council/Vice Chancellor in such cases.
- 10.03(ii) In case a candidate is allowed to resubmit his thesis, he shall have to pay a fresh fee of Rs. Five thousand at the time of resubmitting the thesis but it shall not be necessary to produce any certificate e.g. further attendance at the Institution.
- 10.04 If two examiners recommend the revision of the thesis the thesis shall be revised and resubmitted. The revised thesis shall ordinarily be examined by the same set of examiners for evaluation after obtaining their consent afresh.
Provided further that in case two examiners reject a thesis, the thesis shall be finally rejected.
- 10.05 A printed copy, not used for evaluation and an electronic version on a CD of each accepted

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- thesis shall be placed in the University Library or Research Centre at which the candidate pursued research where it will be open to public inspection.
- 10.06 The copies of report of examiners of the thesis and viva-voce reports, may be given to the candidate on his written request, only in cases where the thesis has been finally accepted for award of the degree, after award of the degree.

DEPOSITORY WITH UGC

- 11.01 Following the successful completion of the evaluation process and conferment of the award of Ph.D. the University shall submit a soft copy of the Ph.D., thesis to the University Grants Commission within a period of thirty days, for hosting the same in INFLIBNET, accessible to all Institutions/Universities.
- 11.02 The University shall host another soft copy of the Ph.D. thesis on its website for general viewing.
- 11.03 The University, along with the Degree, shall issue a Provisional Certificate certifying to the effect that the Degree has been awarded in accordance with the provisions to the University Grants Commission (Minimum Standards and Procedure For Award of M.Phil. /Ph.D. Degree) Regulations, 2009.

Note:

- 1) 'He' & 'His' imply 'he' / 'she' and 'his' / 'her', respectively thereafter.
- 2) Notwithstanding anything contained in these Ordinances, Regulations and Rules all categories of the students/candidates shall be governed by the rules and procedures framed by the Academic Council in this behalf, and in force from time to time.
- 3) Any doubt or dispute about the interpretation of these Ordinances and Regulations shall be referred to the Chairman, Academic Council whose decisions shall be final and acceptable to all.
- 4) Eligibility for admission to Ph.D. programmes may be reviewed from time to time by the concerning faculty and approved by the Academic Council.
- 5) **APPENDIX 1 FRAME WORK AND OUTLINE OF PRE-Ph.D COURSES**

COMPULSORY COURSES FOR FACULTY OF SCIENCE

Ethics In Science

Science and ethics; science as the social, cultural and human pursuit.

Ethical theory and applications.

Interrelationships of science with technology and delivery.

The source of ethical issues in science: examples from different disciplines, e.g. biotechnology, medical sciences, defense research and development, environmental issues, space research, energy, food security etc.

Social and moral responsibilities of scientists and activists.

Ethical issues in science research and reporting: objectivity and integrity, the problem of plagiarism and related issues, international norms and standards.

Scientific temper and virtues; expectations from scientific community.

Desired temper of scientists: truthfulness, simplicity, humility, open mindedness; attitude of service towards social and human well being.

References:

David B. Resnik, 1998, The Ethics of Science: An Introduction. Routledge publisher, USA.

Callahan D. & Bok S., 1996, Ethics Teaching in Higher Education. Plenum Press, New York, USA.

Kapur J.N., 1996, Ethical Values for Excellence in Education and Science, Wishwa Prakashan, New Delhi.



Tripathi A.N., 2008, Human Values. New Age International Publishers, New Delhi.

Methods of Research and Good Laboratory Practices

Methods of research:

Hypothesis: Literature Survey, defining the question and formulating hypothesis/ hypotheses

Methods: Collection of research data, tabulating and cataloging. Sampling and methods of data analysis

Record keeping and analysis: Generation of data, interpreting results/ data and drawing conclusions

Laboratory Safety measures: Handling of Radiation, Bio-hazardous and other toxic experimental materials/ Microbial Material/ Microbes, Bio-Safety

Facilitation of Scientific deliberations among students and faculty

Good laboratory practices:

Recording and storage/ retention of recorded materials

Maintenance of equipments, proper storage and disposal of hazardous materials (chemical & biological)

Management and user responsibilities in proper utilization of the facilities

References:

Jürg P. Seiler, Good laboratory practice: the why and the how 2005.

http://uqu.edu.sa/files2/tiny_mce/plugins/filemanager/files/4281709/good_laboratory_practice_the_why_and_the_how.pdf

Good Laboratory Practice. http://en.wikipedia.org/wiki/Good_Laboratory_Practice

What is scientific method? <http://www.experiment-resources.com/>

Research methodology resources.

http://edutechwiki.unige.ch/en/Research_methodology_resources

Overview of research methods. www.answer.com/topic/overview-of-research-methods

Science Communication

Nature and importance of Communication in Science

Preparation of manuscripts: review articles, research papers, books, monographs, oral presentation, poster presentation, radio and TV talk, research projects; review of manuscripts and Proof reading

Survey of literature, and presentation of data

Preparation of power point presentation

Popularization of Science

Socio – Legal issues: Originality, Integrity, IPR, Patents, Plagiarism

References:

A. Wilson: Handbook of Science Communication, 1998, Institute of Physics Publishing, Bristol, Philadelphia.

Science Communication: Theory & Practice; Stocklmayer, Gore MM, Bryant C (Eds.), 2002, Springer.

Laszis P: Communicating Science: A practical Guide, 2006, Springer.

EXPERIMENTAL TECHNIQUES (PHYSICS)

Section-A

Nuclear Techniques: Physical basis, theory, instrumentation and applications of X-Ray

Fluorescence Spectroscopy; LASER fluorimetry; Gamma-Gamma method; Neutron activation

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analysis and Neutron-Neutron method. Gamma ray spectrometric technique for uranium, thorium and potassium analysis. Alpha particle track etch detector.

Section-B

Materials Science Techniques: Physical basis, theory, instrumentation and applications of Infra Red (IR), UV-Visible, Raman and Photoluminescence spectroscopy; Neutron diffraction; Low Energy electron diffraction (LEED); Rutherford back scattering (RBS); Energy Dispersive XRay analysis (EDX) and Electron Probe Micro Analysis (EPMA).

References:

- Radiation Detection and Measurements: Glenn F. Knoll.
- Principles and Methods of Nuclear Geophysics: U.L.S. Bhima Shankran.
- X-ray Fluorescence Spectroscopy: R. Jenkins-Wiley Interscience, New York, 1999
- Spectrometric identification of organic compounds: R.M. Silverstein.
- Methods of Surface Analysis: J.M. Walls- Cambridge University Press, 1989.
- Modern techniques for surface science: D.P. Woodruff and T.A. Delchar- Cambridge University Press, 1994.
- Thin Film Fundamentals: A. Goswami-New Age International, 2007.
- The Principles and Practice of Electron Microscopy: Ian. M. Watt- Cambridge University Press, 1997.

EXPERIMENTAL TECHNIQUES (BOTANY)

Collection of samples, preservation, fixation, microtomy, micrometry, stains and staining methods, microscopy, Herbarium techniques.
Cytological techniques, emasculation, pollen viability check, Biochemical tests, protein isolation, DNA techniques etc.
Laws of probability distribution, binomial distribution, poisson distribution, normal distribution, hypothesis testing, significance of mean, average small samples, T test and F test, Chi square test, regression, experimental designs (RBD, CRD, Latin square split plot and factorial).
Various ecological tools and techniques, Methodologies for studying plant community, Methods for studying physical and chemical characteristics of soil and plants, Method of measurements of various environmental factors, tools and techniques for studying soil and water pollution
Various pathological techniques, laboratory rules and basic knowledge about equipment and requirement in a pathological study, symptoms of diseases, preparation of culture media.
cultivation techniques for isolation and enumeration of micro-organisms, method of obtaining pure culture of micro-organism, maintenance of pure culture, measurement of growth of micro-organisms and factors influencing growth, control of plant pathogens.

EXPERIMENTAL TECHNIQUES (ZOOLOGY)

Section-A

Study, handling and maintenance of laboratory animals
Statistical analysis of data: theory and practices

Section-B

Instrumentations

- Centrifugation
- Spectrophotometry
- Electrophoresis
- Chromatography



Microtomy and different staining techniques
Microscopy and Micro-Photography
Extraction and identification of different Biomolecules

References:

1. Practical Biochemistry: Wilson and Walker- Cambridge University Press, 1994.
2. Instrumentation: Gurumani N and Veerakumari- MJP Publication.
3. Biometry: Sokal and Rohlf- Freeman & Co., 1994.
4. Biostatistical Analysis: Zar- Pearson Publication, 2005.

COMPULSORY COURSES FOR FACULTY OF ARTS: LITERATURE, SOCIAL SCIENCES & HUMANITIES
COURSE I: RESEARCH METHODOLOGY

Unit I

Meaning and importance of research, steps of the scientific method of research, concept and theory, fact and research, selection of research problem and formulation of hypothesis, types of hypothesis.

Unit II

Methods of research: Historical Method, Comparative Method, Case-Study Method, Experimental Method, and the Statistical Method.

Unit III

Techniques of data (fact) collection: questionnaire, Schedule, interview, observation, socio-metry, scaling techniques and the measurement of attitudes, content analysis and the use of secondary sources of data.

Unit IV

Use of statistics in research – its reference, census (universe) and the sample, types of sampling, classification and tabulation of data, measures of central tendency (mean, median, mode), standard deviation, correlation and tests of significance (χ^2 and t-test).

Unit V

Report writing, diagrammatic and graphic representation of data, generalization and theory building, use of computer in research, the computer language, computer networks: communication system and data transmission media (cable, internet, e-mail, file transfer protocol, WWW, Web Browser), introduction of MS-Office (Word, Excel, Power Point).
Testing of the research scholar's acquaintance with the standard research journals of his/her subject by making him/her study one of them allotted to him/her by the department. The scholar should be made to write summary of at least one research paper published in it since the last five years.

References:

- Allison, B. *The Students' Guide to Preparing Dissertations and Theses*. London. Kogan Page, 1997. Print.
- Altick, Richard D. and John J. Fenstermaker. *The Art of Literary Research*. 4th Ed. New York: Norton, 1993. Print.
- Gibaldi, Joseph. *MLA Handbook for Writers of Research Papers*. 7th Ed. New De Hi: East West Press, 2009
- Kothari, C.R. *Research Methodology: Methods and Techniques*. New Delhi: New Age International Ltd, 1985.
- Rahim, F. Abdul. *Thesis Writing: A Manual for Researchers*. New Delhi: New Age International Pvt

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Ltd, 1996.

Turabian, Kate I. *A Manual for Writers of Term Papers, Theses and Dissertations*. 6th ed Chicago: Chicago UP, 1996.

Wayne C. Booth, Gregory G. Colombo, Joseph M. Williams and William C. Booth. *The Craft of Research: From Planning to Reporting*. Chicago: Chicago UP, 2008.

COMPULSORY COURSES FOR FACULTY OF AGRICULTURE

RESEARCH METHODOLOGY

Unit I

Importance of Agriculture/Forestry/Livestock in national economy, Post GATT structural changes related to agriculture and research challenges. Organisational set up of agricultural research, education and extension in the country.

Unit II

Meaning and significance of research in agriculture, characteristics of good research, qualities of research workers, knowledge of scientific methods of research, laboratory work and writing up an experiment, research design and procedure.

Unit III

Scientific steps in agricultural research, selection of the problem, its analysis and review. Hypothesis: its meaning, type, functions/misuse and attributes of a good hypothesis.

Unit IV

Statistical methods in agricultural research. Data sources, methods of collection, analysis and interpretation.

Unit V

The synopsis: its design, functions, parts and characteristics of good synopsis. The thesis: its title, parts manuscript format and thesis writing. Acquaintance with research journals, laboratory techniques, communication and information media.

COMPULSORY COURSES FOR FACULTY OF EDUCATION

RESEARCH METHODOLOGY

Unit I

Research: concept, nature and ethics in research

Unit II

The research problem and preparation of the research proposal

Knowing the field, selection of the problem, definition and statement of problem, evaluation of the problem

Designing a research proposal

Unit III

The hypothesis in research

Concept, nature and types of hypotheses, formulation and testing of hypotheses, characteristics of good hypotheses. Importance of hypotheses in research.

Unit IV

Types of research

Descriptive research: Meaning, concept, nature and objectives of Descriptive research, steps in Descriptive research and importance of Descriptive research in education

Types of Descriptive research: Survey Studies, Interrelationship Studies, Development Studies, Trend Studies, Ethnographical Research

B



Historical research: Meaning, concept, nature and objectives of Historical research, steps in Historical research, importance of Historical research in education, collection of data for Historical research.

Experimental Research: the experiment- its meaning and nature. Experimental Research: Meaning, concept, nature and steps of Experimental Research, Experimental Design and its classification and importance of Experimental Research in education.

Field Experiment, Field Study (Ex post facto Research), Single variable and two Independent Variable Designs, Experimental and Non-Experimental Designs, Pre-Test and Post Test Design, Randomised and Correlated Groups Design. Factorial Design (Two and Three factors)

Unit V

Sampling in Research

The concept of sample and population, characteristics of good sample, principles of sampling, factors affecting the inferences drawn from a sample. Techniques of sampling- probability and non-probability methods, sampling errors

Unit VI

Selecting a method of data collection (tools and techniques)

The questionnaire: concept, types, advantage, disadvantage, importance, construction and characteristics of a good questionnaire.

Interview: concept, types, functions, importance, preparation of an interview schedule, advantages and disadvantages of interview, different ways of administering of interview.

Observation: concept, types, importance, problems with using observation as a method of data collection, advantages and disadvantages of observation.

Psychological test: meaning, characteristics of a good test, steps of test construction, validation and standardisation.

Inventory, rating scales, and check lists

Unit VII

Establishing the validity and reliability of a research instrument

The concept of validity, types of validity

The concept of reliability, types of reliability, factors affecting the reliability and validity of a research instrument, importance of reliability and validity in research.

Norms: concept and types of research.

Unit VIII

Writing a research report

Formats of research report. components and chapterisation

Writing bibliography, references and footnotes

Evaluation of research report, proof reading of the final draft of the research report

Unit IX

Methods of data analysis

The nature of statistics

Nature of educational data: quantitative and qualitative

Scales of measurement: nominal, ordinal, interval and ratio

Classification of data preparation of frequency distribution

Graphical presentation of data, polygon, histogram, cumulative frequency curve and ogive

Central tendencies, their measurement and uses



Measurement of variability and their uses
Percentile and percentile rank
Correlation: nature and kinds, product moment method rank difference method, bi-serial and point bi-serial correlation, tetrachoric correlation and phi coefficient, contingency coefficient
Normal probability curve (N.P.C.), its properties and applications
Regression equations
Testing of hypothesis, parametric and non parametric tests, statistics and their assumptions, non-parametric tests- chi square, sign test, and the median test, Mann-Whitney U test, K.S. test
Basic procedure of hypothesis testing, significance of mean and other statistics, Null hypothesis, significance of difference between means, 't' test and ANOVA, one way ANOVA, multiple comparison among means- DMRT, Newman Keuls, Tuckey, Protected t, two way ANOVA, types of errors
Variables and their types
Standard scores
The role of computer in research

COMPULSORY COURSES FOR FACULTY OF LAW

RESEARCH METHODOLOGY

criteria of good research: meaning and objectives of research, importance of research methodology, kinds of legal research: Historical, Analytical, Philosophical.
legal research in India: evolution and development, problems and challenges
interdisciplinary perspective on legal research
identification of research problem, survey of literature, working hypothesis
5. tools and techniques of legal research, doctrinal and empirical research, interview technique, scaling technique of socio-legal research, determination of sample design, data collection and analysis.
main steps in research writing. lay out, chapterization, preparation of introduction and conclusion, treatment of quotations, methods of citation, bibliography, abbreviations

ADVANCE LEGAL THEORY

Law and social transformation
Ethics, mortality and law
Modern theories of justice with special reference to Nozick, Rawls and Finnis
Economic approach to law with reference to Posner
Inter-relationship between law and modernization in a developing society
Modern challenges to legal formalism and recent legal theories, critical legal studies, feminism, postmodernism
New perspective on legal theory, human rights, sustainable development, globalization

COMPULSORY COURSES FOR FACULTY OF COMMERCE

RESEARCH METHODOLOGY

Unit I

Meaning, types and significance of research in business; characteristics of good research, identification and formulation of research problems; setting research objectives; hypothesis: meaning, types, need and formulation; importance and format of review of literature

Unit II

Business research design; exploratory, descriptive and casual studies; population and sample;

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sample size; meaning and types of sampling; sampling error; the research proposal

Unit III

Measurement and scaling techniques: nominal scale, ordinal scale, interval scale, rating scale; criteria for good measurement; attitude measurement- Likert's scale, Semantic Differential scale, Thurstone- equal appearing interval scale, Multi Dimensional scaling; meaning and types of data; data collection methods- observation, survey and interview; questionnaire design; reliability and validity of questionnaire.

Unit IV

Editing, coding, classification and tabulation of data; methods of data presentation; interpretation of results; research writing- purpose, steps and format of research reports; final presentation of the research report; idea of referencing, bibliography, footnotes, and end notes.

References

Donald Cooper and Pamela Schindler, Business research methods, Tata McGraw Hill
Gilbert A. Churchill and Dawn Iacobucci, Marketing research: Methodological foundations, South Western Educational Publishing.
McBurney and Donald H, Research methods, Wadsworth Publishing Pre PhD (Management)/URS

COMPULSORY COURSES FOR THE FACULTY OF ENGINEERING & TECHNOLOGY

RESEARCH METHODOLOGY & COMPUTER APPLICATIONS

1. Research:

- a) Types, Research process and steps in it, Hypothesis, Research proposals and aspects.
- b) Research Design: Need, Problem Definition, variables, research design concepts Literature survey and review, Research design process, Errors in research.
- c) Research Modeling: Types of Models, Model building and stages, Data consideration and testing, Heuristic and Simulation modeling.
- d) Report Writing: Pre writing considerations, Thesis writing, Formats of report writing, formats of publications in Research journals.

2. Design of Experiments:

- a) Objectives, strategies, Factorial experimental design, Designing engineering experiments, basic principles-replication, randomization, blocking, Guidelines for design of experiments
- b) Single Factor Experiment: Hypothesis testing, Analysis of Variance components (ANOVA) for fixed effect model; Total, treatment and error of squares, Degrees of freedom, Confidence interval; ANOVA for random effects model, Estimation of variance components, Model adequacy checking.
- c) Two factor Factorial Design, Basic definitions and principles, main effect and interaction, response surface and contour plots, General arrangement for a two-factor factorial design; Models-Effects, means and regression, Hypothesis testing.

3. **Web Search:** Introduction to Internet, Use of Internet endow, Using search engine like Google, Yahoo etc, Using advanced search techniques.

References:

1. Montgomery, Douglas C. (2007), 5/e, Design and Analysis of Experiments, (Wiley India)
2. Montgomery, Douglas C. & Runger, George C. (2007), 3/e, Applied Statistics & Probability for Engineers (Wiley India)
3. Kothari C.K. (2004), 2/e, Research Methodology- Methods and Techniques (New Age International, New Delhi)



4. Krishnaswamy, K.N., Sivakumar, Appa Iyer and Mathiranjani M. (2006), Management Research Methodology; Integration of Principles, Methods and Techniques (Pearson Education, New Delhi)
5. The complete reference Office Xp – Stephan L. Nelson, Gujulia Kelly (TMH)
6. Basic Computer Science and Communication Engineering – R. Rajaram (SCITECH)
7. Book for Open Office.

COMPULSORY COURSES FOR FACULTY OF MEDICINE

Unit I

Introduction to Ph. D Programme: Introduction to the course, course objectives, Open House Discussion, timely submission of Half yearly Reports & Synopsis submission, articles submission. National Knowledge Commission. National Assessment and Accreditation Council (NAAC) University Grant Commission (UGC).

Historical Perspectives: Historical narration about conduct of research on human subject, Biblical times, research on vulnerable population, tackling of ethical issues in the past century. Ethical code, Nuremberg code, Helsinki declaration, Belmont principles in conduct of research in human subject.

Alternative systems of medicine: Various system of medicines Sidha Unani, Homeopathy, Naturopathy, Polanty theory, Reiki, Magneto therapy, Chinese Acupuncture, Ayurveda. Health care delivery systems in India: National Population Policy, National Health Policy, National Rural Health Mission (NRHM program), RCH program, Current Health Problems, Environment & health, Chronic non communicable diseases – Challenges for India, Biomedical waste, Emerging and re-emerging infectious diseases in the world and in India, Population explosion causes and its impact, Health as a Human Right, Patient Counseling.

WHO guidelines for essential medicines, Drug scenario in India, Rational use of medicine in India, Pharmacovigilance – challenges in India, Standard treatment guidelines & essential medicine list, Nobel Laureates, Indian scientists of repute.

Unit II

Ethical Issues in Research :Background, general principles on ethical considerations involving human participants, general ethical issues, Ethical Review Committee – need, relevance and working rules & regulations as applicable in India, Ethical Review Procedures, IRB, Principles for clinical evaluation of drugs/ devices/diagnostics/vaccines/ herbal remedies, Informed Consent Process – Preparing a informed consent for a research project

Good clinical practices: Legal – Regulatory Framework, U.S. Regulations, Principles of GCP, Fundamentals of GCP, GCP & ICH Guidelines.

Good Laboratory Practices :SOP in lab practice, Bio safety, disposal, ethical practices, standardization of techniques and instruments.

Unit III

An Approach to Research in Health Science-Research protoo. development, Research Methodology – Defining research questions/Hypothesis, Study designs - cross sectional study ,case control study and randomized clinical trials Clinical Trials – Introduction, composition, procedures & records, Informed consent, responsibility & rules applicable to investigators and sponsors, ethical issues.

Grant Writing – Introduction, specific aims, review of literature, measures, methodology, study plan and statistical analysis, Protection of human participants, proposed budget and time line for

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the proposal. Pre-Clinical Research / Translational Research

Health Insurance: Types of health insurance, scope, limitation and Utility. Introduction, history and evaluation of health insurance. Classification of health insurance schemes. Public Sector health insurance schemes for profit, like LIC, GIC and its subsidiaries. Public Sector health insurance schemes for non profit like, CGHS, ESI and for disadvantaged groups. Private Sector (Non profit) Community health insurance schemes. Future challenges of health insurance.

Bio diversity : Medicinal plants, application of biotechnology in herbal drug development.

- DNA finger printing
- Molecular biological techniques
- Genetic coding

Unit IV

Manuscript Writing : Writing a scientific manuscript, structured writing and language editing, writing respondents & presentation, bibliography, impact factor, plagiarism, referencing & citations, GCP and safety. Hands on workshop on writing abstracts and manuscripts.

Critical Appraisal Of Article Published In Scientific Journal: What is critical appraisal and why critical appraisal, present scenario of scientific publications, methodology of critical appraisal, format for critical appraisal

Evidence Based Medicine: Introduction to Evidence Based Medicine, Lecture followed by Group activity on EBM, critical appraisal of literature for Evidence Based Medicine

Thesis Writing: Introduction to thesis writing, format for thesis writing, seminar presentations, preparation for Viva-Voce & communication skills.

Unit V Bio-Statistics : Introduction to Bio-statistics, translating research problem into hypothesis testing, Type I & Type II errors in statistics, checking errors in data and correcting them. Types of variables and types of data measurements scales, Data Collection methods, presentation & organization of data – Tabular / Graphical Form. Sampling Designs, Descriptive Statistics

Measures of central tendency & measures of dispersion, correlation Analysis, Regression Analysis, Probability Theory - Binominal distribution, Poisson distribution, normal distribution, concept of testing of hypothesis. Test of Significance- Parametric tests-Z test, T test, ANOVA and Non Parametric tests- Chi- Square test, Wilcoxon Rank test, Kruskal Wallis test. Sample size calculation for different study designs, devising conclusion from data analysis. Use of computers and data cleaning and management learning.

COMMON FOR ALL FACULTIES

QUANTITATIVE TECHNIQUES AND COMPUTER APPLICATIONS

Section A

Unit I

Hypothesis testing: parametric tests: T-test, Z-test and F-test; non-parametric tests: Run test, Median test, Sign-test, Wilcoxon matched pairs- tests, Mann- Whitney U-test, Kruskal Wallis- test, Friedman- test and Wald- Wolfwitz number of run test.

Unit II

Types of statistical analysis: bivariate analysis (chi- square only) and multivariate analysis – factor analysis, discriminant analysis, cluster analysis, MANOVA, structural equation modelling and conjoint analysis.

Unit III

Regression analysis- assumptions of classical normal linear regression model (CNLRM); simple



and multiple regression analysis; dummy variable regression models; violations of assumptions of CNLRM- consequences, detection and remedial measures; basic concepts of time series analysis: stationarity, unit roots, cointegration, standard Granger causality and error correction model.

Unit IV

Applications of SPSS for data entry, editing, transformation and cleaning; applications of E-views, Microfit, Probit, Rats, Lisrel and Stata for managerial analysis

Spreadsheet tools: introduction to spreadsheet application, features and functions, using formulae and functions, data storing, features for statistical data analysis, generating charts/graphs and other features. Tools used may be MS Excel

Presentation tools: introduction to presentation tools, features and functions, creating presentations, customizing presentation, showing presentation, tools used may be MS Power Point

Free Open Source Software (FOSS)

Basic IT Skills Package

The Linux/ Ubuntu

LibreOffice Suite

Firefox

Blender for Architecture and Civil Engineering

GeoGebra for Mathematics

GIMP for Graphics art and design

LaTeX for Typesetting

Scilab for mathematical and scientific calculations

Python for Numerical computation

PHP and MySQL for developing interactive websites and establishing back-end connectivity with a database

OpenFOAM for computational Fluid Dynamics

Section B

Library based assignment

Identification and formulation of research problem

Use of review of literature in research

Evaluation of research papers

Book review

Submission of concise notes on each guest lecture attended

Research proposal, seminars and workshop

Presentation of research proposal

Presentation of research papers in seminar

Submission of concise notes on workshop attended

References

1 P.K Sinha 'Computer Fundamentals', BPB Publications, 1992

2 Guy Hart-Davis 'The ABCs of Microsoft Office 97 Professional edition',BPB Publications, 1998

3 Karl Schwartz, "Microsoft Windows 98 Training Guide", 1998

4 Write and Publish a Scientific Paper by Robert A. Day Oryx Press

5 Scientific Easy when you know how by Jennifer Peat BMJ Books

B



6 Research Projects and Research Proposals A Guide for Scientists Seeking Funding by Paul G. Chapin Cambridge University Press

6) **APPENDIX 2** TABLE SHOWING PROCEDURE FOR AWARDING MARKS ON RESEARCH RELATED ACTIVITIES FOR RECOGNITION OF AFFILIATED/CONSTITUENT COLLEGES AS RESEARCH CENTER

Nature of Work	Category	Description	Max. limit on marks for each category	
1	Patents	Abroad/India	04 marks for each patent awarded, 01 mark for each patent filed.	15
2	Paper Published.	Journal	International 03 marks for each paper National 02 marks for each paper	20
		Conference	International 02 marks for each paper / 03 marks for each invited talk National 01 marks for each paper	10
3	Papers Reviewed/ Discussion/ Reply to discussion/point of view/editorial published	Journal	International 01 marks for each paper National 0.5 marks for each paper	10
4	Poster paper/ only oral presentation	Conference	International 01 marks for each	10
5	Projects / Ph.D.Guided	Master Degree projects/M. Tech./ M. Phil/ Ph.D.	01 marks for each project guided 02 marks for each Ph.D. guided	15
6	Infrastructure		Adequate infrastructural facility conducive to accommodate PhD students such as ICT resource Centre , Seminar Room, Class Room, Library cum Reading Room, adequate laboratory with necessary equipments and research materials.	20
7	Instructional		Books, journals and magazines, Audio-visual equipment – TV, DVD Player, OHP, Photocopying machine. Ten PCs along with UPS and Printer with internet connectivity	20

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8 Amenities

Functional and appropriate furniture in 20 required number for instructional and other purposes.; separate common rooms for male and female students, Sufficient number of toilets, separate for male and female, Safe drinking water, Effective arrangement be made for regular cleaning of campus, water and toilet facilities, repair and replacement of furniture and other equipments. The institution's campus, building, facilities etc should be disabled friendly

7) **Appendix –3 Format for Research Proposal**

1. Area / specialization of the research work.
2. Topic of Research work:
3. Introduction: Aims and objectives of research work (in about 200 words)
4. Methodology of the research work:
5. A brief review of the work: (National and International)
6. Schedule of activity; (Programme chart)
7. Impact of proposed research in academic / industry
8. Address of related website:
9. Major inputs: (infrastructure for research work)
10. Up to date references related to research work.
11. Proposed Chapter scheme:
12. Bibliography: (in standard format)
13. PERT chart for the progress of the work.

Note: The synopsis should not have more than fifty (50) pages and it must have signature of candidate, supervisors and Counter Signature of the Head of Institution / Organization (Place of Research Work).

Signature of the Candidate

Signature and name of Supervisor(s)

Counter Signature of the Head of Institution / Organization.

8) **Appendix –4 Format of Application for Admission to Ph.D. Programme**

1. Name of student: Photo
2. Father's name:
3. Mother's name:
4. Date of Birth:
5. Educational Qualifications (starting from Secondary school exam/high school)
- 5.N. Exam passed/Degree obtained Board/University Year Division/Grade
6. Category (Eligible in): CET/ CET Exempted:
7. Classification: (Regular Whole Time teacher/ Regular Whole Time teacher in departments under SFS scheme) :
8. Merit Position in CET :
9. Category (GEN/SC/ST/OBC/PH) :
10. Date of application:

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11. Broad Area:
12. Sub area:
13. If employed, place of work:
14. Address, Phone Nos. E-Mail:
15. Name, designation, official address, contact Nos. and E- Mail of Proposed Supervisor/s/
Centers (Preference wise):
16. Application fee details:
17. Enrolment / Migration certificate details, whichever applicable

Signature of student

(For employed candidates only)

Declaration by Employer of the candidate

Application of Sh./Smt./Miss , who is working as in our Institution for admission of Ph.D. in Bundelkhand University, Jhansi is forwarded. In case, he/she is selected for admission by the University in the programme; he shall be allowed to pursue the Ph.D. as a full time candidate.

Our Institution shall allow him/her to complete the essential residential and other requirements of the programme as per the rules of the University. For full time study, he shall be relieved/sponsored by our Institution for three/two years.

Counter signature

Head of Department/ In charge of Research Centre (of the Institution, where the student is proposed to be registered)

9) Appendix –5 Format of Approval of Supervisor's for a Candidate

1. Name of student:
 2. Father's name:
 3. Mother's name:
 4. Date of Birth:
 5. Broad area and Sub area of research plan:
 5. Supervisor's name/s with No.(s) :
 6. Broad Area and Sub area of Specialization of Supervisor(s):
- Signature of Supervisors Chairman RDC Member (s) RDC

Date

(For use in Dean office in University) Approved / Queries to be furnished

Dean

Date

10) Appendix –6 Format of certificates in connection with submission of synopsis and Thesis

Certificate No. 1.

Certified that Mr./Ms..... Roll. No...../ID Department of..... has been prescribed the prescribed course credits and he/she has qualifiedcredit requirements.

Assistant Registrar (Academic)

Certificate No. 2

Certified that the above mentioned candidate has presented the results of his/her investigations to a panel duly constituted for the purpose on



.....(Copy enclosed).

Signatures of Members,

Certificate No.3 (To be completed by the Research Supervisor(s))

Certified that the above candidate has carried out the research work under my guidance during the period (Date of registration).....to

Further certified that:

1. there is prima facie case for consideration of the thesis.
2. the thesis does not include any work which has at any time previously been submitted for the award of a degree and.
3. the work involved the following/on collaboration namely:

Signature of Supervisor(s)

Certificate No. 4. (to be completed by the candidate)

I submit herewith 8 copies of the synopsis of my thesis, together with certificate from the Academic Section, Head of the department, the Research supervisor(s), as laid down under the Ph.D. rules.

I have also mailed the PDF file of the Synopsis to(e-mail).

My address for communication will be as follows:

(I hereby undertake to intimate change of address, if any)

Signature of the candidate

Name of the candidate in full: Date:

To

The Chairman, RDC

Department of

Assistant Registrar (Academic)

11) Appendix -7 Sponsorship Certificate for Carrying out the work at designated Research Laboratory through MoU

(This should be typed on the letterhead of the sponsoring organization)

Reference No.

Date:

1. Name of the sponsoring organization:

Address

2. Designation of the applicant:

3. Present status of the applicant:

4. Division/Section where research work is proposed to be done:

5. Name of the Local Supervisor:

(Bio-data of the Local Supervisor to be enclosed giving details of designation, qualification, research experience etc.)

6. Details of relevant facilities, which will be made available to the candidate:

7. Statement of Local Supervisor:

If Mr./Ms. Is admitted to the Ph.D. program at Bundelkhand University, Jhansi, I agree to supervise his/her research program jointly with the Supervisor from Bundelkhand University, Jhansi



Signature of Local Supervisor

If Mr./Ms. is admitted to the Ph.D. Program, we agree to relieve him/her to enable him/her to be in residence at Bundelkhand University, Jhansi during the first semester of his/her Ph.D. Program.

Mr./Ms Will be permitted to carry out research leading to the Ph.D. degree at our organization under the guidance of

Dr.....for which necessary academic leave shall be sought from time to time.

The necessary facilities will be provided for the purpose.

Signature and Seal of the Sponsoring Authority

12) Appendix -8 Format of Supervisor's Registration for Ph.D. Programme

1. Name of Faculty: Photo
2. Father's name:
3. Date of Birth:
4. Designation, official address, contact Nos and E- Mail :
5. Contact address, contact No.s, E- mail :
6. Educational Qualifications (starting from Bachelor's degree)
S.N. Degree obtained University Year Division/Grade
7. Date of application :
8. Broad Area :
9. Sub area :
10. Research activities in last five years:
11. Details of patents/publications etc. and self assessment as per Appendix 2

Signature

Counter signature

Head of Department/ In charge of Research Centre

(For use in University)

Marks as per Regulations:

(Signature of official) Date:

Recommendation of Dean

(a) To be approved / Need review

(b) To be recommended to get further details about the person

(c) Not To Be approved

Date

Signature

Approved as (a)/ (b)/(c) above with

Vice Chancellor

Date

Supervisor's No.

(Faculty) (year- two digits) (three digit no.)