

**P R O S P E C T U S**  
**FOR**  
**ADMISSION TO POST-GRADUATE (MASTER DEGREE) PROGRAMME**  
**2009-2010**

**I. DEGREE PROGRAMMES:**

Admission during the academic session **2009-2010** are open to the following M.Sc. Degree Programmes in the Rajendra Agricultural University, Bihar, Pusa (Samastipur)- 848 125 for **domicile of Bihar**

**Pusa Campus:** Agronomy, Agricultural Economics, Agricultural Statistics, Botany & Plant Physiology, Agril. Biotechnology, Entomology, Extension Education, Nematology, Plant Breeding & Genetics, Post Harvest Technology, Plant Pathology, Soil Science, Soil and Water Engineering, Extension Education (Home Science), Food & Nutrition, Family Resource Management

**Sabour Campus:** Horticulture

**Patna Campus:** Animal Breeding & Genetics, Animal Nutrition, Livestock Production & Management, Animal Reproduction Gynaecology and Obstetrics, Veterinary Parasitology

**II. ADMISSION CRITERIA AND ENTRANCE EXAMINATION**

1. Admission to the University implies acceptance without any modification by the candidate and his/her parents/guardians of all provisions given in the prospectus or any change in the University rules, regulations, fees, etc., that are made from time to time.
2. The students who have been temporarily dismissed or permanently dropped from this/any University either on account of poor academic performance or on account of act(s) of indiscipline or those who have been debarred from seeking admission in this/any University shall not be eligible to apply for admission to any programme of this University.
3. If any document submitted by the candidate is found to be false at any stage during his/her stay in this University, his/her admission will be cancelled.
4. The information indicated in this prospectus are only for general guidance and could be modified/changed from time to time by the University without giving any notice.
5. For correspondence regarding admission, contact

**REGISTRAR**  
**RAJENDRA AGRICULTURAL UNIVERSITY, BIHAR**  
**PUSA (SAMASTIPUR) -848 125**  
**Phone: 06274 -240239 (O)**

6. Admission to Master Degree programme shall be made at the commencement of the academic year.
7. The Competitive Test for admission to Master Degree programmes in the University shall be conducted on **21.06.2009** from **10.30 a.m. to 1.00 p.m.**
8. Candidate must affix or paste on the application form only the recent and clear photographs taken within last three months failing which the candidature would be rejected.

### III. SALE OF APPLICATION FORM

(a)	Sale of application form through DD of Rs. 500/- for General, EBC, BC & others and Rs. 250/- for SC & ST category from the Education Section of the University	<b>20.04.2009 to 20.05.2009</b>
(b)	By post from the office of the Registrar/Education Section, Rajendra Agricultural University, Pusa (Samastipur)-848 125 Bihar, by sending a written request with DD of Rs. 500/- for General, EBC, BC & others and Rs. 250/- for SC & ST category with a self-addressed 30 cm x 25 cm envelop pasted with postage stamp of Rs. 35/- only	<b>20.04.2009 to 20.05.2009</b>
(c)	The DD should be of Punjab National bank, in favour of Comptroller, Rajendra Agricultural University, Pusa payable at Punjab National Bank, RAU, Pusa Branch	-
(d)	Last Date for receipt of application form in the Office of the Registrar through Registered Post only	<b>30.05.2009</b>

The In-service candidates should submit their application through proper channel in accordance with the rules/regulation of the University made for the purpose.

### IV. LAST DATE FOR SUBMISSION OF APPLICATION FORM

The Completed application form on the prescribed proforma along with self-addressed envelope, bearing postage stamp of Rs. 25/- only for sending the admit card along with Acknowledgement Card must reach to the Registrar, Rajendra Agricultural University, Pusa (Samastipur) -848 125 Bihar on or before the last date i.e. on **30.05.2009** by **Registered Post** only. Application received after this date shall not be entertained.

## V. NUMBER OF SEATS AND ELIGIBILITY QUALIFICATION

Number of seats and minimum eligibility for admission to Master Degree Programme for Academic Session, 2009-2010 are as under:

Sl. No.	Subjects	Number of seats	Eligibility & Qualification	Number of fellowships
1.	Agronomy	20	B.Sc. (Ag.)/ B.Sc. (Hort.)	06
2.	Agricultural Economics	12	B.Sc. (Ag.) / B.Sc. (Hort.)	05
3.	Agricultural Biotechnology	04	Bachelor degree in Biotechnology/ Agriculture/ Horticulture/ Biology	02
4.	Agricultural Statistics	04	B.Sc. (Ag.)/ B.V.Sc.& A.H./ B.Sc. Hons. in Stat. or Math	02
5.	Animal Breeding & Genetics	05	B.V.Sc. & A.H.	02
6.	Animal Nutrition	05	B.V.Sc. & A.H.	02
7.	Botany & Plant Physiology	05	B.Sc. (Ag.)/ B.Sc. (Hons.) in Botany/ B.Sc. (Hort.)	02
8.	Entomology	12	B.Sc. (Ag.)/ B.Sc. (Hort.)	05
9.	Extension Education	9+2*	B.Sc. (Ag.)/ B.V.Sc. & A.H/B.Sc. (Hort)	04
10.	Extension Education (H.Sc.)	04	B.Sc. (Home Science)	03
11.	Plant Breeding & Genetics	12	B.Sc. (Ag.)/ B.Sc. (Hort.)	04
12.	Family Resource Management	03	B.Sc. (Home Science)	02
13.	Food & Nutrition	03	B.Sc. (Home Science)	02
14.	Horticulture	18	B.Sc. (Ag.)/ B.Sc. (Hort.)	06
15.	Livestock Production & Management	03	B.V.Sc.& A.H.	02
16.	Nematology	02	B.Sc. (Ag.) / B.Sc. (Hort.)	01
17.	Post Harvest Technology	03	B.Tech. (Agri.Engg.)	02
18.	Plant Pathology	12	B.Sc. (Ag.)/ B.Sc. (Hort.)	05
19.	Soil Science	12	B.Sc. (Ag.)/ B.Sc. (Hort.)	05
20.	Soil and Water Engineering	05	B. Tech. (Agril. Engg.)	02
21.	Animal Reproduction Gynecology and Obstetrics	05	B. V.Sc. & A.H.	02
22.	Veterinary Parasitology	05	B. V.Sc. & A.H.	02

\* **Reserved for Veterinary Graduates**

**Note:** Candidates of Pure Science admitted in the subjects of Agril. Statistics, Botany & Plant Physiology and Agril. Biotechnology will have to complete one-year deficiency courses and thus the complete M.Sc. Programme will be of minimum three years. Candidates having three years bachelor degree will have to spend three years in master degree programme.

**VI** The University reserves the right to make addition or deletion in number of seats without any notice. Candidates possessing the minimum eligibility qualifications as given above shall be eligible for admission to the respective Master Degree Programme, provided they fulfill the following conditions and qualify in the written test and secure a place in the merit list.

- (a) 60% marks in aggregate in Bachelor Degree Programme. In case of S.C. & S.T. candidate, 55% marks in aggregate.
- (b) The minimum qualifying marks for admission to Master Degree programme in the merit list prepared on the basis of entrance examination and academic marks will be 50% for unreserved, i.e. BC, EBC, and RCG candidates, and 45% for SC/ST candidates.

**VII VERIFICATION OF ANTECEDENTS**

Each applicant who seeks admission to this University will be required to submit a *Character Certificate* from the Head of the Institution last attended certifying the following points among others.

- (i) That the applicant has not taken part in any activities subversive of Rules, Regulations and Discipline of the Institution.
- (ii) That the applicant has never used unfair means in any examination of the Institution.

**VIII. MODE OF ADMISSION**

**(a) Scheme of Examination**

Candidates appearing in Competitive Test for Admission to Agriculture (Code 01 to 05), Veterinary (Code 06 to 07), Agril. Engineering (Code 08) and Home Science (09) stream will have to appear in Competitive Test Examination of the respective subject group paper which will carry 160 marks with two and half hours duration.

The candidates will have to select only one group bearing separate code number from the under mentioned groups for admission to Master Degree Programmes. Admission would be allowed to the selected candidates in any of the subjects shown in the group that they have opted and appeared for in the Competitive Test Examination. Candidates will not have any option to choose more than one group.

**Group subject for choice and appearing in the Examination**

<b>Group</b>	<b>Code Number</b>	<b>Subject</b>
Resource management	01	Agronomy Soil Science
Plant Protection	02	Entomology Nematology Plant Pathology
Crop Improvement	03	Agricultural Biotechnology Botany & Plant Physiology Plant Breeding & Genetics
Social Sciences	04	Agricultural Economics Agricultural Statistics Extension Education

Horticulture	05	Horticulture
Clinical Veterinary	06	Animal Reproduction Gynaecology & Obstetrics Veterinary Parasitology
Non-Clinical Veterinary	07	Animal Breeding & Genetics  Animal Nutrition Livestock Production & Management
Agricultural Engineering	08	Post Harvest Technology Soil & Water Engineering
Home Science	09	Extension Education Family Resource Management Food & Nutrition

The selected candidates shall be allowed admission only in any one of the subjects of the group for which they have appeared in the Competitive Test Examination based on merit cum availability of seats in the group.

**(b) Merit list**

The merit list shall be prepared on the basis of total marks obtained by the candidates in Entrance Examination Test-cum Academic Performance and selection will be made as per requirement of seats and roster taking into consideration the following criteria:

<b>Entrance Test-cum- Academic Performance</b>		
(i)	Entrance Examination Test	60%
(ii)	Undergraduate	20%
(iii)	12 <sup>th</sup> standard	10%
(iv)	10 <sup>th</sup> standard	10%

**(c) Choice of programme**

The candidate after their selection shall be given the option to choose the discipline from among subject of their respective group in order of merit only at the time of counselling.

**(d) Breaking of tie**

For determining the merit of candidates in case of a tie, performance at Bachelor Degree level examination will form the criteria. If performance at Degree level were equal, their age would determine the priority.

**IX REFUSAL OF ADMISSION**

- (a) The Vice-Chancellor reserves the right to refuse the admission of any candidate despite his/her fulfillment of the academic requirements for admission on the basis of Entrance Test-cum-Academic performance, for reasons to be recorded in writing whose admission in the opinion of the Vice-Chancellor shall not be in the best interest of the University. The decision of the Vice-Chancellor shall be final.

- (b) The students who have been permanently dropped or temporarily dismissed from this/any University either on account of poor academic performance or on account of acts of indiscipline or those who have been debarred from seeking admission in this University shall not be allowed to appear in the Competitive Test will also not be allowed to or seek admission as a sponsored candidate. Even if such a candidate has appeared in the Competitive Test either by concealing the facts or due to oversight, shall not be eligible for admission.
- (c) Candidates found using unfair means in the Entrance Competitive Test Examination of this University shall be permanently debarred from appearing in future in the Competitive Test Examination of the University.
- (d) It is the responsibility of the candidate to furnish full and correct information on the application form. Any admission made on the basis of wrong or concealed information, supplied by the candidates or due to any oversight or error in the Registrar Office and detected subsequent to the admission or joining of the candidate would be cancelled at the cost and risk of the candidate.

## **X RESERVATION OF SEATS**

Code numbers of various reservation categories have been given below:

<b>Category</b>	<b>Code number</b>
General (General)	101
Scheduled Caste (SC)	102
Scheduled Tribe (ST)	103
Extremely Backward class (EBC)	104
Backward Class (BC)	105
Reserve category girls (RCG)	106

A comprehensive statement showing the details of reserved seats category-wise in different subject group is given in Appendix- I (Roster).

## **XI SUBJECT GROUP CODE**

A candidate has to clearly specify in the application form the subject group code number given under section VIII (a)

## **XII. SYLLABUS**

Syllabus for competitive test for admission to Master degree programme is given in Appendix - II.

## **XIII FEE**

The details of the fee have been given in Appendix-III. Selected candidates shall have to take admission by depositing the required fee on the same day after counselling.

#### **XIV. INSTRUCTION FOR FILLING THE APPLICATION FORM**

Instructions for candidates for filling the application form are given in Appendix-IV.

#### **XV COUNSELLING**

Candidates called for counselling will be required to submit their relevant documents in original as given below with one attested photocopy of the certificates/mark sheets.

- (1) High School/equivalent examination mark sheet as well as certificate for proof of age.
- (2) Intermediate/equivalent examination mark sheet.
- (3) Bachelor Degree Examination Mark sheet/Transcript and Provisional Degree Certificate or Degree Certificate.
- (4) Caste certificate issued by the District Magistrate (in case candidates claiming reservation).
- (5) Two point Character Certificate from Head of the Institution last attended.
- (6) Domicile Certificate issued by the Competent Authority.
- (7) Conversion formula for conversion of OGPA into percentage of marks and vice-versa adopted by the University from where candidate has obtained degree certificate

Counselling does not guarantee admission. It depends on merit and availability of seats in a particular discipline/subject. In case, candidates fail to attend the counselling, his/her candidature shall automatically stand rejected.

#### **XVI RESIDENTIAL REQUIREMENT**

A minimum 4 semesters shall be the residential requirement for completing the courses in Master Degree programme and the maximum period in which the regular student must obtain his/her degree shall be 8 semesters. However, the students admitted for M.Sc. programme in the subjects of Agriculture Statistics, Agricultural Biotechnology and Botany & Plant Physiology will have to take deficiency courses in first two semesters in addition to the prescribed requirement for the said degree programme.

It is compulsory for the students to stay in the University/College Hostel. The students may be required to move to other campuses also for one or more semester for particular courses or research work.

#### **XVII UNIVERSITY FELLOWSHIP**

For only such candidates (domicile of Bihar) who have been allowed admission based on Merit List prepared by RAU, Pusa, Bihar and based on availability of fellowship in a particular subject.

### **XVIII PROCEDURE FOR APPLYING**

- (i) A candidate can apply for admission to only one subject. No change would be allowed thereafter.
- (ii) The application form along with Admit Card and Acknowledgement card (affixed with postal stamp) self-addressed envelope bearing postal stamps of Rs. 25/- only, and filled neatly and correctly by the applicant should be forwarded with necessary sets of attested copies of the documents viz. High School Certificate as a proof of date of birth, mark sheet of 10<sup>th</sup>, 12<sup>th</sup>, Degree Examination, domicile certificate and caste certificate if applicable so as to reach the Registrar, Rajendra Agricultural University, Bihar, Pusa (Samastipur)- 848 125 on or before the last date i.e. **30.05.2009** by **Registered Post**. Any application received after the last date shall not be entertained.
- (iii) The candidate who is appearing in the Bachelor Degree Examination is also eligible to apply provisionally for admission and appear in the Competitive Test Examination, **He/She has to submit documentary proof from the Registrar of the concerned University for award of degree to him/her on or before 12.07.2009.**
- (iv) Candidate who is in-service must submit his/her application through proper channel.
- (v) If a candidate furnishes wrong information or suppresses any relevant information, his/her admission will be cancelled.
- (vi) Candidate must enclose attested copies of the following certificate (whichever is applicable) and documents in the order indicated below. **The candidature of the candidate who fails to attach photocopies of certificates will not be considered.** If selected, candidate has to submit original certificates at the time of counselling.
  - (a) Proof of date of birth
  - (b) Matriculation (Class X) or equivalent certificate and marks sheet.
  - (c) 10+2/Intermediate Examination certificate and marks sheet
  - (d) Bachelor Degree Certificate and marks sheet
  - (e) Caste Certificate (if applicable)
  - (f) Self-addressed envelope bearing postage stamp worth Rs. 22/- only for sending admit card along with a postcard for acknowledgement
  - (g) Domicile certificate

Provisional Admit Card for the Competitive Test Examination to be conducted on **21.06.2009** will be sent by Registered post well in advance to all eligible candidates, who have submitted their application form complete in all respect by the due date. Those who do not get the Admit Card may approach the office of the Registrar one day before the Examination i.e. on **20.06.2009** for issue of Duplicate Admit Card

### Appendix-I

#### Bihar Reservation Act-16, 2003 (Group wise roster schedule for admission to Master Degree programmes during the Academic season 2009-2010)

Sl. No.	Department	Total seat	UR	SC	ST	EBC	BC	RCG	Total
Group Code: 01 (Resource Management)									
1.	Agronomy	20	10	3	1	3	2	1	20
2.	Soil Science	12	6	2	-	2	2	-	12
Group Code: 02 (Plant Protection)									
3.	Entomology.	12	6	2	-	3	1	-	12
4.	Nematology	02	1	1	-	-	-	-	02
5.	Plant Pathology	12	6	1	-	2	2	1	12
Group Code: 03 (Crop Improvement)									
6.	Agril. Biotechnology	04	2	1	-	1	-	-	04
7.	Botany & Plant Physiology	05	2	1	-	1	1	-	05
8.	Plant Breeding & Genetics	12	6	2	-	2	2	-	12
Group Code: 04 (Social Sciences)									
9.	Agril. Economics	12	6	2	-	2	1	1	12
10.	Agril. Statistics	04	2	1	-	1	-	-	04
11.	Extension Education	9+2=11	6	1	-	2	2	-	9+2=11
Group Code: 05 (Horticulture)									
12.	Horticulture	18	9	3	1	3	1	1	18
Group Code: 06 (Clinical Veterinary)									
13.	Animal Reproduction Gynaecology & Obstetrics	05	2	1	-	1	1	-	05
14.	Vet. Parasitology	05	3	-	-	1	1	-	05
Group Code: 07 (Non-clinical Veterinary)									
15.	Animal Breeding & Genetics	05	2	1	-	1	1	-	05
16.	Animal Nutrition	05	3	1	-	1	-	-	05
17.	Livestock Prodn. & Management	03	1	1	-	-	1	-	03
Group Code: 08 (Agril. Engineering)									
18.	Post Harvest Technology	03	2	-	-	1	-	-	03
19.	Soil and Water Engineering	05	2	1	-	1	-	1	05
Group Code: 09 (Home Science)									
20.	Extension Education (H.Sc.)	04	2	1	-	-	1	-	04
21.	Family Resource Management	03	2	-	-	1	-	-	03
22.	Food and Nutrition	03	1	1	-	-	1	-	03

**ABSTRACT**

<b>Total seat</b>	<b>Gen</b>	<b>SC</b>	<b>ST</b>	<b>EBC</b>	<b>BC</b>	<b>RCG</b>	<b>Total</b>
165	83	26	2	29	20	5	165

Note: Physically handicapped candidates who come under merit (selected) shall be provided the benefit of reservation for admission in their respective category as per govt. roster rule within the prescribed number of seats.

**APPENDIX-II****SYLLABUS FOR COMPETITIVE TEST FOR ADMISSION TO POST GRADUATE (MASTER DEGREE) PROGRAMME****RESOURCE MANAGEMENT GROUP (CODE- 01)****Agronomy**

Crop classification and seasons of their production; cropping system- concept of multiple cropping, mixed cropping, relay and inter-cropping and their importance in relation to food production, package of practices of production of important cereals like Rice, Maize, Wheat, Pulses like Red gram, Gram, Green Gram, Sugarcane and Jute; Oilseeds like Rapeseed mustard and Groundnut. Objectives and importance in crop production, factors and elements of weather and climate, climate change and crop production, weather forecasting, methods of irrigation, and water requirements of principal crops, drainage and its significance; types and causes of soil erosion and their control; common weeds of principal crops and their control measures, different types of herbicides and their modes of application agro-forestry in farming system.

**Soil Science**

Weathering of rocks and minerals. Factors of soil formation processes of soil formation. Modern system of soil classification. Physical, chemical and biological properties of soil. Soil texture and structure and the relevance in crop production. The structure and properties of soil clays. Cation and anion exchange capacity of soils and their significance. Movement of water in soil. Soil air and soil temperature. Soil fertility and productivity. Essential major plant nutrient like N.P.K. and their role and deficiency symptoms in plants and remedial measures. Functions of some important micronutrients (Zn, Fe, B and Mo), their deficiency symptoms and corrective measures. Bio-fertilizers Organic manures and inorganic fertilizers. Integrated nutrient management for sustaining crop productivity and enhancing fertilizers use efficient problem soil-acid soils, salt affected soils and organic soils along with their management.

**PLANT PROTECTION GROUP (CODE-02)****Plant Protection (Plant Pathology, Entomology, and Nematology)**

Importance of fungi to man; general characteristics, life cycle and classification of fungi, important diseases of major crop plants and their control measures. Bacterial diseases and their control measures. Major insect- pests in principal crops and their control; pesticide uses, formulations, selection, compatibility, safety, precaution and hazards. Importance of nematodes in agriculture, general characteristic classification and systematic position of nematodes. Important nematode diseases with special reference to

root-knot, cyst, reniform, lesion, citrus and ear-cockle nematodes of major crops their symptoms and management. General control of nematode disorder in plants.

## **CROP IMPROVEMENT GROUP (CODE-03)**

### **1. Plant Breeding and Genetics**

Mendelian inheritance, interaction of genes, variation and its causes, determination of sex, sex linked inheritance, use of mutation in crop improvement, various methods of breeding- self, cross and asexually propagated plants, hybridization methods and uses. Heterosis, characteristics of quality seeds, maintenance of purity and multiplications of seeds, foundation seeds and certified seeds.

Prokaryotic and eukaryotic cells, structures and function of chromosome, Euchromatin and heterchromatin, Cell cycle, Mitosis and meiosis, Mendelian inheritance of genes, Penetrance and expressivity. Quantitative variation, qualitative characters. Multiple factor inheritance. Pseudoalleles and multiple alleles. Linkage and crossing over,. Sex-linked inheritance, Determination of sex in plants animals. Structural and numerical changes in chromosomes. Mutation, types of mutation, Mutagenic agents, Cytoplasmic inheritance, Gene frequencies and Hardy Weinberg equilibrium, Nature, structure replication and manipulation of the genetic material.

### **2. Botany and Plant Physiology**

Phytohormones, their role in growth and development, Mechanisms of photosynthesis, Respiration and transpiration and factors affecting these processes. Absorption and Translocation of water and mineral nutrients, their physiological functions, Biological Nitrogen fixation in relation to crop production, Concept of ecology, environment and biosphere, structure, function and productivity of different kinds of ecosystems, Different kinds of ecosystems, Different kinds of pollution and their control.

### **3. Agricultural Biotechnology**

Isomerism, hydrogen bond and hydrophobic interaction in biomolecules, chemistry of biomolecules- carbohydrates, amino acids, proteins, lipids and nucleic, Metabolism of carbohydrates, fatty acids and protein, Genetic code, replication, transcription and translation, cultivation of major fruits, flowers and vegetable crops, landscaping and floriculture, agro-forestry, Discovery of antibiotics, classification of bacteria, Role of Microbes in carbon and nitrogen cycles, influence of Rhizosphere on soil micro-organisms, biofertilizer, Concept and scope of biotechnology. Tissue culture and its application, Micropropagation, Meristem culture and production of virus free plants, Anther and microscope culture, Embryo and ovary culture. Protoplast isolation protoplast fusion-somatic hybrids, cybrids, somaclones, synthetic seeds, *In vitro* germplasm conservation, Cryopreservation. Organelle DNA, Satellite and respective DNAs, DNA repair, Regulation of gene expression, Recombination DNA technology cloning vectors, restriction enzymes, gene cloning, Methods of gene transfer in plants, Achievements and recent developments of genetic engineering in agriculture.

## **SOCIAL SCIENCES GROUP (CODE-04)**

### **Extension Education**

Extension Education-meaning, objectives, principles, philosophy and process: community development, intensive agricultural programmes, Training and visit system, principles and steps in programme planning with reference to agricultural planning. Evaluation of Extension programmes; methods and steps involved in extension programme; Adoption and diffusion of farm innovations, transfer of technology in agriculture. Extension teaching methods, and audio-visual aids; rural leadership, role of Non-Govt. organization and voluntary agencies in extension programmes.

### **Agril. Economics**

Principles of farm-management; factor- product, product and factor-factor relationships; cost of cultivation of principal crops; land, labour and capital problems in Indian agriculture; Agricultural Production Environments, Role of Agriculture in future economic development; agricultural exports; population explosion and its control.

### **Agril. Statistics**

Definition of statistics, classification, tabulation graphic representation, Histogram, etc. Measures of central tendency- AM, Mode, Median, Geometric Mean, Harmonic Mean, Measure of Dispersion- Range, Interquartile range, Quantile Deviation, Mean Deviation, standard deviation, coefficient of variation. Probability-definition, addition and multiplication laws, Bayes theorem. Random variable, distribution function, Mathematical expectation. Binomial, Poisson and Normal prob, distributions, standard Error of Mean. Correlation and Regression- Line as only Common tests of significance, Z-test, t-test, F-test Assumptions underlying these tests. Chi-square test of goodness of fit and test of independence.

## **HORTICULTURAL GROUP (CODE-05)**

### **Horticulture**

Importance, status and scope of fruit in Indian Agriculture and human nutrition classification of fruit crops method of propagation, site selection and layout of orchards, cultivation of major fruit crops like: Mangoes, Litchi, Bananas, Papaya, Citrus, Guava, Pineapple and coconut. Importance of vegetable crops cultivation, classification of vegetable crops, types of vegetable growing cultivation of potato, tomato, brinjal, chillies. onion, important cucurbits, bhindi, cauliflower, cabbage, beans, radish and carrot. Types of ornamental gardening, lawn and their upkeep cultivation of flowers like roses, dahalia, chrysanthemum and marigold uses and scope of cut flower. Scope and importance of preservation industry in India. General principles of fruits and vegetables preservation, methods of preparation of jam, jelly, squash, tomato, ketchup and pickles Dehydrated products.

## **CLINICAL VETERINARY GROUP (CODE-06)**

- General clinical examination, definition, etiology, symptoms, diagnosis, prognosis, PM findings, curative and preventive treatment of the diseases affecting different systems of various domestic species.
- General classification, morphology, life cycle and bionomics and parasites (Helminths, Protozoa and Arthropod) of Veterinary importance with particular reference to the epidemiology, clinical signs, pathogenesis, diagnosis, ecology.
- Source and nature of drugs, pharmacokinetics, assay of drugs,

chemotherapy- sulpha drugs, antibiotics, mechanism and problems of drug resistance. Drug allergy and hypersensitivity. Poisonous plants. Toxicity of agrochemical and methods of detoxification of poisons. Drugs action on efficient body systems.

- Implantation and parturition in mammals. Management of post-partum complication diseases. Dystocia and its management. Artificial insemination, collection, Preservation, Transport of Semen, Semen diluters. Embryo transfer, Collection, preservation, transport and transplantation of zygotes, oocytes, culture and *in vitro* fertilization.
- Etiology of diseases and concept, extrinsic and intrinsic factors, inflammation, codoma, thrombosis, hemorrhage shock, degeneration and infiltration. Necrosis, calcification, gangrene, death, healing. Pathology of metabolic diseases, poisons, metaplasia, atrophy, hypertrophy, hyperplasia, benign and malignant tumours in domestic animals.
- Classification and growth characteristics of bacteria, bacterial variations, transduction and transformation. Bacterial diseases of livestock and poultry. General characters, classification and study of important fungi. Nature of viruses, morphology, biophysical and biochemical characteristics, RNA and DNA viruses, oncogenic viruses, viral immunity, viral vaccines. Important viral diseases of livestock and poultry. Antigen and Antibody, theory of antibody formation, immunity, allergy, anaphylaxia hypersensitivity, immunoglobulin, complement system.

#### **NON CLINICAL VETERINARY GROUP (CODE-07)**

- Structure of cells, cell organelles, chromosome structure and functions, cell growth, division and differentiation and functions. Histology and physiology of mammalian organs and systems, reproduction (including placental), major sense organs and receptors. The exocrine and endocrine glands, hormones and their actions, male and female fertility and its management. Blood composition and function. Homeostasis, osmoregulation and blood clotting. Digestion- control of motility and secretion of alimentary canal, gastric hormones and reflexes in the control of digestive functions, control of rumen motility, digestion in the ruminant and monogastric animals, absorption from rumen and the digestive tract, avian digestion, physiological basis of gastric disorders. Mechanics of respiration, neural and chemical control of respiration, gaseous transport and exchange, hypoxia, anoxia, hypobarrism and high altitude living, physiology of work and exercise. Control of male sexual behaviours, control of ovarian function, ostrus, ovulation, mechanism of sperm capacitation, sperm and ovum transport. The female genital tract, fertilization, implantation maintenance of pregnancy and physiology of placenta.
- Immunity and control, economic and zoonotic importance of parasites, zoonotic disease through milk and meat.
- General concept of livestock production and management in Indian agro-climatic & socio economic conditions, impact of livestock farming in Indian Agriculture. Concepts of livestock housing under tropical and temperate climate. Production and reproduction management of different species of livestock, lactation management, concept of machine milking in dairy cattle and buffaloes.
- General nutrition, carbohydrates, proteins and fats, their digestion and metabolism, protein value of food, measure of protein quality, application of protein quality in feeding practice and supplementary value of proteins,

intake and utilization of energy and nutrients of feeds, essential fatty acids to nutrition, requirement of energy, protein, minerals (macro and micro) vitamins and additives for poultry and pigs, protein-energy interrelationship comparative design of nutrients in various species. Foods and animal body composition, function of water in animal body, rumen digestion and metabolism, effect of different foods on rumen microbial activity, factors affecting rumen development, non protein nitrogen metabolism in the rumen, animal foods and fodders, quality of forage related to production. Energy and protein, role of antibiotics, hormones and other biostimulators, importance of trace minerals in ruminants, nutrients and their relationship with vitamins and hormones.

- Inheritance of acquired characters, cell structure and functional organisation of cell, mitosis and meiosis. Mendel's laws, gene interaction, sex determination, sex linkage, maternal effects, cytoplasmic heredity, quantitative inheritance, linkage and recombination, different types of chromosomes, changes in chromosome structure, gene structure and its functions, mutation and migration and random, draft in speciation and evolution. Inbreeding and cross breeding, general and specific Combining ability, heterosis, sire evaluation, breeds of various important livestock species, population statistics of livestock species, breeding programme in various livestock species in vogue in India. Measures of central tendency and dispersion, elements of probability theory, law of probability. Mathematical expectation, binomial Poisson and normal distributions regression and correlation.

## **AGRICULTURAL ENGINEERING GROUP (CODE-08)**

### **Soil and Water Engineering**

**Mechanics of Fluid Flow:** Velocity distribution in fluid flow, friction factor-Reynolds number relationship, Bernoulli's equation fluid flow measurements.

**Soil Mechanics:** Soil consistency, soil water seepage, shear strength, compaction and consolidation theories, earth pressures- Columb's and Rankin's theories, stability of slopes, bearing capacity.

**Hydrology & Soil Conservation:** Rainfall and its measurement, estimation of evaporation factor affecting runoff, measurement, development of runoff models, base flow separation, s-curves and unit-graphs, flood routing, principles and mechanics of erosion, measurement and estimation of soil loss, biological and engineering measures to control erosion, diversion ditches, vegetative waterways, outlets and their designs, terraces, gully control structures- drop, drop-in-let and chute spillways, farm ponds, earth dams, principles of watershed management.

**Irrigation and Drainage:** Steady and unsteady flow into wells, design of pipe lines and prismatic & silt loaded channels, land levelling, infiltration equations, evapotranspiration models, water requirements of crops, irrigation scheduling problems, irrigation efficiencies, irrigation methods, pump characteristics and selection of pumps, drainage coefficient, hydraulic conductivity, surface and subsurface drainage systems-mole drains, interceptor drains and outlets quality of water.

### **Agricultural Processing and Farm Structure**

**Heat and Mass Transfer:** Steady state heat transfer in conduction, convection and radiation, estimation of convective heat transfer coefficients for flow on simple surface, unsteady state heat transfer in simple geometry, design of double pipe tubular and plate heat exchangers.

**Unit operation in Agricultural Processing:** Material and energy balance, energy requirements in size reduction of liquid and solid foods, size separation by screening, filter medium and centrifugal separation of solids, liquids and gases, fluidization of granular solids, pasteurization and sterilization processes for liquid foods, shelf life extension of foods through temperature lowering and freezing estimation of freezing time, control of water activity through moisture reduction and solute addition, hot air drying of foods, operating principles and capacity estimation of through flow, traydrum and spray dryers.

**Farm Structures:** Farm stead planning, farm roads, fences and gates, analysis of forces and design and trusses, different kinds of beams, shear distribution and shear reinforcement, dairy and poultry buildings, estimation of quantities and costs, lateral pressure in grain silo, types of grain silo and their design, bulk and bag storage of grains.

## **HOME SCIENCE GROUP (CODE-09)**

### **Extension Education (Home Science)**

- Introduction to Home Science Education
- Introduction to Extension Education and Rural Development
- Rural Development Programme in India with special reference to women and children
- Extension teaching methods and aids
- Programme planning and evaluation for rural home with special emphasis on Adult Education & Women's literacy

### **Food and Nutrition**

- Basic food groups and Principle of Nutrition factors responsible for under nutrition
- Nutrition for different age groups
- Meal planning for normal and diseased person
- Food preservation and community Nutrition

### **Family Resource Management**

- Principle of Management
- Work simplification
- Importance of financial management
- Use, care and maintenance of modern equipment

## APPENDIX -III

Sl. No.	Item	Master degree programme (Rs.)
1	Course Registration fee (per student per semester)	125.00
2	Migration fee/Emigration fee (once in Academic Programme)	150.00
3	Laboratory caution money (Refundable)	400.00
4	Semester fees to be charged in each semester	
	(a) Admission fee	150.00
	(b) Tuition fee	1500.00
5	Examination fee to be charged in each semester	300.00
6	Library security money (Refundable)	1000.00
7	Library fee (per semester)	200.00
8	Medical fee (per semester)	150.00
9	Athletic fee (per semester)	150.00
10	Extra co-curricular fee (per semester)	150.00
11	Common Room fund (per student per semester)	50.00
12	Hostel fund (per student per semester)	50.00
13	Hostel charge	
	(a) Hostel Security money (Refundable)	500.00
	(b) Seat rent (per student per semester)	400.00
14	Development fee/Charges (once in Academic Programme)	3000.00
15.	University Registration fee (once in Academic Programme)	100.00
16.	Bihar State Inter University Sports & Cultural meet	10.00
	<b>TOTAL:</b>	<b>8385.00</b>

**Fees to be charged semester-wise*****First Semester***

Category	M.Sc. Programme	Remarks
	(Rs.)	
General	8385.00	
SC/ST	6585.00	Only tuition fee and exam fee will not be charged
EBC/BC-I*	6885.00	Tuition fee will not be charged from EBC/BC-1*

**Note:** Those EBC students who are recipient of scholarship/fellowship/stipend shall be charged full fee as in the case of general candidate.

***Fee to be charged in Subsequent Semester***

Category	M.Sc. Degree Programme (Rs)	Remarks
General	3235=00	
SC/ST	1435=00	Tuition fee & Exam fee will not be charged
EBC*	1735=00	Only tuition fee will not be charged

Note: \* Such EBC/BC-I students who are recipient of scholarships/fellowships/stipend shall be charged full fees as in the case of general category students.



14. Please write your full Mailing Address with PIN CODE
15. The details of the Bank Draft should be entered at the appropriate place of the application form.
16. Please ensure that the declaration is duly signed by the father/guardian (if father is not alive). Forged signature is liable to disqualify the candidate from counselling.
17. The candidate must ensure that the certificate of forwarding officer is duly signed by the Head of the Institution last attended/attending along with seal. The forwarding Officer must be the same who has attested the photograph on the application form of the candidate.
18. Only those candidates who have completed their qualifying examination (B.Sc.) and their results have been declared on or before **12.07.2009** are eligible for consideration of admission.
19. Date of publication of final result shall be considered as the date of completion of Bachelor degree programme

#### **IMPORTANT DATES**

- |   |  |   |   |
|---|--|---|---|
| 1 | Sale of Application Form and Prospectus  | : | <b>20.04.2009 to 20.05.2009</b>   |
| 2 | Last date for submission of Application Form   | : | <b>30.05.2009</b>   |
| 3 | Issue of Admit Card  | : | <b>08.06.2009</b>   |
| 4 | Issue of Duplicate Admit Card  | : | <b>20.06.2009</b>   |
| 5 | Date, time and venue of Examination  | : | <b>21.06.2009</b> at RAU, Pusa from<br><b>10.30 a.m.</b>  |
| 6 | Date of Publication of Merit List in News Paper/Notice Board   | : | <b>06.07.2009</b>   |
| 7 | Date, time and venue of Counselling<br>(Candidate may have to stay for one more day for counselling at his/her own cost) | : | <b>Venue:</b> Sanchar Kendra, Pusa<br><b>Ist Counselling:</b> <b>13.07.2009</b> from<br>10.00 a.m. to 02.00 p.m.<br><b>IInd Counselling (If necessary):</b><br><b>16.07.2009</b> 10.00 a.m. |
| 8 | Date of Admission  | : | <b>20.07.2009</b>   |

**DIRECTIONS FOR CANDIDATE**

1. The candidate shall be present at the centre 30 minutes before the commencement of the Entrance Test Examination.
2. Candidate will not be admitted to the Examination Hall after 30 minutes from the commencement of the Examination.
3. Candidate who does not produce the Admit Card shall not be allowed to sit in the examination hall by the Centre Superintendent/Invigilator.
4. Candidate must preserve the Admit Card till his/her admission in the Institution/Department.
5. Candidates are not allowed to leave the Examination Hall before expiry of the time and handing over the answer sheet and Question paper (Test Booklet) to the concerned Invigilator.
6. **The candidate shall not remove any page(s) from the Test Booklet and if any page(s) is/are found missing from his/her booklet, he/she will be proceeded against and shall be liable for cancellation of his/her candidature and legal action.**
7. The candidate must fill in the Box with blue **ballpoint pen** of good quality.
8. Candidate are not allowed to bring any **books, notes or calculator, cell phone**, etc. in the Examination Hall.
9. Candidate must follow the instructions strictly as given by the invigilators in the examination hall.
10. Impersonation in any form will lead to cancellation of candidature and legal action.
11. **Negative marking:** For each wrong answer one-fourth of the marks allotted to the question will be deducted from the total score. However, if no response is indicated in the answer sheet, no marks will be deducted.