

Department of Genetics & Plant Breeding

**College of Agriculture
G.B. Pant University of Agriculture & Technology
Pantnagar-263145, Uttarakhand**

Academics

Degree Offered

| Sl. No. | Degree | No. of seats | | Total |
|---------|---|----------------------|------|-------|
| | | Uttarakhand domicile | ICAR | |
| 1. | M.Sc. Ag (Genetics & Plant Breeding) | 16 | 5 | 21 |
| 2. | Ph.D. (Genetics & Plant Breeding) | 8 | 2 | 10 |
| 3. | Ph. D (Seed Science & Tech.) | 4 | 1 | 5 |

Courses offered

UG

| Course title | Course Number | Credit hours | Course instructor(s) |
|--|---------------|--------------|--|
| Introductory Plant Breeding | AGP 303 | 3(2-0-3) | Dr. S.P. Singh, Dr. Surendra Singh, Dr. S.S. Verma Dr. D.C. Baskheti, Dr. P.K. Pandey, Dr. Pushpendra |
| Elements of Genetics | AGP 301 | 3(2-0-3) | Dr. R.K. Panwar, Dr. Mukesh Karnwal, Dr Rajendra Prasad, Dr. Swati, Dr. Anil Kumar, Dr. Usha Pant |
| Introduction to Plant Biotechnology | AGP 302 | 3(2-0-3) | Dr. Indra Deo, Dr. Anju Arora, Dr. N.K. Singh, Dr Usha Pant, Dr. J.P. Jaiswal, Dr. Swati |
| Breeding Field Crops | AGP 310 | 3(2-0-3) | Dr. D.C. Baskheti, Dr. Surendra Singh, Dr. S.P. Singh, Dr Kamendra Singh, Dr. R.K. Panwar, Dr. M.K. Karnwal |
| Seed Production, Plant Breeders and Farmers Rights | AGP 356 | 3(1-0-2) | Dr. M.K. Karnwal Dr. B.B. Bandyopadhyay, Dr. P.S. Shukla, Dr. Birendra Prasad, Dr. P.K.Pandey, Dr. D.C. Basketi |
| Tree Seed Technology | AST 374 | 2(1-0-3) | Dr. Rajendra Prasad, Dr. Virendra Singh |
| Handling and Testing of Forest Seeds | AST 395 | 3(0-0-3) | Dr. B. B. Bandyopadyay, Dr. P.S. Shukla |

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- **M. Sc. Ag. (Genetics & Plant Breeding)**

Core Courses

| Course title | Course Number | Credits Hrs | Course Instructor |
|---|----------------|-------------|---|
| Breeding Field Crops-I | AGP 520 | 2(1-0-1) | Dr. M.K. Nautiyal Dr. Kamendra Singh |
| Breeding Field Crops-II | AGP 530 | 2(1-0-1) | Dr. S.S. Verma, Dr. Swati |
| Cell Biology, Molecular Genetics and Gene Regulation | AGP 540 | 3(3-0-0) | Dr. Indra Deo, Dr. Swati |
| Principles of Cytogenetics | AGP550 | 3(2-0-1) | Dr. Usha Pant, Dr. Anju Arora |
| Advanced Plant Breeding | AGP 560 | 3(3-0-0) | Dr. Ram Bhajan Dr. N.K. Singh |
| Principles of Quantitative Genetics | AGP 570 | 3(2-0-1) | Dr D. Roy Dr. P.K. Shrotria |
| Masters Seminar | AGP600 | 1(1-0-0) | Dr. Ram Bhajan Dr Rajendra Prasad Dr. Kamendra Singh Dr. H.S. Chawla |
| Total | | 20 | |
| Basic Supporting Courses | | | |
| Experimental Statistics | BPS 661 | 4(3-0-1) | * |
| Thesis Research | AGP 690 | 20 | |
| Credits for Optional/Minor Courses | | 6 | |
| Total | | 50 | |
| List of Optional Courses | | | |
| Plant Genetic Resources and Crop evolution | AGP 610 | 3(2-0-1) | Dr. J.S. Verma Dr. A.S. Jeena |
| Breeding for Biotic and Abiotic Stress Resistance | AGP 622 | 3(3-0-0) | Dr. P.K. Shrotria Dr. Pushpendra |
| Maintenance Breeding, Variety Release and Seed Production | AGP 625 | 2(1-0-1) | Dr. M.K.Nautiyal |
| Breeding for Crop Quality | AGP 630 | 2(1-0-1) | Dr. Anil Kumar |
| Heterosis Breeding | AGP 640 | 2(1-0-1) | Dr. A.S. Jeena Dr. Rajendra Prasad |
| Mutagenesis and Mutation Breeding | AGP 650 | 2(2-0-0) | Dr. D.P. Pant Dr. Pushpendra |
| Biotechnology in Crop Improvement | AGP 624 | 3(2-0-1) | Dr H.S. Chawla, Dr. Usha Pant, Dr Anju Arora |
| Special Problem | AGP 601 | 1 – 2 | Dr. Salil Tewari |
| Compulsory Deficiency Courses | | | |
| Principles of Genetics | AGP 411 | 3(2-0-1) | Dr. A.S. Jeena, Dr. D.P.Pant |
| Principles of Plant Breeding | AGP 421 | 3(3-0-0) | Dr. J.S. Verma, Dr. B.B. Bandyopadhyay |
| For Biology Group | | | |
| Elements of Crop Production | APA 401 | 3(2-0-1) | * |
| Introductory Plant Pathology | APP 401 | 3(2-0-1) | * |
| Introduction to Horticulture | APH 401 | 3(2-0-1) | * |

• **Ph.D. (Genetics & Plant Breeding)**

| Core Courses: | | | |
|---|----------------------|--------------------|---|
| Course title | Course Number | Credits Hrs | Course Instructor |
| Advances in Plant Breeding Systems | AGP 720 | 2(2-0-0) | Dr Ram Bhajan, Dr. S.K. Verma |
| Genomics in Crop Improvement | AGP 724 | 2(2-0-0) | Dr. J.P. Jaiswal |
| Molecular and Chromosomal Manipulation for Crop Breeding | AGP 725 | 2(2-0-0) | Dr. N.K. Singh Dr. Anju Arora |
| Advanced Biometrical and Quantitative Genetics | AGP 730 | 3(2-0-1) | Dr. D. Roy Dr. S.K. Verma |
| Doctoral Seminar I | AGP 788 | 1(1-0-0) | Dr. Ram Bhajan Dr Rajendra Prasad Dr. Kamendra Singh Dr. H.S. Chawla |
| Doctoral Seminar II | AGP 789 | 1(1-0-0) | Dr. Ram Bhajan Dr Rajendra Prasad Dr. Kamendra Singh Dr. H.S. Chawla |
| | Total | 11 | |
| Basic Supporting Courses | | | |
| Advanced Experimental Designs | BPS 662 | 3(2-0-1) | * |
| Advances in Seed Science Research | AST 705 | 1(1-0-0) | Dr. Birendra Prasad Dr. J.S.Verma |
| | | 5 | |
| Credit for Minor Package | | | |
| Thesis Research | AGP 790 | 45 | |
| | Total | 75 | |
| List of Optional Courses | | | |
| Plant Genetic Resources and Crop evolution | AGP 610 | 3(2-0-1) | Dr. J.S. Verma Dr. A.S. Jeena |
| Breeding for Biotic and Abiotic Stress Resistance | AGP 622 | 3(3-0-0) | Dr. P.K. Shrotria Dr. Pushpendra |
| Maintenance Breeding, Variety Release and Seed Production | AGP 625 | 2(1-0-1) | Dr. M.K. Nautiyal |
| Breeding for Crop Quality | AGP 630 | 2(1-0-1) | Dr. Anil Kumar |
| Heterosis Breeding | AGP 640 | 2(1-0-1) | Dr.A.S. Jeena Dr. Rajendra Prasad |
| Mutagenesis and Mutation Breeding | AGP 520 | 2(2-0-0) | Dr. D.P. Pant Dr. Pushpendra |
| Breeding Field Crops-I | AGP 520 | 2(1-0-1) | Dr. D.P. Pant Dr. Kamendra Singh |
| Breeding Field Crops-II AGP 530 | | 2(1-0-1) | Dr.S. S. Verma |
| Cell Biology, Molecular Genetics and Gene Regulation | AGP 540 | 3(3-0-0) | Dr. Indra Deo Dr. Swati |
| Advanced Plant Breeding | AGP 560 | 3(3-0-0) | Dr. Ram Bhajan Dr. N.K. Singh |
| Principles of Cytogenetics | AGP550 | 3(2-0-1) | Dr. Usha Pant Dr. Anju Arora |
| Principles of Quantitative Genetics | AGP 570 | 3(2-0-1) | Dr. D. Roy Dr. P.K. Shrotria |
| Biotechnology for Crop Improvement | AGP624 | 3(2-0-1) | Dr H.S. Chawla, Dr. Usha Pant, Dr Anju Arora |
| Doctoral Seminar I | AGP 788 | 1(1-0-0) | Dr. Kamendra Singh |

| Minor Package for students of other Departments/Majors | | | |
|---|---------|----------|----------------------------------|
| Cell Biology, Molecular Genetics and Gene Regulation | AGP 540 | 3(3-0-0) | Dr. Indra Deo, Dr. Swati |
| Advanced Plant Breeding | AGP 560 | 3(3-0-0) | Dr. Ram Bhajan Dr. N.K. Singh |
| Any 500 series and above courses of 2-4 credits from list of the courses of the Department/ Programme | | 2-4 | |

• **Ph.D. (Seed Technology)**

Core Courses

| Course title | Number | Credits Hrs | Course Instructor |
|--|---------------|--------------------|---|
| Hybrid Seed Production | AGP/AST 701 | 2 (1-0-1) | Dr. P.S. Shukla Dr. Birendra Prasad |
| Seed Laws and DUS Testing for Plant Variety Protection | AGP/AST 704 | 3 (2-0-1) | Dr. M.K. Nautiyal Dr. H.S. Chawla Dr. M.K. Karanwal |
| Advances in Seed Science Research | AST 705 | 1(1-0-0) | Dr. Birendra Prasad Dr.J.S Verma |
| Doctoral Seminar I | AST 788 | 1(1-0-0) | Dr. D. Roy |
| Doctoral Seminar II | AST 789 | 1(1-0-0) | Dr. Rajendra Prasad |
| Total | | 8 | |
| Basic Supporting Courses | | | |
| General Biochemistry | BBC 501 | 3 (3-0-0) | * |
| Basic Techniques in Biochemistry | BBC 505 | 1 (0-0-1) | * |
| Seed Physiology | BPY 608 | 3 (2-0-1) | * |
| Total | | 7 | |
| Credits for Optional courses | | 5 | |
| Credit for Minor Package | | 10 | |
| AST 790 | | 45 | |
| Grand Total | | 75 | |

List of Optional Courses

| | | | |
|---|-------------|-----------|----------------------------------|
| Seed Vigour | APA/AST 702 | 2 (1-0-1) | * |
| Plant Genetic Resources and Crop Evolution | AGP 610 | 3 (2-0-1) | Dr. J.S. Verma Dr. A.S. Jeena |
| Seed Health Technology | APP 710 | 3 (2-0-1) | * |
| Seed Production Technology of Vegetable Crops | APV 535 | 3 (2-0-1) | * |
| Seed Marketing and Management | AEC/AST 703 | 2 (1-0-1) | * |
| Special Problem | AST 601 | 1-2 | Dr. R.K. Panwar |

Minor Package for students of other Departments/Majors

| | | | |
|---|-------------|-----------|---|
| Hybrid Seed Production | AGP/AST 701 | 2 (1-0-1) | Dr. P.S. Shukla Dr. Birendra Prasad |
| Seed Laws and DUS Testing for Plant Variety Protection | AGP/AST 704 | 3 (2-0-1) | Dr. M.K.Nautiyal Dr. H.S.Chawla Dr. P.S. Shukla |
| Any 500 series and above, courses of 5 credits from the list of courses of the Multi Disciplinary Programme | | 5 | |

Total 10

* Instructor from other department.