

Rama University, Kanpur

Ref: RU/PASAI/Patho/01

Dated: 11-06-2018

Faculty of Agricultural Sciences and Allied Industries

Minutes of Meeting

Boards of Studies 1

A meeting of Boards of Studies of FASAI, Department Plant Pathology was held on **11-06-2018** in Conference room. The following members were present:

1. Prof. Rajendra Prasad - Chairperson (R. Prasad)
2. Dr. Udai Bhan Singh - Member (U. B. Singh)
3. Mr. Omendra Sharma - Member (O. Sharma)

The following members agreed to review the minutes

1. Prof. Udit Narain - External Member (U. Narain)
2. Dr. S.K. Biswas - External Member (S. K. Biswas)

Agenda:

1. Review of the existing programs and their curricula

S. No.	Item No.	Existing	Recommendation /Action Taken
1.	1. To construct the evaluation scheme for M.Sc. Agriculture(Plant Pathology) students admitted in the session 2018-19.	N/A	The BOS Consider and approved the evaluation scheme for M.Sc. Agriculture(Plant Pathology) students admitted in the session 2018-19. Attached curriculum, syllabus and evaluation scheme(ANNEXURE:1)

2. Recommendation on New courses under the Institute

S. No.	Item No.	Feedback from Faculty/Student	Recommendation /Action Taken
1	NA	NA	NA

3. Consideration of the curricula of the new programs prepared by the faculty

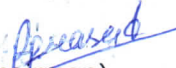
S. No.	Item No.	Feedback from Faculty/subject experts/Industries	Recommendation /Action Taken
1	NA	NA	NA

4. Review of Teaching Process

S. No.	Item No.	Existing	Recommendation /Action Taken
1	NA	NA	NA

The meeting concluded with a vote of thanks to the chair.

Date of the Next Meeting: to be decided and conveyed later


(Chairman)

Encl.: Recommended Curricula attached for consideration and approval.

CC:

1. Dean Academics Office
2. Registrar Office

PROGRAMME OUTCOMES: M.Sc. Agriculture (Plant Pathology)

Course aims towards providing:

PO1	Knowledge of various branches specialized to studies related to Plant Pathology.
PO2	Attract, retain and train high quality graduate students.
PO3	Place students earning the M.Sc. into positions including extension agents, state and federal plant pathologists, instructors at the community college level, support scientists in public or private sector research programs , and PhD programs .
Po4	Required to raise the income of farmers Providing detailed knowledge of agriculture in India and Indian farmers income generating
PO5	Enterprises marketing of agricultural produce Knowledge dissemination regarding various technique of farming and farming system in India.

PROGRAMME SPECIFIC OUTCOMES: M.Sc. Agriculture (Plant Pathology)

PSO1	Impart a high quality education in the discipline of Plant Pathology and developing students to meet out future challenges in agriculture.
PSO2	Understand the nature and basic concepts of basic and Plant Pathology, Molecular Plant Pathology and bioinformatics.
PSO3	Analyse the complex crop disease problems of agriculture and address issues through use of modern biotechnological techniques.
PSO4	Perform experimental procedures as per established laboratory standards in the areas of Molecular Plant Pathology, Plant tissue culture, Genetic Engineering, Molecular marker technology and Bioinformatics.
PSO5	Understand the applications of Plant Pathology in all spheres of agriculture and develop crops resistance to diseases with improved productivity thereby increasing farmers' income, better human health and decreased environmental pollution.

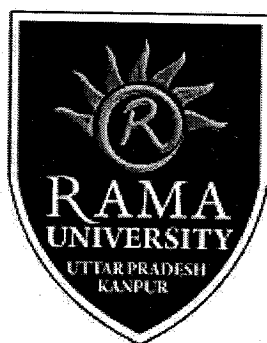
Program Educational Outcome
M.Sc. (Ag) Plant Pathology

1. Understanding, interpretation and synthesis of scientific literature pertaining to plant pathology and related disciplines
2. Student will know about importance of isolation and identification methods, disease and management caused by fungi, bacteria, virus and other plant pathogen and their role in biological cycle.
3. Student will know importance of sign and symptoms for detection of pathogens and disease, integrated methods of disease management, use of biological and chemicals in disease management.
4. Best problem-solving skills in students would encourage them to carry out innovative research projects thereby making them to use knowledge creation in depth.
5. Student should be aware of ethical issues and regulatory considerations while addressing society needs for growth with honesty.
6. Collecting data in an objective way and conducting appropriate statistical analyses and interpretation and presentation of research results in oral and written formats.
7. Publication of research in peer-reviewed scientific journals and other discipline-appropriate outlets such as commodity newsletters

RAMA UNIVERSITY

Faculty of Agricultural Sciences & Allied Industries

Department of Plant Pathology



ORDINANCE

For

M.Sc. (Ag)

Plant Pathology

PROGRAMME

ORDINANCE GOVERNING THE DEGREE OF MASTER OF SCIENCE (AGRICULTURE) IN PLANT PATHOLOGY (M.Sc. (Ag.) PLANT PATHOLOGY PROGRAM

1. DEFINITIONS OF KEY WORDS:

- (i) **University:** Rama University, Kanpur U.P.,
- (ii) **Academic Year:** Two consecutive (one odd followed by one even) semesters constitute one academic year.
- (iii) **Semester:** Each semester will consist of 15-18 weeks of academic work equivalent to 90 actual teaching days. The odd semester may be scheduled from July to December and even semester from January to June.
- (iv) There shall be subjects of studies for the Master of Science in Agriculture i.e. M. Sc. (Ag.) in Plant Pathology at Rama University, Kanpur (Faculty of Agricultural Sciences & Allied Industries). Introduction of any new subject(s) of studies in PG Level at the Institute will be made in due course without modification of the ordinance.
- (v) The Post-graduate Degree courses of two-year duration comprising four semesters will run under "Course and Credit System".
- (vi) A candidate seeking admission to M. Sc. (Ag.) Plant Pathology Programme is required to produce a certificate that he / she has passed the four-year B. Sc. (Ag.) Honours degree examination of Rama University or equivalent examination recognized by the ICAR and/or the UGC. The other eligibility criteria like percent of marks, OGPA etc. will be decided as per University guidelines, which may vary from time to time.
- (vii) The candidate admitted for admission to the M.Sc. (Ag.) Plant Pathology Programme shall abide by the regulations regarding the course curricula and the academic standards as prescribed by the University from time to time.
- (viii) The medium of instruction and examination shall be in English.

Department and major field of specialization: Faculty of Agricultural Sciences & Allied Industries, Rama University, Kanpur offers Master's degree in the Horticulture programmes with major studies in:

M. Sc. (Ag.)	Major subject(s)
Plant Pathology	Mycology/ Biological Control

2. Standing Committee (PG Programme):

- a. A Standing Committee (PG Programme) shall be formed for examining the issues related to M. Sc. (Ag.) Plant Pathology Programme of the Faculty.
- b. **The composition of the Standing Committee (PG Programme) shall be**
 - i. **Chairman:** A Senior Professor appointed by the Dean of the Faculty.
 - ii. Head of the Department.
 - iii. PG Coordinator of each M. Sc. (Ag.) Plant Pathology Programme.
- c. **Function of Standing Committee (M.Sc. (Ag.) Plant Pathology Programme) may include:**
 - i. Looking after the general work of M. Sc. (Ag.) Programme.
 - ii. Reviewing academic standards including syllabus, examinations etc.
 - iii. Looking after matters related to examinations, evaluation etc.

3. PG Coordinator:

- a. BOS/Departmental Committee of the Department offering M. Sc. (Ag.) Plant Pathology Programme, may select a faculty member as a PG Coordinator for course.

b. The Course Coordinator will look after smooth running of M. Sc. (Ag.) Programme of the Department.

4. Academic Session and Semester Calendar:

a. The duration of M. Sc. (Ag.) Plant Pathology Programme shall be of two academic years consisting of four semesters. The maximum allowable semesters for completion of M. Sc. Plant Pathology (Ag.) Programme is eight (8).

b. The academic year of M. Sc. (Ag.) Plant Pathology Programme shall be in terms of two semesters in a year. The odd semesters (i.e. First and Third) shall run in the first half of an academic year and even semesters (i.e. Second and Fourth) shall run in the second half of the same academic year. The broad schedule of two semesters is:

Odd semesters (I & III)	July to December
Even semesters (II & IV)	January to June

c. The commencement of each semester in a particular academic year shall be decided by the Standing Committee (PG Programme) from time to time.

d. There shall be no semester break but summer and autumn recesses and enlisted holidays will be followed as prescribed by the University.

5. Courses:

a. Code: Each course shall bear a distinguishing code (three letters and three digits) that identifies the discipline from which it is being offered.

b. Code numbers:

i. Course seminar shall be designated by Code No. MSPP-401

ii. Master's research (Thesis) shall be designated by Code No. MSPP-402

c. There shall be two types of courses, "credit courses" and "non-credit courses". Grade points obtained only in 'credit courses' will be considered for the classification of results. Performance in non-credit courses including Thesis will be as "Satisfactory/No satisfactory"

d. There shall be four types of credit courses, "only theory courses", "only practical courses", "composite courses" and "credit seminar". The composite courses will consist of both theory and practical components.

e. The distribution of marks in various courses of M. Sc. (Ag.) shall be:

i.	For 'only theory courses'	
	Semester Terminal Examination	80
	Internal Assessment	20
	Total	100
ii.	For 'only practical courses'	
	Semester Terminal Practical Examination	80
	Internal Assessment	20
	Total	100
iii.	For 'Composite courses' i.e. Theory & Practical (60:40)	
	Semester Terminal Theory Examination	50
	Internal Assessment (Theory)	20
	Semester Terminal Practical Examination	30
	Total	100
iv.	For 'Credit seminar'	100

f. Internal assessment:

Internal assessment will be done in the form of Continuous Evaluation having at least two tests of different forms (tutorial, class test as objective, essay, viva-voce, quiz type, assignment/term paper, class seminar, group discussion, interaction, small projects etc.) per course. The tests should be

spread throughout the Semester but 15 days before the commencement of Terminal Examination. At least 50 % weightage should be on written form of tests. In case of the student who fails to appear in the Terminal examination of a given semester but appears in Internal Assessment (continuous evaluation) of the courses, marks of internal assessment of the student will remain valid during his/her next chances but if a student remains absent or scores low or nil marks even in internal assessment, he/she will not be permitted to reappear for internal assessment after the semester is over.

Within 15 days of conducting the Tests, the Course Instructors will submit marks in the prescribed form in duplicate to the HoD who will sign on both the copies, keep one copy for office use and forward the other copy to the Controller Examinations. The marks of the Internal Assessment should be displayed in the Department for at least seven days before forwarding the same to the Controller Examination. Once the marks of the Internal Assessment are submitted to the Controller Examination by the Department, the marks cannot be corrected or changed.

g. Marks scored in Internal Assessment are to be mentioned separately in the Mark sheet.

h. Courses:

- i) **Major courses:** The discipline in which the student shall pursue major study in his/her Master Programme.
- ii) **Minor courses:** The discipline closely related to a student's major discipline. Split minors will be permissible.
- iii) **Supporting courses:** It could be any discipline excluding major considered relevant for student's research work or necessary for building his/her overall competence.
- iv) **Non-credit compulsory courses:** Courses are of general nature and are compulsory for M. Sc. (Ag.) Plant Pathology Programme. Students' require completing course as stated below:

CODE	COURSE TITLE	CREDITS
MAS-104	Computer Science	2+0

i. One credit hour indicates one hour lecture or two hours practical work per week for the entire semester.

6. Credit Requirements:

- a. A student is required to complete a minimum of 60 credits of which 40 credits shall be of course work and 20 credits shall be allocated for the research (Thesis) work.
- b. A student's programme of studies shall not be more than 25 credits in any semester.
- c. The total course and credit requirements for obtaining Degree shall be:

Particulars	Minimum Credits
i) Course Work	
Major courses	25
Minor courses	09
Supporting courses	05
Non-credit Compulsory courses	06
Seminar	01
Total	46
ii) Comprehensive Examination	Non-Credit
iii) Thesis	20

d. In addition to above a candidate may be permitted to opt for required number of credits from optional major courses and minor or supporting courses as suggested the Chairman of Advisory Committee.

7. Course Regulation:

- a. The courses to be offered in a particular academic year or semester shall be decided by the

BOS/HOD based on available facilities and faculty strength.

- b. Allotment of courses, designating faculties as Course Instructors and Course Associates shall be decided by the BOS/HOD well in advance of the commencement of a semester. The Course Leader will be in rotation considering the workload of each teacher associated with a particular course.
- c. Towards introduction of a new course or revision of course, University rules will be followed.
- d. There shall be no rigid rule or guideline regarding the minimum number of students required for offering a course. The course will be offered even for a single student.
- e. There shall be the provision of inviting the Guest Lecturers to deliver lecture on some highly specialized topics if required.

8. Course Registration:

The students will have to submit their choices for course(s) for a particular Semester in writing (in prescribed format) to the HOD through the Major Advisor and PG Coordinator of Department at least one week before the commencement of classes of the said Semester. Students intending to change the Course opted for once will be allowed to do so in the same process within 15 days after the initial Registration.

9. Advisory Committee:

- a. The Advisory Committee consisting of at least three members from both major and minor subjects shall be constituted for each student.
- b. Every student shall have a Major Advisor who shall be from the Major Field to which the student has been admitted. The Major Advisor shall function as the Chairman of the Advisory Committee.
- c. The nomination for Chairman of the Advisory Committees of all newly admitted students shall be completed within four weeks of the first Semester by the HoD.
- d. The Advisory Committee of the student should meet frequently to monitor the progress of the student.
- e. A proposal for the formation of the students' Advisory Committee along with the Plan of Post-graduate Work shall be forwarded in the prescribed proforma to the HoD for approval within six weeks from the date of admission of the student.
- f. The Major Advisor will select other members of the student's Advisory Committee (with the knowledge and consent of the members concerned). Co-advisor shall be from the major field of study/specialization of the Department; Member(s) one each from the Department(s) offering Minor Courses; and Member(s), from any discipline, if Major Advisor feels it necessary for the student's Thesis work.
- g. Co-advisor will act as the Major Advisor of the concerned student if the original Chairman is not available due to one or more reasons (death, leaving the university, prolonged absence, ill health etc.)
- h. Replacement of members of the Advisory Committee: The Chairman of the concerned student after consultation with the HoD can replace any member of the Advisory Committee due to one or more reasons as stated in Para 9. g above.
- i. In case of newly admitted students, the HoD will discharge the functions of the Chairman of the Advisory Committee till the Chairman is selected as per procedure prescribed above.
- j. A faculty member having a minimum of one year teaching/ research experience or Doctoral degree can be the Chairman of the Advisory Committee.

10. Plan of Post-graduate Work (PPW):

- a. The programme of studies indicating the PPW of each student in prescribed format shall be finalized by his/her Advisory Committee to provide considerable latitude in the choice of courses, taking into account the requirement for research in that particular field.

- b. The broad research topic of every student will be mentioned at the time of preparation of PPW. The Advisory Committee should finalize PPW within six weeks of the first Semester.

11. The Outline of Research Work (ORW):

- a. The ORW in prescribed format will have to be approved by the Advisory Committee and forwarded by the Chairman of the Committee to the HoD through the PG Coordinator.
b. The ORW will be presented in the Departmental Seminar for discussion and suggestions.

12. Attendance:

Candidates should have an average attendance of 75% in every Semester to be eligible to appear for the Terminal Examination of a given Semester. Candidates having 60% and more but less than 75% attendance may be allowed to appear in the Semester Examination after paying the requisite fine as decided by the University from time to time.

13. Paper setting and Evaluation:

- a. In the Semester Terminal examination question papers for fifty percent of the major courses in each semester shall be set externally and evaluated externally. But for only practical courses evaluation will jointly be made by the external and internal(s) examiners. For minor course(s) concerned BoS will make appropriate arrangement.
b. In case any external examiner fails to arrive in the practical examination, the concerned HoD may exercise the option to appoint himself or any other teacher of the University or an expert available in the vicinity other than internal examiner(s).
c. For all the non-credit compulsory courses the paper setting as well as evaluation will be made internally.

14. Examination and Regulation:

- a. Semester Terminal examinations for odd Semesters shall ordinarily be held in December while for even Semesters be held in the month of June in every academic year. Standing Committee (PG Programme) will fix the period of every Semester Terminal examination preferably at the beginning of the semester. It is also expected that the Semesters of M. Sc. (Ag.) Plant Pathology Programme in the Faculty will commence at the same time.
b. The candidates shall be required to pass all the courses mentioned in his/her PPW. He/she also needs to complete required Thesis credit hours within the stipulated period i.e. not more than eight (8) Semesters.
c. Before appearing in the end semester theory and/or practical examinations (both theory and practical examinations for composite courses) the student must pass all the backlog paper(s).
d. There shall be the provision for Review System and the evaluation will be done internally. The BoS will recommend the names of three members (HoD and other two members excluding the first examiner) for Review Examination. In case the HoD has evaluated the course, Adhyksha will act as a member in the Board replacing the HoD.
e. The duration for semester Terminal examination of different courses shall be as follows:
i) For theory courses: 3 hours
ii) For practical courses: 3 hours
f. The candidates appearing in each Semester Terminal examination of M.Sc. (Ag.) Plant Pathology Programme shall: (i) produce a certificate from the HoD that he/she has attended at least 75 % of the in-campus classes. Relaxation, if any, will be guided by the University Ordinance; (ii) produce a certificate from HoD that his/her conduct has been good and that he/she is fit and proper candidate for the examination.
g. A student found adopting unfair means at the examination will be treated heavily and stringent action will be taken as per University rules.
h. No 'make up' examination shall be permitted in lieu of the missed Terminal theory and/or practical examination.

- i. If a student fails to appear in any final theory and /or practical examination or does not secure pass marks in any course, he/she requires fresh registration for the course during the next available Semester with that course but the candidate has to complete the degree programme including all the repeat courses within eight (8) Semesters.
- j. If a candidate is compelled to drop a Semester on medical ground he/she will be allowed to repeat in the next available Semester. However, he/she has to complete all the courses within eight (8) Semesters.
- k. If a student has to drop a course on medical ground but having less than 75 % attendance the student shall be given 'I' grade, i.e. "incomplete", and will be allowed to repeat the course in the next available Semester. The 'I' grade shall be entered in the transcript also. In all other cases dropping of course will be declared 'Fail' in the course.

15. Fees and other Charges:

Student admitted to M.Sc. (Ag.) Plant Pathology Programme shall pay examination fees (as per University guidelines) for each Semester Terminal Examination at the time of filling up of form for the purpose.

16. Moderation:

- a. A Moderation Committee consists of at least three members may be appointed as per University rule but excluding an external moderator, shall do moderation of question papers for the Terminal Theory Examinations.
- b. Separate Moderation Committee shall be formed for each M. Sc. (Ag.) Programme and that may act under the Chairmanship of HoD.

17. Scrutiny:

- a. There shall be a Scrutiny Committee consisting of HoD and two other teachers of the Department to scrutinize the results of internal assessment, Terminal as well as Review examinations before finalization. The BoS of the concerned Department will approve the Committee.
- b. M.Sc. (Ag.) Plant Pathology Programme will have separate Scrutiny Committee that will act independently.

18. Credit Seminar:

- a. Each student shall be required to deliver a Seminar during the course of studies on a topic relevant to the concerned discipline.
- b. Code No. 380 shall be assigned for Course Seminar.
- c. PG Coordinator shall act as Seminar Leader. Otherwise, HoD of Department himself or may select any faculty member as Seminar Leader.
- d. Departmental students' Credit Seminar will be an open Seminar.
- e. The Seminar Leader in consultation with the HoD shall fix the schedule for the Seminars.
- f. The Seminar topic shall not be within the purview of the student's Thesis instead should cover a subject of topical interest.
- g. Each student will prepare and distribute copies of 'Abstract' to the persons attending the Seminar. The Abstract (within 300 words) should precisely state the main theme of the talk.
- h. Seminar write-up: The student shall prepare a full account (not normally exceeding 3000 words) on the topic covered in the seminar and submit to the Seminar Leader on or before the date of presentation of the Seminar.
- i. Seminar evaluation: Seminar Leader and the members of the Advisory Committee will evaluate the performance of the students, taking into account all the relevant factors like, Introduction, Review of Literature, presentation of subject, capacity to draw general conclusion from literature and ability to answer questions raised and will award marks to the student.

19. Comprehensive:

- a. Every student has to appear at Comprehensive Examination to be conducted by the Advisory Committee.
- b. A candidate should be allowed for comprehensive examination after completion of 75% course work separately in major and minor subject(s) but before the submission of Thesis.
- c. Written comprehensive examination consists of one paper in major courses and one paper in minor courses each of three hours duration having 100 marks.
- d. Paper setting and evaluation will be done internally.
- e. Qualifying marks will be 50% and grading will be Satisfactory/Unsatisfactory. If the performance of a student becomes unsatisfactory he/she has to appear again to a maximum of three more attempts within eight (8) Semesters. Repeat comprehensive test (s) shall be conducted at least with a gap of 30 days of the previous test.
- f. The results of comprehensive examination shall be forwarded by the HoD to the Examination Section for record. The grade obtained will not be reflected in the Final transcript.

20. Thesis:

- a. The thesis for the Master's Degree shall indicate student's potentialities for conducting research.
- b. The topic of Thesis will be within the Major Field of specialization under the Code No. 399.
- c. The subject of the Thesis should be approved by the student's Advisory Committee and the HoD at the time of formation of the student's PPW and then ORW.
- d. The Thesis shall be based on the results of the student's own work. A certificate to this effect from the Major Advisor shall accompany the Thesis.
- e. The Thesis shall preferably follow the following: chapters on Introduction, Review of literature, Materials and Methods, Results, Discussion, Conclusion and Summary, Future scope of research and References.
- f. **Thesis Seminar:** A student shall deliver a seminar on the research problem before the submission of Thesis and all the faculty members may be invited to participate in the discussion and make constructive suggestions on the Thesis.
- g. Thesis submission: After fulfilling the prescribed courses, residential requirements and minimum semester requirements (4 Semesters) and successfully completing the research work to the level of full satisfaction, a student shall submit the Thesis.
- h. The Chairman of the student's Advisory Committee shall ensure that all members of the Advisory Committee are duly consulted before submission of the manuscript of the Thesis.
- i. Each student shall submit three copies of the Thesis within the date notified by concerned HOD, one copy to deposit to the Institute Library, another to the Departmental Library, third to the Major Advisor.
- j. The Thesis shall accompany a certificate to the effect that the work has not been submitted in part or full for any other degree or diploma.
- k. The candidate shall submit the Thesis to the concerned HoD along with "no dues certificate" and other formalities.
- l. **Thesis Viva-Voce:** An External Examiner shall examine the Thesis. An arrangement for viva voce shall be made by the concerned Department by an Examination Committee consisted of External Examiner, HoD and the members of the Advisory Committee of the candidate. The student shall be awarded "Satisfactory" (i.e. pass) or "non-satisfactory" (i.e. fail) in Thesis Viva-Voce.
- m. The grade obtained (i.e. Satisfactory/Non-satisfactory) shall be shown in the final transcript but shall not be included for the purpose of calculation of OGPA.
- n. In case, the External Examiner suggests modification/re-submission, the student may be permitted to defend his/her thesis in final viva-voce, and as such of modifications as are finally agreed upon may be carried out after the viva-voce.

- o. Re-examination: If a student fails (i.e. non-satisfactory) in Thesis he/she may be permitted to continue the work and/or rewrite the Thesis as per comments of the Examination Committee and resubmit it to the HoD with the recommendation of the Chairman of the Advisory Committee for permission to appear a second time. Re-examination shall not take place earlier than three months after the final semester examination but within eight (8) Semesters and as far as possible the Committee as previously constituted, will conduct it. No further reexamination is permissible and a student failing to secure 'satisfactory' grade a second time shall not qualify for the degree

21. Rights on Thesis:

- a. The Thesis submitted by a student shall become the property of the Institute.
- b. Whenever, an extract from the Thesis is published, there should be an acknowledgement in the form of footnote stating that the results are from the Thesis submitted for the degree from the Faculty of Agricultural Sciences & Allied Industries, Rama University.
- c. All patents, designs and inventions derived from the Thesis research work shall belong to the Faculty which may, at its discretion, allow or direct any benefit thereon to be retained by or given to the author of the Thesis.
- d. Copies of the Thesis submitted to the University Library or in the Departmental Library shall not be issued on loan for a period of two years from the date of submission.
- e. In case where student does not take care to publish the Thesis work even after three years of completion of the degree, there stands no objection of the student to publish papers/articles by the Chairman, Advisory Committee of the concerned student.

22. Grading System:

- a. There will be a ten point grading system of evaluation with grade point (GP) equals to percent marks obtained divided by 10.
- b. **The conversion formula will be:** Percent of marks = 10 x OGPA
- c. Minimum requirement: Grade point (GP) of 5.00 for passing a course and an Overall Grade Point Average (OGPA) of 5.00 for completing the M. Sc (Ag.) Plant Pathology Programme. A candidate failing to secure minimum OGPA (5.00) will not be considered for the award of degree and shall be declared as 'failed'. If a candidate fails to secure 40 % marks in Practical examination of composite course he /she will be declared as 'fail' in the concerned course.
- d. A candidate failing to obtain minimum GP (5.00) in not more than three courses, in a Semester, will be allowed to repeat the failed course(s) afresh not more than two times in next available Semesters. A candidate failing in more than three courses in a Semester has to repeat the Semester. In any circumstance the student is to complete the degree Programme including all the repeat courses within the maximum of 08 Semesters.
- e. Symbols to be used in the Semester Transcript:

I = Incomplete

S = Satisfactory

NS = Non-Satisfactory

R = Repeat

Specialization of the candidate needs to be mentioned in the Semester Mark sheet/Transcript.

23. Residential Norms:

- a. Residential requirement shall mean presence of the student continuously in working days/hours in the Institute/University (class room for classes, laboratories for practical and/or research, farm for field work, library for collecting information or placed somewhere on duties etc.).
- b. The minimum residential requirement shall be of four Semesters from the date of admission to the University. However, with the prior written permission of the HoD, PSB through the Chairman a student may be allowed to discontinue after completion of two consecutive

Semesters and renew studies even after two Semesters. Completion of semester shall mean clearing of all examinations as scheduled. He/she has to pay annual fees for the University for Retention of the studentship.

- c. A student may be allowed for discontinuance only by one break and he/she shall have to complete all courses including submission of Thesis within eight semesters from the date of admission to the University, failing which his/her studentship shall be treated as cancelled.
 - d. A student appealing discontinuance for one or two semester(s) has to vacate hostel accommodation.
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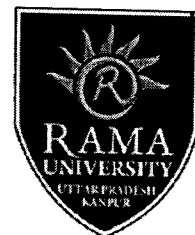
Evaluation Scheme:

M.Sc.(Ag.) Plant Pathology FIRST YEAR (SEMESTER-I)

S.N.	Subject Code	Subject Name	Period			Evaluation Scheme			Subject Total	Credit Hours
			L	T	P	CE	MTE	ETE		
Theory subjects										
1	MSPP-101	Mycology	2	0	0	20	20	60	100	2
2	MSPP-102	Plant Virology	2	0	0	20	20	60	100	2
3	MSPP-103	Plant Bacteriology	2	0	0	20	20	60	100	2
4	MSPP-104	Principles of Plant Pathology	3	0	0	20	20	60	100	3
5	MAS-104	Computer Application	2	0	0	20	20	60	100	2
Practical's / Project										
1	MSPP-151	Mycology	0	0	1	30	20	50	100	1
2	MSPP-152	Plant Virology	0	0	1	30	20	50	100	1
3	MSPP-153	Plant Bacteriology	0	0	1	30	20	50	100	1
4	MAS-153	Computer Application	0	0	1	30	20	50	100	1
Total			11	0	4	220	180	500	900	15

M.Sc.(Ag.) Plant Pathology FIRST YEAR (SEMESTER-II)

S.N.	Subject Code	Subject Name	Period			Evaluation Scheme			Subject Total	Credit Hours
			L	T	P	CE	MTE	ETE		
Theory subjects										
1	MSPP-201	Principles of Plant disease management	2	0	0	20	20	60	100	2
2	MSPP-202	Diseases of fruits, plantation and ornamental crops	2	0	0	20	20	60	100	2
3	MSPP-203	Diseases of vegetables and spices crops	2	0	0	20	20	60	100	2
4	MAS- 205	Experimental Design	2	0	0	20	20	60	100	2
Practical's / Project										
1	MSPP-251	Principles of Plant disease management	0	0	1	30	20	50	100	1
2	MSPP-252	Diseases of fruits, plantation and ornamental crops	0	0	1	30	20	50	100	1
3	MSPP-253	Diseases of vegetables and spices crops	0	0	1	30	20	50	100	1
4	MAS- 255	Experimental Design LAB	0	0	1	30	20	50	100	1
Total			8	0	4	200	160	440	800	12



M.Sc.(Ag.) Plant Pathology SECOND YEAR (SEMESTER-III)

S.N.	Subject Code	Subject Name	Period			Evaluation Scheme			Subject Total	Credit Hours
			L	T	P	CE	MTE	ETE		
Theory subjects										
1	MSPP-301	Chemicals in Plant disease management	2	0	0	20	20	60	100	2
2	MSPP-302	Biological control of plant Diseases	2	0	0	20	20	60	100	2
3	MSPP-303	Integrated Diseases management	2	0	0	20	20	60	100	2
4	MSPP-304	Epidemiology and forecasting of plant Diseases	2	0	0	20	20	60	100	2
5	MSPP-305	Plant quarantine	2	0	0	20	20	60	100	2
6	PGS-301	History of Agriculture	1	0	0	20	20	60	100	1
Practical's / Project										
1	MSPP-351	Chemicals in Plant disease management	0	0	1	30	20	50	100	1
2	MSPP-352	Biological control of plant Diseases	0	0	1	30	20	50	100	1
3	MSPP-353	Integrated Diseases management	0	0	1	30	20	50	100	1
4	MSPP-354	Epidemiology and forecasting of plant Diseases	0	0	1	30	20	50	100	1
Total			11	0	4	240	200	560	1000	15

M.Sc.(Ag.) Plant Pathology SECOND YEAR (SEMESTER-IV)

S.N.	Subject Code	Subject Name	Period			EVALUATION SCHEME			Subject Total	Credit
			L	T	P	CE	MTE	ETE		
Theory Subjects										
1	MSPP- 400	Comprehensive exam	0	0	0	0	0	200	200	0
Practical subjects										
1.	MSPP-401	Master's Seminar	0	0	1	0	0	100	100	1
2.	MSPP-402	Master's Research (Research Work & Thesis/project)	0	0	2	200	0	300	500	20
Total			0	0	3	220	0	330	550	21



Evaluation Scheme:

L-Lecture, T-Tutorial, P- Practical, CE- Continuous Evaluation, MTE-Mid Term Examination, ETE-End Term Examination

• **Course without practical components**

For Continuous Evaluation (CE) is such as: 20 Marks

1 Attendance: 5 Marks

2 Assignments/Quiz / Seminar/Term paper /Project :15Marks

MTE - Mid Term Examination: 20 Marks

a. First Mid Term Examination: 10 marks

b. Second Mid Term Examination: 10 marks

ETE - End Term Examination: 60 Marks

• **Course with practical components only**

For Continuous Evaluation (CE) is such as: 30 Marks

Conduct / Perform/Execution /Practical File/ Viva-Voice

MTE - Mid Term Examination: 20 Marks

a. First Mid Term Examination: 10 marks

b. Second Mid Term Examination: 10 marks

ETE - End Term Examination: 50 Marks

Convener

Signature: *R. Prasad*

Name : Dr. Rajendra Prasad

Date :

Internal Members

Signature: 1 *U. Bhan Singh*

Name: Dr. Udai Bhan Singh

Date:

2 *Omendra Sharma*

Mr. Omendra Sharma

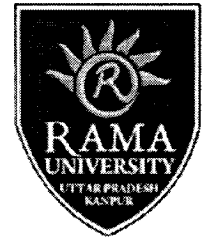
External Members

Signature: 1 *S.K. Biswas*

(Dr. S.K. Biswas)

2 *Udit Narain*

(Prof. Udit Narain)



Evaluation Scheme:

M.Sc.(Ag.) Plant Pathology FIRST YEAR (SEMESTER-I)

S.N.	Subject Code	Subject Name	Period			Evaluation Scheme			Subject Total	Credit Hours
			L	T	P	CE	MTE	ETE		
Theory subjects										
1	MSPP-101	Mycology	2	0	0	20	20	60	100	2
2	MSPP-102	Plant Virology	2	0	0	20	20	60	100	2
3	MSPP-103	Plant Bacteriology	2	0	0	20	20	60	100	2
4	MSPP-104	Principles of Plant Pathology	3	0	0	20	20	60	100	3
5	MAS-104	Computer Application	2	0	0	20	20	60	100	2
Practical's / Project										
1	MSPP-151	Mycology	0	0	1	30	20	50	100	1
2	MSPP-152	Plant Virology	0	0	1	30	20	50	100	1
3	MSPP-153	Plant Bacteriology	0	0	1	30	20	50	100	1
4	MAS-153	Computer Application	0	0	1	30	20	50	100	1
Total			11	0	4	220	180	500	900	15

M.Sc.(Ag.) Plant Pathology FIRST YEAR (SEMESTER-II)

S.N.	Subject Code	Subject Name	Period			Evaluation Scheme			Subject Total	Credit Hours
			L	T	P	CE	MTE	ETE		
Theory subjects										
1	MSPP-201	Principles of Plant disease management	2	0	0	20	20	60	100	2
2	MSPP-202	Diseases of fruits, plantation and ornamental crops	2	0	0	20	20	60	100	2
3	MSPP-203	Diseases of vegetables and spices crops	2	0	0	20	20	60	100	2
4	MAS- 205	Experimental Design	2	0	0	20	20	60	100	2
Practical's / Project										
1	MSPP-251	Principles of Plant disease management	0	0	1	30	20	50	100	1
2	MSPP-252	Diseases of fruits, plantation and ornamental crops	0	0	1	30	20	50	100	1
3	MSPP-253	Diseases of vegetables and spices crops	0	0	1	30	20	50	100	1
4	MAS- 255	Experimental Design LAB	0	0	1	30	20	50	100	1
Total			8	0	4	200	160	440	800	12

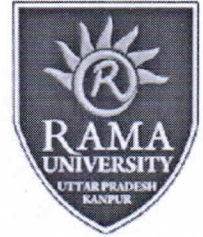


M.Sc.(Ag.) Plant Pathology SECOND YEAR (SEMESTER-III)

S.N.	Subject Code	Subject Name	Period			Evaluation Scheme			Subject Total	Credit Hours
			L	T	P	CE	MTE	ETE		
Theory subjects										
1	MSPP-301	Chemicals in Plant disease management	2	0	0	20	20	60	100	2
2	MSPP-302	Biological control of plant Diseases	2	0	0	20	20	60	100	2
3	MSPP-303	Integrated Diseases management	2	0	0	20	20	60	100	2
4	MSPP-304	Epidemiology and forecasting of plant Diseases	2	0	0	20	20	60	100	2
5	MSPP-305	Plant quarantine	2	0	0	20	20	60	100	2
6	PGS-301	History of Agriculture	1	0	0	20	20	60	100	1
Practical's / Project										
1	MSPP-351	Chemicals in Plant disease management	0	0	1	30	20	50	100	1
2	MSPP-352	Biological control of plant Diseases	0	0	1	30	20	50	100	1
3	MSPP-353	Integrated Diseases management	0	0	1	30	20	50	100	1
4	MSPP-354	Epidemiology and forecasting of plant Diseases	0	0	1	30	20	50	100	1
Total			11	0	4	240	200	560	1000	15

M.Sc.(Ag.) Plant Pathology SECOND YEAR (SEMESTER-IV)

S.N.	Subject Code	Subject Name	Period			EVALUATION SCHEME			Subject Total	Credit
			L	T	P	CE	MTE	ETE		
Theory Subjects										
1	MSPP- 400	Comprehensive exam	0	0	0	0	0	200	200	0
Practical subjects										
1.	MSPP-401	Master's Seminar	0	0	1	0	0	100	100	1
2.	MSPP-402	Master's Research (Research Work & Thesis/project)	0	0	2	200	0	300	500	20
Total			0	0	3	220	0	330	550	21



Evaluation Scheme:

L-Lecture, T-Tutorial, P- Practical, CE- Continuous Evaluation, MTE-Mid Term Examination, ETE-End Term Examination

• **Course without practical components**

For Continuous Evaluation (CE) is such as: 20 Marks

- 1 Attendance: 5 Marks
- 2 Assignments/Quiz / Seminar/Term paper /Project :15Marks

MTE - Mid Term Examination: 20 Marks

- a. First Mid Term Examination: 10 marks
- b. Second Mid Term Examination: 10 marks

ETE - End Term Examination: 60 Marks

• **Course with practical components only**

For Continuous Evaluation (CE) is such as: 30 Marks

Conduct / Perform/Execution /Practical File/ Viva-Voice

MTE - Mid Term Examination: 20 Marks

- a. First Mid Term Examination: 10 marks
- b. Second Mid Term Examination: 10 marks

ETE - End Term Examination: 50 Marks

Convener

Signature: 

Name : Dr. Rajendra Prasad

Date :

Internal Members

Signature: 1. 

Name: Dr. Udai Bhan Singh

Date:

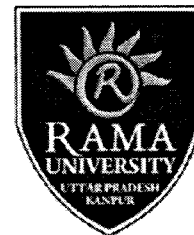
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Mr. Omendra Sharma

External Members

Signature: 1. 

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Semester-I

MSPP 101: MYCOLOGY

Course objective:-	L	T	P	CR
1. Discuss the importance of fungi in various ecological roles.	3	2	1	3
2. Demonstrate an understanding of how fungi impact human affairs .				
3. Outline the higher taxonomy of the fungi and how the fungi relate to other organisms.				
4. Discuss the characteristics of the major classes and orders within the fungal kingdom.				
5. Demonstrate a working knowledge of how fungi grow and reproduce, and where and how they can be isolated.				

Detail Contents

Unit : 1 – 20%

Unit : 2 - 20%

Unit : 3 - 40%

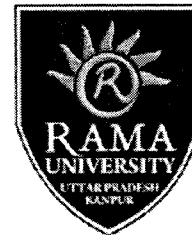
Unit : 4 - 10%

Unit 1:

To study the nomenclature, classification and characters of fungi. Theory Introduction, definition of different terms, basic concepts.

Unit 2

Importance of mycology in agriculture, relation of fungi to human affairs, history of mycology. Concepts of nomenclature and classification, fungal biodiversity, reproduction in fungi.



Unit 3

The comparative morphology, ultrastructure, characters of different groups of fungi up to generic level: (a) Myxomycota and (b) Eumycota- i) Mastigomycotina ii) Zygomycotina, iii) Ascomycotina, iv) Basidiomycotina, v) Deuteromycotina.

Unit 4

Lichens types and importance, fungal genetics and variability in fungi.

Practical

Detailed comparative study of different groups of fungi; collection, identification and preservation of specimens. Isolation and identification of plant pathogenic fungi.

Course Learning Outcomes (CLO)

Assessment methods may include written and practical examinations, homework assignments and discussion activities. Student knowledge application, laboratory performance, problem solving skills, punctuality and attendance, participation, and communication skills is assessed in each laboratory exercise utilizing an evaluation rubric that includes cognitive, psychomotor and affective learning domains.

Text books:-

Ainsworth GC, Sparrow FK & Susman HS. 1973. *The Fungi An Advanced Treatise*. Vol. IV (A & B). Academic Press, New York. Alexopoulos CJ, Mims CW & Blackwell M. 2000.

Introductory Mycology. 5th Ed. John Wiley & Sons, New York. Mehrotra RS & Arneja KR. 1990.

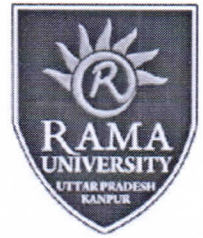
An Introductory Mycology. Wiley Eastern, New Delhi. Sarbhoy AK. 2000. *Text book of Mycology*. ICAR, New Delhi. Singh RS. 1982. *Plant Pathogens The Fungi*. Oxford & IBH, New Delhi.

Webster J. 1980. *Introduction to Fungi*. 2nd Ed. Cambridge Univ. Press, Cambridge, New York.

Reference books:-

An Introductory Mycology. Wiley Eastern, New Delhi. Sarbhoy AK. 2000. *Text book of Mycology*. ICAR, New Delhi. Singh RS. 1982. *Plant Pathogens The Fungi*. Oxford & IBH, New Delhi.

Webster J. 1980. *Introduction to Fungi*. 2nd Ed. Cambridge Univ. Press, Cambridge, New York.



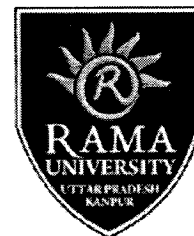
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MSPP 102 : VIROLOGY

Course objective:-	L	T	P	CR
	3	2	1	3

1. Discuss the importance of viruses in various ecological roles.
2. Demonstrate an understanding of how virus impact human affairs .
3. To acquaint with the structure, virus-vector relationship, biology and management of plant viruses.

Detail Contents

Unit : 1 – 20%

Unit : 2 - 20%

Unit : 3 - 20%

Unit : 4 - 20%

Unit : 5 - 20%

Unit 1

To acquaint with the structure, virus-vector relationship, biology and management of plant viruses.
Theory History of plant viruses, composition and structure of viruses.

Unit 2

Symptomatology of important plant viral diseases, transmission, chemical and physical properties, host virus interaction, virus vector relationship.

Unit 3

Virus nomenclature and classification, genome organization, replication and movement of viruses. I.
Virus-cell interactions .



Unit 4

Isolation and purification, electron microscopy, protein and nucleic acid based diagnostics. Mycoviruses, phytoplasma arbo and baculoviruses, satellite viruses, satellite RNAs, phages, viroids, prions.

Unit 5

Principles of the working of electron microscope and ultra-microtome. Origin and evolution, mechanism of resistance, genetic engineering, ecology, and management of plant viruses.

Practical

Study of symptoms caused by viruses ,transmission, assay of viruses, physical properties, purification, method of raising antisera, serologic.

Course Learning Outcomes (CLO)

Assessment methods may include written and practical examinations, homework assignments and discussion activities. Explain the rationale behind the Baltimore classification system of viruses and present example viruses for each Baltimore group

Text books:-

Bos L. 1964. Symptoms of Virus Diseases in Plants. Oxford & IBH., New Delhi.

Brunt AA, Krabtree K, Dallwitz MJ, Gibbs AJ & Watson L. 1995. Virus of Plants: Descriptions and Lists from VIDE Database. CABI, Wallington.

Reference books:- Gibbs A & Harrison B. 1976. Plant Virology - The Principles. Edward Arnold, London. Hull R. 2002. Mathews Plant Virology. 4th Ed. Academic Press, New York.

Noordam D. 1973. Identification of Plant Viruses, Methods and Experiments. Oxford & IBH, New Delh

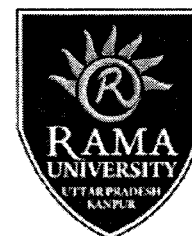
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1. K. Prasad

2. P. P. Singh

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4. S. K. Prasad



MSPP 103: BACTERIOLOGY

Course objective:-	L	T	P	CR
	3	2	1	3

1. Discuss the importance of bacteria in various ecological roles.
2. Demonstrate an understanding of how bacteria impact human affairs .
3. Outline the higher taxonomy of the bacteria and how the bacteria relate to other organisms.
4. Demonstrate a working knowledge of how bacteria grow and reproduce, and where and how they can be isolated.

Detail Contents

Unit : 1 – 20%

Unit : 2 - 20%

Unit : 3 - 20%

Unit : 4 - 20%

Unit 1:

To acquaint with plant pathogenic prokaryote (procarya) and their structure, nutritional requirements, survival and dissemination.

Unit 2

Theory History and introduction to phytopathogenic procarya, viz., bacteria, MLOs, spiroplasmas and other fastidious procarya. Importance of phytopathogenic bacteria. Evolution,

Unit 3

classification and nomenclature of phytopathogenic procarya and important diseases caused by them. Growth, nutrition requirements, reproduction, preservation of bacterial cultures and variability among phytopathogenic procarya



Unit 4

General biology of bacteriophages, L form bacteria, plasmids and bdellovibrios. Prokaryotic inhibitors and their mode of action against phytopathogenic bacteria. Survival and dissemination of phytopathogenic bacteria.

Practical Isolation, purification, identification and host inoculation of phytopathogenic bacteria, staining methods, biochemical and serological characterization, isolation of plasmid and use of antibacterial chemicals/antibiotics..

Course Learning Outcomes (CLO)

Student will know about importance of isolation and identification methods, disease and management caused by bacteria and their role in biological cycle.

Text books:-

Goto M. 1990. Fundamentals of Plant Bacteriology. Academic Press, New York.

Jayaraman J & Verma JP. 2002. Fundamentals of Plant Bacteriology. Kalyani Publ., Ludhiana.

Reference books:-

Mount MS & Lacy GH. 1982. Phytopathogenic Prokaryotes. Vols. I, II. Academic Press, New York.

Verma JP, Varma A & Kumar D. (Eds). 1995. Detection of Plant Pathogens and their Management. Angkor Publ., New Delhi.

Verma JP. 1998. The Bacteria. Malhotra Publ. House, New Delhi.

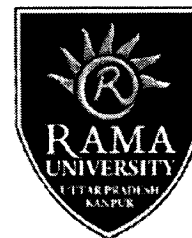
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MSPP-104 PRINCIPLES OF PLANT PATHOLOGY

L	T	P	CR
3	3	0	3

Course objective:-

To educate about the nature, prevalence, etiology, factors affecting disease development and control measures of field and medicinal crop **diseases**. Detailed study of symptoms and host parasite relationship of important **diseases** of above mentioned crops.

Detail Contents

Unit : 1 – 20%

Unit : 2 - 20%

Unit : 3 - 20%

Unit : 4 - 20%

Unit : 5 - 20%

Unit 1:

To introduce the subject of Plant Pathology, its concepts and principles. Theory Importance, definitions and concepts of plant diseases, history and growth of plant pathology, biotic and abiotic causes of plant diseases.

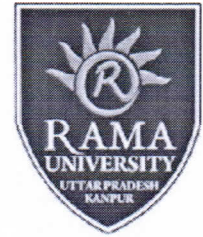
Unit 2

Growth, reproduction, survival and dispersal of important plant pathogens, role of environment and host nutrition on disease development.

Unit 3

Host parasite interaction, recognition concept and infection, symptomatology, disease development- role of enzymes, toxins, growth regulators; defense strategies- oxidative burst; Phenolics, Phytoalexins, PR proteins, Elicitors.

Unit 4



Altered plant metabolism as affected by plant pathogens. Genetics of resistance; 'R' genes; mechanism of genetic variation in pathogens;

Unit 5

molecular basis for resistance; marker-assisted selection; genetic engineering for disease resistance. Disease management strategies.

Course Learning Outcomes (CLO)

To study living, non-living and environmental causes of diseases or disorders of the plants

- To study the mechanism of plant disease development.
- To study interaction between host/susceptible and the pathogens.
- To develop systems of management of plant diseases and reducing losses caused by them.

Text books:-

Agrios GN. 2005. Plant Pathology. 5th Ed. Academic Press, New York.

Heitefuss R & Williams PH. 1976. Physiological Plant Pathology. Springer Verlag, Berlin, New York.

Mehrotra RS & Aggarwal A. 2003. Plant Pathology. 2nd Ed. Oxford & IBH, New Delhi.

Reference books:-

Singh RS. 2002. Introduction to Principles of Plant Pathology. Oxford & IBH, New Delhi.

Singh DP & Singh A. 2007. Disease and Insect Resistance in Plants. Oxford & IBH, New Delhi.

Upadhyay RK & Mukherjee KG. 1997. Toxins in Plant Disease Development and Evolving Biotechnology. Oxford & IBH, New Delhi.

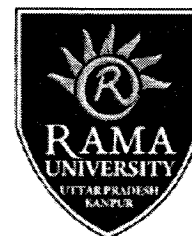
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1. R. Prasad

2. Dr. ...

3.

4. S. Kumar



Semester-2
MSPP-201 PRINCIPLES OF PLANT DISEASE MANAGEMENT

Course objective:	L	T	P	CR
1. To acquaint with different strategies for management of plant diseases	3	2	1	3

Detail Contents

Unit : 1 – 25%

Unit : 2 - 25%

Unit : 3 - 25%

Unit : 4 - 25%

Unit 1:

To acquaint with different strategies for management of plant diseases. Theory Principles of plant disease management by cultural, physical, biological, chemical, organic amendments and botanicals methods of plant disease control,

Unit 2

integrated control measures of plant diseases. Disease resistance and molecular approach for disease management.

Unit 3

Foliage, seed and soil application of chemicals, role of stickers, spreaders and other adjuvants, health vis-a-vis environmental hazards, residual effects and safety measures.

Unit 4

History of fungicides, bactericides, antibiotics, concepts of pathogen, immobilization, chemical protection and chemotherapy, nature, properties and mode of action of antifungal, antibacterial and antiviral chemicals.

:



Practical In vitro and in vivo evaluation of chemicals against plant pathogens; ED and MIC values, study of structural details of sprayers and dusters.

Course Learning Outcomes (CLO)

Students will know various laboratory methods of detection of plant pathogens and evaluation of biological and chemical agents against plant pathogens..

Text books:-

Fry WE. 1982. Principles of Plant Disease Management. Academic Press, New York.

Hewitt HG. 1998. Fungicides in Crop Protection. CABI, Wallington.

Marsh RW. 1972. Systemic Fungicides. Longman, New York.

Reference books:-

Nene YL & Thapliyal PN. 1993. Fungicides in Plant Disease Control. Oxford & IBH, New Delhi.

Palti J. 1981. Cultural Practices and Infectious Crop Diseases. Springer- Verlag, New York.

Vyas SC. 1993 Handbook of Systemic Fungicides. Vols. I-III. Tata McGraw Hill, New Delhi.

Signature:-

1. R. Prasad

2. [Signature]

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MSPP-202 DISEASES OF FRUITS, PLANTATION AND ORNAMENTAL CROPS

L	T	P	CR
3	2	1	3

Course objective:- Objective To acquaint with diseases of fruits, plantation, ornamental plants and their management

Detail Contents

Unit : 1 – 25%

Unit : 2 - 25%

Unit : 3 - 25%

Unit : 4 - 25%

Unit 1:

To acquaint with diseases of fruits, plantation, ornamental plants and their management. Theory Introduction, symptoms and etiology of different fruit diseases.

Unit 2

Factors affecting disease development in fruits like apple, pear, peach, plum, apricot, cherry, walnut, almond, strawberry, citrus, mango, grapes, guava, ber, banana, pineapple, papaya, fig, pomegranate, date palm and management of the fruits diseases

Unit 3

Symptoms, mode of perpetuation of diseases of plantation crops such as tea, coffee, rubber and coconut and their management. Symptoms and life cycle of pathogens.

Unit 4

Factors affecting disease development of ornamental plants such as roses, gladiolus, tulip, carnation, orchids, marigold, chrysanthemum and their management.



Practical

Detailed study of symptoms and host parasite relationship of representative diseases of plantation crops. Collection and dry preservation of diseased specimens of important crops.

Course Learning Outcomes (CLO)

Students will know symptoms, etiology, disease cycle and management of major diseases of FRUITS, PLANTATION AND ORNAMENTAL CROPS .

Text books:-

Gupta VK & Sharma SK. 2000. Diseases of Fruit Crops. Kalyani Publ., New Delhi.

Pathak VN. 1980. Diseases of Fruit Crops. Oxford & IBH, New Delhi.

Reference books:-

Singh RS. 2000. Diseases of Fruit Crops. Oxford & IBH, New Delhi.

Walker JC. 2004. Diseases of Vegetable Crops. TTPP, India.

Signature:-

1. R. Prasad

2. A. Behl

3. B.

4. S.K. Biswas



MSPP-203 DISEASES OF VEGETABLE AND SPICES CROPS

L	T	P	CR
3	2	1	3

Course objective:- To impart knowledge about symptoms, epidemiology of different diseases of vegetables and spices and their management.

Detail Contents

Unit : 1 – 25%

Unit : 2 - 25%

Unit : 3 - 25%

Unit : 4 - 25%

Unit 1:

To impart knowledge about symptoms, epidemiology of different diseases of vegetables and spices and their management.

Unit 2

Theory Nature, prevalence, factors affecting disease development of bulb, leafy vegetable, crucifers, cucurbits and solanaceous vegetables.

Unit 3

Diseases of protected cultivation. Symptoms and management of diseases of different root, bulb, leafy vegetables, crucifers, cucurbits and solanaceous vegetable crops.

Unit 4

Symptoms, epidemiology and management of diseases of different spice crops such as black pepper, saffron, cumin, coriander, turmeric, fennel, fenugreek and ginger..



Practical

Detailed study of symptoms and host pathogen interaction of important diseases of vegetable and spice crops.

Course Learning Outcomes (CLO)

Students will know symptoms, etiology, disease cycle and management of major diseases of vegetable crops. Student knowledge application, laboratory performance, problem solving skills.

Text books:-

Chaube HS, Singh US, Mukhopadhyay AN & Kumar J. 1992. Plant Diseases of International Importance. Vol. II. Diseases of Vegetable and Oilseed Crops. Prentice Hall, Englewood Cliffs, New Jersey.

Gupta VK & Paul YS. 2001. Diseases of Vegetable Crops. Kalyani Publ., New Delhi

Sherf AF & McNab AA. 1986. Vegetable Diseases and their Control. Wiley Inter Science, Columbia.

Singh RS. 1999. Diseases of Vegetable Crops. Oxford & IBH, New Delhi.

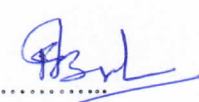
Reference books:-


Gupta SK & Thind TS. 2006. Disease Problem in Vegetable Production. Scientific Publ., Jodhpur.

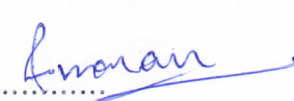
Walker JC. 1952. Diseases of Vegetable Crops. McGraw-Hill, New York.

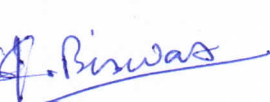
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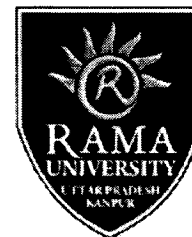
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Semester-4
MSPP-301 CHEMICALS IN PLANT DISEASE MANAGEMENT

L	T	P	CR
3	2	1	3

Course objective:- To impart knowledge on the concepts, principles and judicious use of chemicals in plant disease management.

Detail Contents

Unit : 1 – 25%

Unit : 2 - 25%

Unit : 3 - 25%

Unit : 4 - 25%

Unit 1:

To impart knowledge on the concepts, principles and judicious use of chemicals in plant disease management. Theory History and development of chemicals; definition of pesticides and related terms; advantages and disadvantages of chemicals.

Unit 2

Classification of chemicals used in plant disease control and their characteristics. Chemicals in plant disease control, viz., fungicides, bactericides, nematocides, antiviral chemicals and botanicals.

Unit 3

Formulations, mode of action and application of different fungicides; chemotherapy and phytotoxicity of fungicides. Handling, storage and precautions to be taken while using fungicides; compatibility with other agrochemicals, persistence, cost-benefit ratio, factor affecting fungicides.



Unit 4:

General account of plant protection appliances; environmental pollution, residues and health hazards, fungicidal resistance in plant pathogens and its management.

Practical

Acquaintance with formulation of different fungicides and plant protection appliances. Formulation of fungicides, bactericides and nematicides; in vitro evaluation techniques, preparation of different concentrations of chemicals including botanical pesticides based on active ingredients against pathogens; persistence, compatibility with other agro-chemicals; detection of naturally occurring fungicide resistant mutants of pathogen; methods of application of chemicals.

Course Learning Outcomes (CLO)

Students will know biological control of pests and weeds and conventional and industrial production of quality chemical -control. Chemicals used in plant disease control and their characteristics.

Text books:-

Bindra OS & Singh H. 1977. Pesticides - An Application Equipment. Oxford & IBH, New Delhi.

Nene YL & Thapliyal PN. 1993. Fungicides in Plant Disease Control. 3rd Ed. Oxford & IBH, New Delhi.

Torgeson DC (Ed.). 1969. Fungicides. Vol. II. An Advanced Treatise. Academic Press, New York.

Reference books:-

Vyas SC. 1993. Handbook of Systemic Fungicides. Vols. I-III. Tata McGraw Hill, New Delhi

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MSPP-302 BIOLOGICAL CONTROL OF PLANT DISEASES 3(2+1)

Course objective:- To study principles and application of eco friendly and sustainable management strategies of plant diseases.

Detail Contents	L	T	P	CR
	3	2	1	3

Unit : 1 – 25%

Unit : 2 - 25%

Unit : 3 - 25%

Unit : 4 - 25%

Unit 1:

To study principles and application of ecofriendly and sustainable management strategies of plant diseases. Theory Concept of biological control, definitions, importance, principles of plant disease management with bioagents, history of biological control, merits and demerits of biological control.

Unit 2

Types of biological interactions, competition, mycoparasitism, exploitation for hypovirulence, rhizosphere colonization, competitive saprophytic ability, antibiosis, induced resistance, mycorrhizal associations, operational mechanisms and its relevance in biological control.

Unit 3

Factors governing biological control, role of physical environment, agroecosystem, operational mechanisms and cultural practices in biological control of pathogens, pathogens and antagonists and their relationship, biocontrol agents, comparative approaches to biological control of plant pathogens by resident and introduced antagonists, control of soil-borne and foliar diseases.



Unit 4

Compatibility of different bioagents. Commercial production of antagonists, their delivery systems, application and monitoring, biological control in IDM, IPM and organic farming system, biopesticides available in market. Quality control system of biocontrol agents.

Practical

Isolation, characterization and maintenance of antagonists, methods of study of antagonism and antibiosis, application of antagonists against pathogen in vitro and in vivo conditions. Study of cfu/g.

Course Learning Outcomes (CLO) Students will know biological control of pests and weeds and conventional and industrial production of quality bio-control agents.

Text books:-

Campbell R. 1989. Biological Control of Microbial Plant Pathogens. Cambridge Univ. Press, Cambridge.

Cook RJ & Baker KF. 1983. Nature and Practice of Biological Control of Plant Pathogens. APS, St. Paul, Mennisota.

Fokkemma MJ. 1986. Microbiology of the Phyllosphere. Cambridge Univ. Press; Cambridge.

Gnanamanickam SS (Eds). 2002. Biological Control of Crop Diseases. CRC Press, Florida

Reference books:-

Heikki MT & Hokkanen James M (Eds.). 1996. Biological Control - Benefits and Risks. Cambridge Univ. Press, Cambridge.

Mukerji KG, Tewari JP, Arora DK & Saxena G. 1992. Recent Developments in Biocontrol of Plant Diseases. Aditya Books, New Delhi.

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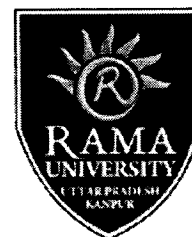
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MSP-303

INTEGRATED DISEASE MANAGEMENT

3(2+1)

L	T	P	CR
3	2	1	3

Course objective:- To emphasize the importance and need of IDM in the management of diseases of important crops.

Detail Contents

Unit : 1 – 50%

Unit : 2 - 50%

Unit 1:

To emphasize the importance and need of IDM in the management of diseases of important crops. Theory Introduction, definition, concept and tools of disease management, components of integrated disease management- their limitations and implications.

Unit 2

Development of IDM- basic principles, biological, chemical and cultural disease management. IDM in important crops- rice, wheat, cotton, sugarcane, chickpea, rapeseedmustard, pearl millet, kharif pulses, vegetable crops and fruit crops.

Practical

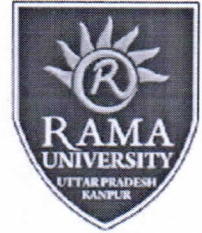
Application of biological, cultural, chemical and biocontrol agents, their compatibility and integration in IDM; demonstration of IDM in certain crops as project work.

Course Learning Outcomes (CLO)

Students will know principles and utilization of integrated pest management of field crops.. Student knowledge application, laboratory performance, problem solving skills.

Text books:-

Gupta VK & Sharma RC. (Eds). 1995. Integrated Disease Management and Plant Health. Scientific Publ., Jodhpur.



Mayee CD, Manoharachary C, Tilak KVBR, Mukadam DS & Deshpande Jayashree (Eds.).

2004. Biotechnological Approaches for the Integrated Management of Crop Diseases. Daya Publ. House, New Delhi

Reference books:-

Sharma RC & Sharma JN. (Eds). 1995. Integrated Plant Disease Management. Scientific Publ., Jodhpur.

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MSPP-304 EPIDEMIOLOGY AND FORECASTING OF PLANT DISEASES

3(2+1)

Course objective:-

To acquaint with the principles of epidemiology and its application in disease forecasting.

Detail Conte

L T P CR

3 2 1 3

Unit : 1 – 25%

Unit : 2 - 25%

Unit : 3 - 25%

Unit : 4 - 25%

Unit 1

Objective To acquaint with the principles of epidemiology and its application in disease forecasting. Theory Epidemic concept and historical development, pathometry and crop growth stages, epidemic growth and analysis. Information's needed for disease forecasting

Unit 2

Common and natural logarithms, function fitting area under disease progress curve and correction factors, inoculum dynamics, population biology of pathogens, temporal spatial variability in plant pathogens.

Unit 3

Survey, surveillance and vigilance, crop loss assessment and models. Principles and pre-requisites of forecasting, systems and factors affecting various components of forecastings.

Unit 4

some early forecasting, procedures based on weather and inoculum potential, modeling disease growth and disease prediction.

Practical Measuring diseases, spore dispersal and trapping, weather recording, survey, multiplication of inoculum, computerized data analysis, function fitting, model preparation and validation.



Course Learning Outcomes (CLO)

Detailed knowledge on the subject to improve the farmer's condition by their contributions. Detailed knowledge of cultivation practices, Soil, fertilizers, livestock's insect pest, economic associated with farming enterprises.

Text books:-

Campbell CL & Madden LV. 1990. Introduction to Plant Disease Epidemiology. John Wiley & Sons. New York

Cowling EB & Horsefall JG. 1978. Plant Disease. Vol. II. Academic Press, New York.

Laurence VM, Gareth H & Frame Van den Bosch (Eds.). The Study of Plant Disease Epidemics. APS, St. Paul, Minnesota.

Nagarajan S & Murlidharan K. 1995. Dynamics of Plant Diseases. Allied Publ., New Delhi.

Thresh JM. 2006. Plant Virus Epidemiology. Advances in Virus Research 67, Academic Press, New York.

Reference books:-

Van der Plank JE. 1963. Plant Diseases Epidemics and Control. Academic Press, New York.

Zadoks JC & Schein RD. 1979. Epidemiology and Plant Disease Management. Oxford Univ. Press, London

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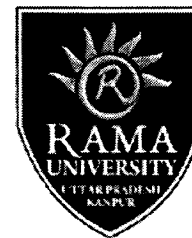
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MSPP-305 PLANT QUARANTINE

2(2+0)

L	T	P	CR
2	2	0	2

Course objective:- To acquaint the learners about the principles and the role of Plant Quarantine in containment of pests and diseases, plant quarantine regulations and set-up.

Detail Contents

Unit : 1 – 20%

Unit : 2 - 20%

Unit : 3 - 20%

Unit : 4 - 20%

Unit : 5 - 20%

Unit 1:

To acquaint the learners about the principles and the role of Plant Quarantine in containment of pests and diseases, plant quarantine regulations and set-up.

Unit 2

Theory Definition of pest, pesticides and transgenics as per Govt. notification; relative importance; quarantine – domestic and international.

Unit 3

Quarantine restrictions in the movement of agricultural produce, seeds and planting material; case histories of exotic pests/diseases and their status.

Unit 4

Plant protection organization in India. Acts related to registration of pesticides and transgenics. History of quarantine legislations, PQ Order 2003. Environmental Acts, Industrial registration; APEDA, Import and Export of bio-control agents..



Unit 5

Identification of pest/disease free areas; contamination of food with toxigens, microorganisms and their elimination; Symptomatic diagnosis 81 and other techniques to detect pest/pathogen infestations; VHT and other safer techniques of disinfestation/salvaging of infected material. WTO regulations; non-tariff barriers; Pest risk analysis, good laboratory practices for pesticide laboratories; pesticide industry; Sanitary.

Course Learning Outcomes (CLO)

Students will know planning, methodology and interpretation of data for making conclusion of field work and disease management.

Text books:-

Rajeev K & Mukherjee RC. 1996. Role of Plant Quarantine in IPM. Aditya Books.

Reference books:-

Rhower GG. 1991. Regulatory Plant Pest Management. In: Handbook of Pest Management in Agriculture. 2nd Ed. Vol. II. (Ed. David Pimental). CRC Press

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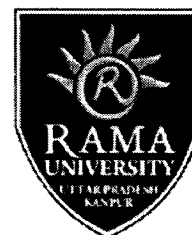
1. R. Prasad

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3. Dr. M.

4. Dr. Amaral

S. J. Binuway



PGS -301 HISTORY OF AGRICULTURE

(1L+0P)

L	T	P	CR
1	0	0	1

Course objective:- To learn about the evolution and achievements of agricultural science in India, lessons learnt and vision for future Agriculture in ancient India:

Detail Contents

Unit : 1 – 25%

Unit : 2 - 25%

Unit : 3 - 25%

Unit : 4 - 25%

Unit 1

To learn about the evolution and achievements of agricultural science in India, lessons learnt and vision for future Agriculture in ancient India: archaeological findings and literature.

Unit 2

Ancient literature on: farm implements, forecast of weather and rains, types of lands, manure, irrigation, seed and sowing, pests and their management, horticulture and arboriculture, cattle management etc.

Unit 3

Agricultural research, education and extension in pre-and post-independent India. Green revolution, success, associated problems, lessons learnt.

Unit 4

Challenges to Indian agriculture: future needs and capabilities, environmental problems, international agriculture and partnership. Emerging scenario and expectations.

Course Learning Outcomes (CLO)



Students will know about Agricultural research, education and extension in pre-and post-independent India.

Text books:-

Reference books:-

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Semester-IV

MSPP-400 Comprehensive Examination

Course Objective : To evaluate the knowledge gain by students.

Course Learning Outcomes (CLO : To enable the students to gain deeper knowledge , understanding capabilities in the context of the programme of study.

Text books:-

Fry WE. 1982. Principles of Plant Disease Management. Academic Press, New York.

Hewitt HG. 1998. Fungicides in Crop Protection. CABI, Wallington.

Marsh RW. 1972. Systemic Fungicides. Longman, New York.

Reference books:-

Nene YL & Thapliyal PN. 1993. Fungicides in Plant Disease Control. Oxford & IBH, New Delhi.

Palti J. 1981. Cultural Practices and Infectious Crop Diseases. Springer- Verlag, New York.

Vyas SC. 1993 Handbook of Systemic Fungicides. Vols. I-III. Tata McGraw Hill, New Delhi

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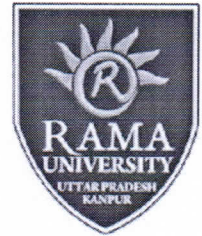
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MSP-401: Seminar

Course Objective To prepare synopsis of dissertation work.

Course Learning Outcomes (CLO)

Students will know about Agricultural research, education and extension in pre-and post-independent India.

Text books:-

Reference books:-

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S. K. Sinha



MSAGP-402: Synopsis, Research Work & Thesis.

Course Objectives

To know importance of dissertation work, utilization of theatrical principles in field and preparation and presentation of thesis report.

Course Learning Outcomes (CLO)

Student will able to carry out field experiments.

Text books:-

Reference books:-

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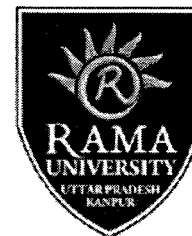
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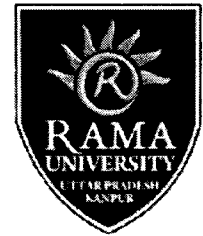
List of Journals

Annals of Applied Biology Cambridge University Press, London
Annual Review of Phytopathology Annual Reviews, Palo Alto, California
Annual Review of Plant Pathology - Scientific Publishers, Jodhpur
Canadian Journal of Plant Pathology - Canadian Phytopathological Society, Ottawa
Indian Journal of Biotechnology - National Institute of Science Communication and Information Resources, CSIR, New Delhi
Indian Journal of Mycopathological Research- Indian Society of Mycology, Kolkata.
Indian Journal of Virology - Indian Virological Society, New Delhi
Indian Phytopathology - Indian Phytopathological Society, New Delhi
Journal of Mycology and Plant Pathology - Society of Mycology and Plant Pathology, Udaipur
Journal of Phytopathology - Blackwell Verlag, Berlin
Mycologia - New York Botanical Garden, Pennsylvania
Mycological Research - Cambridge University Press, London
Physiological Molecular Plant Pathology - Academic Press, London

PG Syllabus, Department of Plant Pathology, UBKV [17]
Phytopathology - American Phytopathological Society, USA
Plant Disease - The American Phytopathological Society, USA
Plant Disease Research Indian Society of Plant Pathologists, Ludhiana
Plant Pathology - British Society for Plant Pathology, Blackwell Publ.
Review of Plant Pathology - CAB International, Wallingford
Virology- New York Academic Press e-Resources
www.shopapspress.org
www.apsjournals.apsnet.org
www.apsnet.org/journals
www.cabi_publishing.org
www.springer.com/life+Sci/agriculture
www.backwellpublishing.com
www.csiro.au
www.annual-reviews.org

Suggested Broad Topics for Masters and Doctoral Research

Pathogenesis and characterization of plant pathogens
Survey and surveillance
Induction of resistance using biotic and abiotic elicitors
Variability in plant pathogens
Plant-Virus-Vector relationships
Genome organization of plant pathogens
Dynamics of plant pathogen propagules and their biology
Molecular tools in disease diagnosis



Molecular mechanisms of pathogenesis in crops and seeds
Rhizosphere in pathogenesis of seed-borne plant pathogens
Transgenic resistance
Development of disease prediction models in disease forecasting
Integrated Disease Management
Molecular Taxonomy of different plant pathogens
Development of Rapid Diagnostic methods
Development and Formulation of Improved Biocontrol Agent