PROSPECTUS

for
Admission to Master Degree Programme
(2016-17)

Bihar Agricultural University,
Sabour -813 210 (Bhagalpur)

Bihar Agricultural University
Sabour, Bhagalpur (Bihar)

Bihar Agricultural University, Sabour (Bhagalpur) is a State Agricultural University, which has been established on 5th August 2010 by an Act (No. 20 of 2010) State Legislature of Bihar as a State University specified by the UGC under section 22 of the UGC Act. 1956. The area of activity of this University is extended in three Agroclimatic zones spread over in 25 districts that include 12 Research Stations and 20 Krishi Vigyan Kendra (KVKs).

Bihar Agricultural University, Sabour is having following colleges & Institutes.

1. Bihar Agricultural College, Sabour, Bhagalpur
2. Mandan Bharti Agricultural College, Agwanpur, Saharsa
3. Bihar Veterinary College, Patna
4. Sanjay Gandhi Institute of Dairy Technology, Patna
5. Nalanda Horticulture College, Noorsarai, Nalanda
6. Veer Kunwar Singh Agricultural College, Dumraon, Buxer
7. Bhola Paswan Shasrti Agricultural College, Purnea.
8. Dr. Kalam Agriculture College, Kishanganj

This University is situated about 8 km east of Bhagalpur and the nearest railway station is Sabour. Sabour is directly connected by road, rail and air links. The National Highway No. 80 previously called Assam link road, passes through Sabour which links Gauhati (Assam) and Patna (Bihar). The nearest Air Port (Bhagalpur) is located about 4 kms away from the University campus, which is likely come in operation soon.

The University offers courses for the award of UG, PG & Ph. D. Degree. The Master's Degree is available in Agriculture stream at BAC, Sabour Campus & Veterinary stream at B.V.C., Patna Campus.

MANDATE

The mandate of Bihar Agricultural University, Sabour would include the following objectives:

- To impart education in different disciplines of agriculture and its allied disciplines.
- To undertake strategic and applied research for development of agricultural technology.
- To undertake extension education programme in the State of Bihar, by planning and organizing different programmes of human resource capability in agriculture and related domains.
- To help State Government in production and supply of breeder seeds for multiplication of foundation and certified seeds.
- To serve as a repository of national and international scientific information on various aspects of agricultural and animal production.
- To collaborate with relevant national and international agencies for all round development of agriculture and allied disciplines in the State, in particular and the country as a whole; and also to undertake such other activities, as it may deem fit, from time-to- time.

PROSPECTUS FOR ADMISSION TO
POST-GRADUATE (MASTER DEGREE) PROGRAMME 2016–17

I. DEGREE PROGRAMME :

Admission during the academic session 2016 – 17 is open to the following Master Degree Programme in the Bihar Agricultural University, Sabour- 813 210, Bhagalpur for domicile of Bihar.

Sabour Campus: Agricultural Economics, Agricultural Statistics, Agronomy, Entomology, Extension Education, Horticulture, Horticulture (Post Harvest Technology), Molecular Biology & Biotechnology, Plant Breeding & Genetics, Plant Pathology, Seed Science & Technology and Soil Science & Agricultural Chemistry.

Patna Campus: Animal Genetics & Breeding; Animal Nutrition; Animal Reproduction, Gynecology and Obstetrics; Livestock Production Management; Veterinary Medicine; Veterinary Microbiology; Veterinary Parasitology; Veterinary Pathology; Veterinary Public Health & Epidemiology and Veterinary Surgery & Radiology.

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, regulation, 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 or act(s) or 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 informations 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

Bihar Agricultural University, Sabour – 813 210, Bhagalpur
Phone: - 0641 –2452614, Fax:-0641 – 2452614
Website: www.bausabour.ac.in
Email: registrarbau2015@gmail.com

6. Admission to Master Degree Programme shall be made at the commencement of the academic year 2016-17.

7. The Competitive Test for admission to Master Degree Programme shall be conducted at BAU, Sabour on **05.06.2016** from 11.00 AM to 1.00 PM.

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.

9. In-service candidates sponsored from alien Organizations/Institutions may not be required to appear in the Competitive Test for seeking admission. However, such candidates may submit his/her application through proper channel on or before **17.05.2016**

III. AVAILABILITY OF APPLICATION FORM :

A.	The Application Form and Prospectus can be downloaded from University Website (www.bausabour.ac.in)	18.04.2016 to 13.05.2016
B.	Dully filled in application form can be submitted along with requisite fee i.e. Demand draft of Rs. 500/- (for General / EBC / BC / RCG category) and Rs. 250/- (for SC / ST category) to the Office of the Registrar, BAU, Sabour.	On or before 17.05.2016
C.	The DD should be in favour of **Comptroller, Bihar Agricultural University, Sabour** payable at **State Bank of India, Sabour.** (*Cash, Cheque, Postal orders and money order shall not be accepted).*	
D.	Last Date for receipt of application form in the office of the Registrar through **Registered/Speed Post/Courier** only.	17.05.2016

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. 27/- only for sending the admit card along with Acknowledgement Card must reach office of the **Registrar, Bihar Agricultural University, Sabour- 813 210, Bhagalpur on or before 17.05.2016 by Registered/Speed Post/Courier only**. Application received after this date shall not be entertained.

V. SUBJECT WISE SEATS AND ELIGIBILITY CRITERIA :

Subject wise seats and eligibility criteria for admission in Master Degree Programme for Academic Session 2016 – 2017 are as under:-

Sl. No.	Subjects	BAU Seats	ICAR Seats	Total Seats	Eligibility Criteria
Agriculture Faculty					
1.	Agricultural Economics	4	1	5	B.Sc. (Ag)/B.Sc. (Hort)
2.	Agricultural Statistics	2	0	2	B.Sc. (Ag)/B.Sc. (Hort)
3.	Agronomy	7	3	10	B.Sc. (Ag)/B.Sc. (Hort)
4.	Entomology	4	1	5	B.Sc. (Ag)/B.Sc. (Hort)
5.	Extension Education	4	1	5	B.Sc. (Ag)/B.Sc. (Hort)
6.	Horticulture	18	5	23	B.Sc. (Ag)/B.Sc. (Hort)
7.	Horticulture (Post Harvest Technology)	2	0	2	B.Sc. (Ag)/B.Sc. (Hort)
8.	Molecular Biology & Biotechnology	4	1	5	B.Sc. (Ag)/B.Sc. (Hort)
9.	Plant Breeding & Genetics	9	3	12	B.Sc. (Ag)/B.Sc. (Hort)
10.	Plant Pathology	6	2	8	B.Sc. (Ag)/B.Sc. (Hort)
11.	Seed Science & Technology	2	0	2	B.Sc. (Ag)/B.Sc. (Hort)
12.	Soil Science & Agricultural Chemistry	9	3	12	B.Sc. (Ag)/B.Sc. (Hort)
Veterinary Faculty					
1.	Anatomy & Histology	3	1	4	B.V. Sc. & A.H.
2.	Animal Genetics & Breeding	5	2	7	B.V. Sc. & A.H.
3.	Animal Nutrition	5	2	7	B.V. Sc. & A.H.
4.	Animal Reproduction, Gynecology and Obstetrics	4	1	5	B.V. Sc. & A.H.
5.	Livestock Production Management	2	0	2	B.V. Sc. & A.H.
6.	Pharmacology & Toxicology	3	1	4	B.V. Sc. & A.H.
7.	Veterinary Medicine	2	0	2	B.V. Sc. & A.H.
8.	Veterinary Microbiology	2	0	2	B.V. Sc. & A.H.
9.	Veterinary Parasitology	4	1	5	B.V. Sc. & A.H.
10	Veterinary Pathology	2	0	2	B.V. Sc. & A.H.
11.	Veterinary Public Health & Epidemiology	2	0	2	B.V. Sc. & A.H.
12	Veterinary Surgery and Radiology	2	0	2	B.V. Sc. & A.H.

VI. ELIGIBILITY REQUIREMENT :

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 that they fulfill the following conditions and qualify the written test and secure a place in the merit list.

(a) A candidate should possess at least 60% marks in aggregate or 6.0/10.0 in Bachelor's Degree and in the case of SC/ST, 55% marks in aggregate or 5.5/10.0 OGPA is required.

(b) Cut of marks for SC/ST candidate is 40% and 45% for all other categories in the merit list of Entrance Test – cum- Academic Performance.

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:

(a) That the applicant has not taken part in any activity subversive of Rules, Regulations and Discipline of the Institution.

(b) That the applicant has never used unfair means in any examination of the Institution.

VIII. MODE OF ADMISSION :

(a) Scheme of Examination :

Candidates willing to secure admission in **Agriculture (Code- A)** and **Veterinary (Code - V)** streams will have to appear in Competitive Entrance Test.

The candidates will have to opt the subject at the time of counseling on the basis of seat availability and reservation policy of Bihar Government.

Merit list:

The merit list shall be prepared on the basis of total marks obtained by the candidates in Entrance Test-cum-Academic Performance as mentioned below:

Entrance Test-cum-Academic Performance

(i)	Entrance Examination Test	80%
(ii)	Undergraduate	10%
(iii)	12th standard	5%
(iv)	10th standard	5%

(c) 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 is equal, then 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 act of indiscipline or those who have been debarred from seeking admission in this University shall not be allowed to appear in the Competitive Test or will also not be allowed to 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 Entrance Competitive Test of this University shall be permanently debarred from appearing in future in the Competitive Test 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:

Category	Code number
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

Reservation of seats shall be given as per Bihar Govt. Rules.

Categories wise seats for M.Sc. (Ag.) Degree Programme.

SI. No.	Subject	BAU Seats	UR	EBC	SC	BC	RCG	ST	Roaster Point
1.	Agricultural Economics	4	2	1	-	1	-	-	80-83
2.	Agricultural Statistics	2	1	-	-	-	1	-	84-85
3.	Agronomy	7	3	1	2	1	-	-	86-92
4.	Entomology	4	2	1	-	1	-	-	93-96
5.	Extension Education	4	2	1	1	-	-	-	97-100
6.	Horticulture	18	9	3	3	2	1	-	1-18
7.	Horticulture (Post Harvest Technology)	2	1	1	-	-	-	-	19-20
8.	Molecular Biology & Biotechnology	4	2	-	1	1	-	-	21-24
9.	Plant Breeding & Genetics	9	5	2	1	1	-	-	25-33
10.	Plant Pathology	6	3	1	1	1	-	-	34-39
11.	Seed Science & Technology	2	1	-	1	-	-	-	40-41
12.	Soil Science & Agricultural Chemistry	9	4	2	1	1	-	1	42-50
	Total	**71**	**35**	**13**	**11**	**09**	**02**	**01**	**80-50**

Categories wise seats for M.V. Sc. Degree Programme.

SI. No.	Subject	BAU Seats	UR	EBC	SC	BC	RCG	ST	Roaster Point
1.	Anatomy & Histology	3	2	-	1	-	-	-	85-87
2.	Animal Genetics & Breeding	5	2	1	1	1	-	-	88-92
3.	Animal Nutrition	5	3	1	-	1	-	-	93-97
4.	Animal Reproduction, Gynecology and Obstetrics	4	2	1	1	-	-	-	98-1
5.	Livestock Production Management	2	1	1	-	-	-	-	2-3
6.	Pharmacology & Toxicology	3	1	-	1	1	-	-	4-6
7.	Veterinary Medicine	2	1	1	-	-	-	-	7-8
8.	Veterinary Microbiology	2	1	-	1	-	-	-	9-10
9.	Veterinary Parasitology	4	2	1	-	1	-	-	11-14
10.	Veterinary Pathology	2	1	-	1	-	-	-	15-16
11.	Veterinary Public Health & Epidemiology	2	1	-	-	-	-	1	17-18
12.	Veterinary Surgery and Radiology	2	1	1	-	-	-	-	19-20
	Total	**36**	**18**	**07**	**06**	**04**	**-**	**01**	**85-20**

XI. STREAM CODE :

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

XII. INSTRUCTION FOR FILLING THE APPLICATION FORM :

Instructions to the candidates for filling the application form are given in Appendix – I.

XIII. FEE :

The details of the fee have been given in Appendix – II. Selected candidates shall have to take admission by depositing the required fee.

XIV. SYLLABUS :

Syllabus for competitive Entrance Examination for admission to Master's Degree Programme is appended in Appendix - III.

XV. COUNSELING :

Candidates called for counseling will be required to submit their relevant documents in original as given below with one set of self attested photocopies of the certificates/marks sheet.

(a) High School/equivalent examination mark sheet as well as certificate for proof of age.

(b) Intermediate/equivalent examinations mark sheet and certificate.

(c) Bachelor Degree Examination Mark sheet/Transcript and Provisional Degree Certificate or Degree Certificate.

(d) Caste certificate issued by the C.O/B.D.O. (in case candidates claiming reservation).

(e) Two points Character Certificate from Head of the Institution last attended.

(f) Domicile Certificate issued by the Competent Authority.

Counseling does not guarantee admission. It depends on merit and availability of seats in a particular stream/ discipline. In case, candidates fail to attend the counseling his/her candidature shall automatically stand rejected. University shall not bear any responsibility for any postal delay.

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 semester.

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 semesters for particular courses or research work.

XVII. UNIVERSITY FELLOWSHIP :

The University Fellowship shall be awarded to 75% students admitted in a particular subject on the basis of their performance in First Semester result.

XVIII. PROCEDURE TO APPLY :

(a) The application form along with Admit Card and verification card, self-addressed envelope bearing postal stamps of Rs. 27/- only, and filled neatly and correctly by the applicant should be sent with necessary set of attested copies of the documents viz, High School Certificate as a proof of date of birth, mark sheet of 10th, 12th, Degree Examination, domicile certificate and caste certificate if applicable so as to reach the **Registrar, Bihar Agricultural University, Sabour- 813 210, Bhagalpur on or before the last date i.e. 17.05.2016** by **Registered/Speed Post/Courier** only. Any application received after the last date shall not be entertained.

(b) The Candidate who is appearing for the Bachelor Degree Examination is also eligible to apply provisionally for admission and appear in the Competitive Test. However, he/she must have course completion along with CGPA on or before **04.07.2016**

(c) If a candidate furnishes wrong information or suppresses any relevant information, his/her admission will be cancelled.

(d) Candidate must enclose attested copies of the following certificate (whichever is applicable) and document in order as indicated below. The candidature of the candidate, who fails to attach photocopies of certificate, will not be considered. If selected, candidate has to submit original certificate at the time of counseling.

(1) Proof for date of birth

(2) Matriculation (Class X) or equivalent certificate and marks sheet

(3) 10+2/Intermediate Examination certificate and marks sheet

(4) Bachelor Degree Certificate/ Provisional Degree Certificate and Transcript.

(5) Caste Certificate (if applicable)

(6) Self-addressed envelope bearing postage stamp worth Rs. 27/- only for sending admit card along with a postcard for acknowledgement

(7) Domicile certificate

Admit card for the Competitive Test to be conducted on **05.06.2016** will be sent by Registered post well in advance to all eligible candidates who have submitted their application form completed in all respect by the due date. Those who do not get the Admit Card may approach the office of Registrar one day before the Examination i.e. on **04.06.2016** for issue of Duplicate Admit Card with payment of Rs. 50.00 only.

IMPORTANT DATES

1.	Availability of Application Form and Prospectus at university website	18.04.2015 to 13.05.2016
2.	Last date of submission of Application Form	17.05.2016
3.	Issue of Admit Card	30.05.2016
4.	Issue of Duplicate Admit Card	04.06.2016
5.	Date, time and venue of Examination	05.06.2016 (Sunday) 11.00 AM to 1.00 PM B.A.C., Sabour (Bhagalpur)
6.	Date of Publication of Merit List at University website	07.07.2016
7.	Date, time and venue of Counseling	15.07.2016 (Friday) Auditorium, BAC, Sabour 9.30 AM onwards
8.	Date of Admission	18.07.2016
(Candidate may have to stay one more Day for counseling at his/her own cost)		

DIRECTIONS FOR CANDIDATE

1. The candidate shall be present at the centre 30 minutes before the commencement of the 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 prosecuted against and shall be liable for cancellation of his/her candidature and legal action.
7. The candidate must fill in the Box with **black ballpoint pen** of good quality.
8. Candidates 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. No cutting or overwriting is allowed.
11. Impersonation in any form will lead to cancellation of candidature and legal action.

Appendix – I

INSTRUCTION FOR FILLING THE APPLICATION FORM

Please read the following instruction carefully before filling up the application form.

Application form must be filled by applicant's own handwriting in English only.

All entries in the box provided in item 1 to 10 must be made in block letters only with a ball pen. Please ensure that three recent identical passport size photographs from same negative (showing the portion of body chest upward) are pasted at appropriate places. The photographs to be affixed must be attested by Guzetted Officer/Head of the Institution last attended/attending

Do not fill in the spaces meant for office use.

1. The candidate is required to write his/her name in Capital letter in English in the same order as entered in his/her Matric examination/Mark sheet/certificate as blow :

P	U	J	A		R	A	N	I		K	U	M	A	R	I								

2. Write the name of father :

3. Write the name of mother :

4. Write the name of Guardian (if father is not alive) :

5. Date of birth must be entered in Christian era as recorded in High School Certificate e.g. 5th September1991 be entered as

0	5		0	9		1	9	9	1
Date			Month			Year			

6. Write complete address:

7. Sex (Write 'M' for male and 'F' for female)

8. Nationality :

9. Domicile of Bihar (Write 'Yes' or 'No')

10. Reservation Category : As defined in item-X

11. Write your caste, if you sought reservation:

12. Stream; As defined in item- VIII (a)

13. The details of the Bank Draft should be entered at the appropriate space provided in the application form.

14. Percentage of marks secured: Enter the actual percentage of marks secured in Matric/10th, Inter/12th and Bachelor's Degree up to two digits after decimal, for example 79.66.

15. Please write your Phone / Mobile No. and e-mail Id.

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 counseling.

17. The appearing candidate must ensure that the certificate of forwarding officer is duly signed by the Head of the Institution along with seal.

18. 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. However, He/ She must complete the degree requirement on or before **04. 07.2016.** However, he/ she must submit attested copy of final mark sheet/ transcript to the office of Registrar latest by **04.07.2016** through email **registrarbau2015@gmail.com** only.

19. Conversion formula for conversion of OGPA into percentage of marks and vice-versa adopted by the University from where candidate has obtained degree certificate may be mentioned in application form at appropriate place.

Appendix – II

Master Degree Programme

Sl. No.	Item	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
	Total	**8385.00**

Fees to be charged semester-wise

First Semester

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

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

Fee to be charged in Subsequent Semester:

Category	M.Sc. Programme (Rs.)	Remarks
General	3235.00	
SC/ST	1435.00	Only tuition fee and exam fee will not be charged
EBC/BC-1*	1735.00	Tuition fee will not be charged from EBC/BC – 1*

Note: * Such EBC/BC–1 students who are recipient of scholarships/fellowships/stipend shall be charged full fees as in the case of general category students.

Appendix – III

SYLLABUS FOR COMPETITIVE TEST FOR ADMISSION TO MASTER'S DEGREE PROGREMME

Agriculture Stream (Code A)

General Agronomy : National and international agricultural research institutes of India ; Agro-climatic zones of Bihar; Area, production and productivity of major crops in India and Bihar; Weather and climate, micro-climate, weather elements, basics of weather forecasting; Dry land agriculture; Tillage; crops stand establishment; Classification of crops; Definition and concept of cropping system, cropping pattern, multiple cropping, mixed cropping, inter-cropping, multistoried cropping, relay cropping and alley cropping and their importance in relation to food production; Basic elements of crop production; Factors affecting crop production.

Irrigation- definition and objectives; Water resources and irrigation development in India and Bihar, Soil-plant-water relationships; Methods of soil moisture estimation; Water requirement of crops; Scheduling of irrigation; Methods of irrigation-surface, sprinkler and drip; Irrigation efficiency and water use efficiency; Irrigation water quality and its management; Agricultural drainage; Water management of important crops.

Weeds - introduction, characteristics, harmful and beneficial effects, classification, propagation and dissemination; Weed biology and ecology, crop- weed competition and allelopathy; Concept of weed prevention, control and eradication; Method of weed control - physical, cultural, chemical and biological methods; Integrated weed management; Herbicide: classification, formulations, methods of application; selectivity of herbicides; Weed management in major field and horticultural crops; Aquatic and problematic weeds and their control.

Organic farming - definition, concept, relevance in present context, principles and components; Organic production requirement; Biological intensive nutrient management-organic manures, vermicomposting, green manuring, recycling of organic residues, bio-fertilizers; Soil improvement and amendments; Integrated diseases and pest management-use of bio-control agents, bio-pesticides, pheromones, trap crops; bird perches, Quality considerations, certification, labeling and accreditation processors, marketing, exports. Sustainable agriculture - introduction, definition, goal and current concepts, factors affecting ecological balance and ameliorative measures; Land degradation and conservation of natural resources. Farming system–definition, principles and components; Useful integrated farming system (IFS) models for lowland, upland and dry land situations; Principles of integration of different enterprises for the preparation of farming system modules; Utilization of wasteland through farming system.

Field crops - Origin, economic importance, soil and climatic requirement, varieties and cultural practices of crops –Cereals : rice, maize, sorghum, pearl millet, minor millets, wheat, barley; Pulses**:** pigeon pea, mung bean, urd bean, chickpea, lentil, peas, bean; Oilseeds: ground nut, sesame, soybean, rapeseed and mustard, sunflower, safflower and linseed ; Sugar crop: sugarcane; Medicinal and aromatic crops - mentha, lemon grass, citronella, isabgol and posta ; Commercial crop**:** potato; Forage crops : sorghum, maize, cowpea, cluster bean, napier, berseem and oat; Calculation of seed rate, fertilizers, weedicide and yield estimation; Preparation of cropping scheme for irrigated and dry land situations.

Horticulture: Definition and importance; Classification of horticultural crops; Area and production of different fruit, vegetable and flower crops; Planting systems, high density planting, planning and establishment of new orchard; Principles and methods of training and pruning of fruit crops; propagation methods and use of growth regulators in horticultural crops; Package of practices of important fruits (mango, banana, guava, citrus, litchi, papaya, strawberry etc.), vegetables (tomato, brinjal, chillies, okra, cucurbitaceous vegetables, cole crops, bulb crops, tuber crops, root crops, beans etc.), ornamental crops (trees, shrubs, climbers, palms and seasonal flowers) and spices (turmeric, coriander, fenugreek, ginger); importance of post-harvest technology in horticultural crops; Maturity indices, harvesting and post-harvest handling of fruits and vegetables; Pre harvest factors affecting quality on post-harvest shelf life of fruits and vegetables; Principles of preservation by heat, low temperature, chemicals and fermentation; Preparation of jams, jellies, preserves, pickles, ketchup, sauce.

Soil Science –Pedological and edaphological concept of soil; Composition of; ear Weathering of rocks and minerals; Soil formation - factors and processes; Type of soil -production importance and their management; Soil physical properties - Soil texture, Textural classes, Particle size analysis, Soil structure : classification, Soil aggregates : significance, Soil consistency, Soil crusting, Bulk density and particle density of soils & porosity : their
Significance and manipulation, Soil compaction, soil colour; Soil moisture – retention and potentials, soil moisture constants, infiltration, percolation, permeability, drainage; Soil temperature, soil air, gaseous exchange, influence of soil temperature and air on plant growth; Soil colloids: properties, nature, types and significance; Layer silicate clays, their genesis and sources of charges, adsorption of ions, ion exchange, CEC & AEC factors influencing ion exchange and its significance; Soil organic matter: composition, decomposability, humus, fractionation of organic matter, carbon cycle, C: N ratio. Soil biology: biomass, soil organisms and their beneficial and harmful roles; Types of soil micro-organism, their role in different geochemical transformations; biological nitrogen fixation, bio-fertilizers, Rhizosphere, Phyllospere, plant-microbe interaction; Microbial

pesticides, Microbial composting, Microbial agent to control plant diseases. **Soil health assessment techniques;** Soil as a source of plant nutrients - essential and beneficial elements, criteria of essentiality, forms of nutrients in soil, functions and deficiency symptoms of essential nutrients and measures to overcome deficiency, mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants; Problem soils –acid and salt affected soils : their characteristics, nutrient availabilities, reclamation methods (mechanical, chemical and biological methods); Use of saline water for agriculture; Soil fertility–approaches for soil fertility evaluation and methods; Critical limits of plant nutrients in soil; Factors influencing nutrient use efficiency for different soil and crops grown under rainfed and irrigated condition; Fertilizers and manures - types, application methods; Integrated nutrient management (INM); Bio-fertilizers and their advantage; Preparation of organic manures, vermi compost, FYM, green manuring.

Plant Breeding & Genetics: Major objectives and achievements of plant breeding in India; Centre of diversity and its importance in crop improvement; Modes of reproduction: Sexual, Asexual; Modes of pollination; genetic consequences, differences between self and cross pollinated crops; Nature of Pollination of crops; Parthenocarpy in plants; Germplasm conservation and its utilization; Concept of gene and gene pool; Hybridization & methods of handling segregating generations; Pure line selection, Mass selection, Heterosis breeding, Hybridization, pedigree method, bulk method, modified bulk method, back cross method, recurrent selection; Male sterility and self–incompatibility-mechanism and their utilization in crop improvement; Heterosis –concepts, estimation and genetic basis of heterosis; Clonal selection; Polyploidy breeding and its importance in crop breeding; Mutation breeding; Hybrid production and importance in different crop plants; Wide hybridization and constrains related to it; Synthetics and composites, their development; Crop ideotype-concept and importance, IPR and its related issues, Genetic basis of adaptability to unfavorable environments; Definition of biometrics, assessment of variability i.e., additive, dominance and epistasis and their differentiation; Genotype X Environment interaction and influence on yield performance. Hardy-Weinberg Law; Study in respect of origin, distribution of species, wild relative and forms of Vegetables (Tomato, bhindi, chilli, cucumbers); Flowers corps (Chrysanthemum, rose, galardia, gerbera & marigold); fruit crops (aonla, guava, mango, custard apple, banana, papaya);; Breeding for resistance to biotic and abiotic stresses variability in pathogens and pests; Mechanisms of resistance in plant to pathogens and pest; Quantitative and qualitative characters; Components of genetic variation, correlation and regression; Cell division-mitosis and meiosis; Mendel's laws of inheritancetions, Multiplealleles, linkageand crossingtheirover; except Cytoplasmic inheritance, Chromosome: structure, morphology, number and types. Structure of DNA and RNA and its replication; Concept of Plant Biotechnology: Tissue Culture and Plant Genetic Engineering; Tot potency in plant, meristem culture, anther culture, pollen culture, embryo culture, callus culture, cell culture; Somaclonal variation; Transgenic- achievements and future prospects.

Seed Science : Basic principles of seed production, kinds of seed and Indian Seed Act 1966; ntroduction and history of seed industry in India; Definition of seed; Differences between grain and seed; Importance and scope of vegetable seed production in India; Principles of vegetable seed production; Role of temperature, humidity and light in vegetable seed production; Methods of seed production of cole crops, root vegetables, solanaceous vegetables, cucurbits, leafy vegetables, bulb crops, leguminous and exotic vegetables; Seed germination and purity analysis; Field and seed standards; Seed drying and extraction.

Plant Physiology: Transpiration: significance, Transpiration in relation to crops productivity, Water Use Efficiency, WUE in C3, C4 and CAM plants, Factors affecting WUE; Photosynthesis, Significance of C3, C4 and CAM pathway, Relationship of Photosynthesis and crop productivity, Translocation of assimilates, Phloem loading, apoplastic and symplastic transport of assimilates, Source and sink concept, Photorespiration, Factors affecting photosynthesis and productivity, Methods of measuring photosynthesis, Photosynthetic efficiency, Dry matter partitioning, Harvest index of crops; Respiration and its significance, Brief account of Growth respiration and maintenance respiration, Hydroponics, Introduction of Photo-periodism and Vernalization in relation to crop productivity; Photo-periodism, Plant Growth Regulators – Occurrence –Biosynthesis –Mode of action of Auxins, Gibberellins, Cytokinin, ABA, Ethylene, Novel plant growth regulators, Commercial application of plant growth regulators in Agriculture, Senescence and abscission.

Entomology : Economic importance of insects; General morphology and anatomy of insect; Classification of insects; Apiculture, sericulture and lac culture; Important insect and non-insect pests of important field crops (rice, maize, sorghum, pearl millet, minor millets, wheat, barley; pigeon pea, mung bean, urd bean, chickpea, lentil, peas, bean, ground nut, sesame, soybean, rapeseed and mustard, sunflower, safflower and linseed sugarcane); vegetables (tomato, brinjal, chillies, okra, cucurbitaceous vegetables, cole crops, bulb crops, tuber crops, root crops, beans), orchard and plantation crops (mango, banana, guava, citrus, litchi, papaya, palms) and their management; Storage pests and their management; Integrated pest management; Biological control of pests; Plant quarantine measures; Different categories of pesticides, their formulation and modes of action; Insect toxicology and concept of LD_{50}/LC_{50}MRL and waiting period; Recent techniques of pest management; Plant protection equipment'sanditsapplication in pest management; Insecticide Act, 1968 & Puts, 1971. General characteristics of plant pathogenic nematodes, its morphology and biology; Classification of nematodes up to family level with emphasis on groups containing economically important genera; General symptoms caused by nematodes and their management.

Plant Pathology : Introduction of important plant pathogenic organisms - fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroid, algae, Protozoa and phanerogamic parasites with examples of diseases caused by them; Prokaryotes: classification of prokaryotes according to Bergey's; General characters,

Manual of reproduction and classification of fungi; Definition and objectives of Plant Pathology; Survival and Dispersal of Plant Pathogens; Plant disease epidemiology; General principles of plant diseases management; Integrated plant disease management (IPDM); Economic importance, symptoms, cause, epidemiology and disease cycle and important diseases of important field crops (rice, maize, sorghum, pearl millet, minor millets, wheat, barley; pigeon pea, mung bean, urd bean, chickpea, lentil, peas, bean, ground nut, sesame, soybean, rapeseed and mustard, sunflower, safflower and linseed sugarcane); vegetables (tomato, brinjal, chillies, okra, cucurbitaceous vegetables, cole crops, bulb crops, tuber crops, root crops, beans), orchard and plantation crops (mango, banana, guava, citrus, litchi, papaya, palms) and their management.

Agricultural Economics –meaning, definition; Basic Concepts: Goods, Service, Utility, Value, Price, Wealth, Welfare; Wants: Meaning, characteristics, classification, importance; Law of Diminishing Marginal Utility, law of equi-marginal utility; Consumer equilibrium; Demand: meaning, definition , kinds of demand, demand schedule, demand curve, market demand, Price, income and cross elasticities; Public Finance–Meaning, Principle, Sources, Direct Tax, Indirect Tax; Public expenditure; Inflation; Nationalized and Commercial Banking System. Agricultural credit; Agricultural co-operative: structure and function; Agricultural marketing - definition, classification; Marketable surplus & marketed surplus, Marketing channel, Types and systems of farming, Farm planning and budgeting, Risk and Uncertainty; Principles of production and costs, Cost of cultivation, net returns, Farm records, Balance sheet, Profit –loss analysis.

Extension Education: meaning, definition; Agricultural extension & its importance; Rural development: meaning, definition, objectives and importance; Different extension programmes - Etawah Pilot Project, Community Development Programme, Panchayati Raj System, High Yielding Variety Programme, National Demonstration, Frontline Demonstration, Krishi Vigyan Kendra, ATMA, Institutional Village Linkage Programme (IVLP), Integrated RuralDevelopment Programme (IRDP); Communication: meaning, definition, elements and selected models; Extension Programme-planning : meaning, scope, principles and steps; Monitoring and evaluation of Extension programme; Extension teaching methods; Leadership, Attitude, Knowledge, Skill, Training, Communication skill; Local leaders, Adoption and Diffusion, Innovations and their characteristics, Kisan Call Centers, Entrepreneurship in Agriculture, SWOT analysis; Capacity building of extension personal.

Agricultural Statistics : Definition of statistics , its use and limitation; Graphical representation - Histogram, Frequency polygon, Frequency curve, Ogive; Measures of Central Tendency – Mean, Median, Mode, Geometric Mean, Harmonic Mean; Measures of Dispersion –Range, Quartile deviation, Mean deviation, Standard deviation, Variance, Coefficient of Variation; Concept of Probability; Simple Random Sampling; Standard Error, Type I and Type II Error; Null Hypothesis, Level of Significance; Test of Significance based on Chi-Square, t and F test; Correlation Coefficient , Regression Coefficient, Experimental Designs –CRD, RBD and LSD.

Agricultural Engineering: Basic concepts of various forms of energy; unit and dimensions of force, energy and power; IC Energies: Basic principles of operation of compression, ignition and spark ignition engines, two strokes and four stroke energies; cooling and lubrication system, power transmission system, broad understanding of performance and efficiency of tractors, power tillers and their types and uses; Tillage: objectives, methods of ploughing; Primary tillage implements: construction and function of mould board ploughs, disc and rotary ploughs; Secondary tillage implements: constructions and function of tillers, harrows, levelers, ridges and bund formers; Sowing and transplanting equipment: seed drills, potato planters, seedling transplanter; Grafting, pruning and training tools and equipments; Inter-cultural equipments: sweep. Junior hoe, weeders, long handle weeders.

Veterinary Stream (Code B)

GROUP 'A'– ANIMAL SCIENCE

UNIT-I : Principles of animal genetics, cell structure and multiplication. Mendel's laws, principles of population genetics, concept of heredity, heterosis and mutation, principles of evolution, principles of molecular genetics, genetic code, quantitative and qualitative traits. Selection of breeding methods in livestock and poultry. Population statistics of livestock.

UNIT-II : General nutrition, proximate principles, carbohydrates, proteins and fats their digestion and metabolism in ruminants and non-ruminants. Energy partition-measures of protein quality. Water, minerals, vitamins and additives, feeds and fodders and their classification. Common anti-nutritional factors and unconventional feeds. Hay and silage making. Grinding, chaffing, pelleting, roasting, feed block. Feed formulation principles. Digestion-control motility and secretion of alimentary tract. Mechanism, natural and chemical control of respiration, gaseous exchange and transport, high altitude living, physiology of work and exercise. Cardiac cycle, natural control of cardiovascular system. Smooth and skeletal muscle contraction. Blood coagulation. Physiology of immune system. Male and female reproduction including artificial insemination, in-vitro fertilization, cryo- preservation. Excretory system.

UNIT-III: General concepts of livestock production and management, status of dairy and poultry industry, impact of livestock farming in Indian agriculture. Livestock housing, production and reproduction management,

lactation management, breeding programmes for livestock and poultry. Composition, quality control and preservation of livestock products, methods of processing and storage livestock products. International Trade/WTO/IPR issues related to livestock products.

UNIT-IV: Concept of sociology, differences between rural, tribal and urban communities, social change, factors of change. Principles and steps of extension education, community development – aims, objectives, organizational set up and concept evolution of extension in India, extension teaching methods. Role of livestock in economy. Identifying social taboos, social differences, obstacles in the way of organizing developmental programmes. Concept of marketing, principles of co-operative societies, animal husbandry development planning and programme, key village scheme, ICDD, Gosadan, Goshala, Role of Gram Panchayat in livestock development. Basics of statistics, data analysis and computational techniques.

GROUP 'B'– VETERINARY SCIENCE

UNIT I : Structure of cells cell organelles, chromosome structure and functions, cell growth, division and differentiation and functions. Structure and function of basic tissues-epithelium, connective tissue, muscle and nervous tissue. Gross Morphology, Histology and physiology of mammalian organs and systems, major sense organs and receptors. Circulatory system. Digestion in simple stomached animals birds and fermentative digestion in ruminants, Kidney and its functions-respiratory system-animal behaviour-growth-influence of environment of animal production-biotechnology in animal production and reproduction-electrophysiology of different types of muscle fibres. Exocrine and endocrine glands, hormones and their functions, blood composition and function. Homeostasis, osmoregulation and blood clotting. Gametogenesis and development of urogenital organs. Boundaries of body cavities. Pleural and peritoneal reflections.

UNIT-II: Classification and growth characteristics of bacteria, important bacterial diseases of livestock and poultry, general characters, classification of important fungi. Nature of viruses, morphology and characteristics, viral immunity, important viral diseases of livestock and poultry. Viral vaccines. Antigen and antibody, antibody formation, immunity, allergy, anaphylaxis, hypersensitivity, immunoglobulins, complement system. Etiology of diseases and concept, extrinsic and intrinsic factors, inflammation, degeneration, necrosis, calcification, gangrene, death, atrophy, hypertrophy, benign and malignant tumours in domestic animals, General classification, morphology, life cycle of important parasites, important parasitic diseases (Helminths, Protozoa and Arthropods) of veterinary importance with respect to epidemiology, symptoms, pathogeneses, diagnosis, immunity and control.

UNIT-III: History and scope of Veterinary Medicine. Concept of animal diseases, diagnosis, differential diagnosis and prognosis. Hyperthermia, hypothermia, fever, septicaemia, toxaemia, shock and dehydration. General systemic states Clinical examination and diagnosis, Etiology, epidemiology, symptoms, diagnosis, prognosis, treatment and control of infectious and non infectious diseases of cattle, buffalo, sheep goat, horses and pet and wild animals. Diseases of digestive, respiratory, circulatory and uro-genital system. Emergency medicine and critical care. Aetiology, clinical manifestation diagnosis and treatment of metabolic and production diseases.

Introduction, history, classification, surgical terminology and development of veterinary surgery. Asepsis-antisepsis, their application in Veterinary surgery. Surgical risk and judgement. Management of shock, haemorrhage. Principles of fluid therapy. Differential diagnosis of surgical treatment of abscess, tumer, cyst, haematoma, necrosis, gangrene, burn, wound. General surgical principles and management of surgical cases. Pre-anaesthetic considerations, local and general anaesthesia, anaesthetic agents. Anaesthetic emergencies and their management. Post operative pain management. Production and properties of X-rays. Principles of viewing and interpreting X-ray films. Classification of radiographic lesions. Biological effect of radiation, radiation hazards and their prevention. Principles of ultrasonography, CT scan, MRI, echocardiography, scintigraphy, gamma camera and Doppler and their application in veterinary practice. Use of radiological techniques in the diagnosis of animal diseases.

Clinical evaluation and abnormalities of reproductive tracts of domestic animals. Delayed puberty and sexual maturity. Estrus and estrus cycle in domestic animals, Superfoetation and superfecundation. Fertility, infertility and sterility and its management. Pregnancy diagnosis, parturition, management of postpartum complications dystokias and its management. Introduction to andrology Developement of male genitalia and gonads. Forms of male infertility. Causes of male infertility and its treatment. Methods of semen collection and preservation. Physical, biochemical, and biological tests for evaluation of semen. Artificial insemination.

UNIT-IV: Definition, history and classification of Zoonotic diseases and their management. Emerging, re-emerging and occupational diseases. Bio-terrorism. Zoo animal health. Source and nature of drugs, pharmacokinetics, chemotherapy-sulpha drugs, antibiotics, mechanism and problem of drug resistance. Fundamentals of drug screening and assay of drugs. Adverse drug reaction interaction. Drug designing and development. Introduction to bio-pharmaceutics and gene therapy. Drug allergy, important poisonous plants, toxicity of important agro-chemicals and their detoxification, drugs action on different body systems. Pharmacotherapeutics of hormones and vitamins. Bio-enhancers, immunostimulants, immunosuppressant, New drugs and drug formulations.