NAVOI STATE UNIVERSITY

OSIM1206 PLANT INTRODUCTION (O'SIMLIKLAR INTRODUKSIYASI) — MASTER'S COURSE SYLLABUS

Faculty of Natural Sciences & Medicine | Department of Biology | Program: 70510101 Master in Biology

COURSE PASSPORT & ACADEMIC METADATA

Course Title: Plant Introduction & Acclimatization

Course Code: OSIM1206

Course Type: Mandatory Master's Course

Field of Study: 100000 Humanities / 110000 Education

Program: 70510101 Master of Biology

Academic Year: 2025–2026

Semester: 2

Form of Education: Full-time

Workload: 180 Hours total (44 hrs Lecture, 46 hrs Practical, 90 hrs Independent)

Credits: 6 ECTS Credits

Assessment: Examination

Aligned UN SDGs: SDG 15 (Life on Land), SDG 13 (Climate Action), SDG 2 (Zero Hunger)



1. Course Description & SDG Integration

The Plant Introduction course for Master's students focuses on the theoretical principles, ecological methodologies, bio-ecological adaptability, and acclimatization strategies of wild, exotic, economic, and medicinal plant species into local environments.

In alignment with SDG 15 (Life on Land), SDG 13 (Climate Action), and SDG 2 (Zero Hunger), the course provides advanced methodologies for evaluating plant stress tolerance, seed germination biology, phenological growth rhythms, ex-situ conservation in botanical gardens, and reintroduction of endangered endemics.

2. Course Aims & Intended Master's Competencies

Course Aim: To train postgraduate researchers in designing introduction experiments, applying agro-climatic analog methods, performing biometrics, and utilizing introduced flora for economic and conservation purposes.

- Theoretical Mastery: Understand De Candolle's and N.I. Vavilov's centers of origin of cultivated plants, G. Mayr's climatic analogs, and Selyaninov's agro-climatic analog method.
- Experimental Methodologies: Execute seed dormancy breaking, germination testing, phenological tracking, biometric growth analysis, and introduction evaluation scales.
- Economic Applications: Evaluate introduced medicinal, fiber, essential-oil, ornamental, forage, and non-traditional plants (e.g., Azolla, Lemna, Pistia).
- Conservation Competency: Apply reintroduction methodologies to restore rare and endangered endemic plant populations in Uzbekistan (SDG 15).

3. Prerequisites

Prerequisites: Biodiversity (BXXM1106), Biostatistics (BSTM1206), Advanced Plant Physiology.

4. Course Structure & Workload Allocation

Activity Type	Semester 2 Hours	Workload Allocation
Lectures	44 Hours	22 Topics (2 hrs each)
Practical Classes	46 Hours	23 Practical Sessions
Independent Study	90 Hours	Research, Testing, Field Logs
Total Workload	180 Hours	6 ECTS Credits

5. Detailed Course Curriculum Outline

5.1 Lecture Syllabus Outline

• **L1: Introduction as a Science & Naturalization Concepts:** Aims, objects, and scope of plant introduction, acclimatization, and naturalization.

• **L2: History of Plant Introduction & Uzbek Scientists:** Historical milestones and contributions of Uzbek botanists to acclimatization science.

• **L3: World Floristic Regions & Plant Resources:** Phytogeographical realms, distribution patterns, and candidate plant selection.

• **L4: Introduction Methodologies & Agro-Climatic Analogs:** Mayr's climatic analogs, Selyaninov's agro-climatic method, Good's theory, and Kultiasov's approach.

• **L5: Stages of Introduction Research & Material Selection:** Morphological, biochemical, and ecological screening of introduction materials.

• **L6: Success Evaluation Scales for Introdudents:** Evaluation scales for woody, shrub, and herbaceous introduced plants.

• **L7: Vavilov's Centers of Origin & Polyploidy:** N.I. Vavilov's centers of origin, polymorphism, and polyploidy in plant domestication.

• **L8: Growth Rhythms, Photoperiodism & Adaptability:** Growth stimulants, seasonal rhythms, and ecological adaptation criteria.

• **L9: Agrotechnical Methods in Introduction:** Seed treatment, sowing protocols, and vegetative propagation techniques.

• **L10: Biometrics & Phenological Observation Protocols:** Ontogenetic tracking and environmental requirement assessment.

• **L11: Role of Botanical Gardens in Ex-Situ Conservation:** Tashkent Botanical Garden, Samarkand State University Garden, and international ex-situ conservation networks.

• **L12-L16: Economic Plant Introduction:** Food, fiber (cotton, kenaf), oil/narcotic, medicinal, and spice plant introduction.

• **L17-L20: Non-Traditional, Ornamental & Indoor Plants:** Aquatic macrophytes (Azolla, Lemna, Pistia), landscape design, and indoor tropical plants.

• **L21-L22: Forage Crops & Reintroduction of Endangered Endemics:** Pasture improvement, fitomelioration, and reintroduction of Red Book endemic species.

5.2 Practical & Laboratory Outline

- Selection of introduction candidate species and initial germplasm collection.
- Application of Mayr's climatic analogs and Selyaninov's agro-climatic index calculations.
- Primary and secondary introduction field trials setup.
- Studying environmental stress factors on introduced plant growth.
- Mapping Vavilov's world centers of origin of cultivated plants.
- Botanical garden field excursion and ex-situ conservation assessment.
- Quantitative evaluation of plant acclimatization success using rating scales.
- Reproductive biology and seed viability testing of introduced species.
- Field phenological and biometric measurement protocols.
- Evaluating introduced medicinal and aromatic plant collections.

5.3 Independent Study (Mustaqil Ta'lim) Topics

- Theoretical foundations of introduction: Academic presentation preparation (10 hrs).
- Developing a 60-question test bank on Plant Introduction & Acclimatization (20 hrs).
- Practical introduction research: Cultivating 4-5 introduced species, recording bio-ecological logs, and submitting a final research report (60 hrs).

6. Recommended Literature & Information Sources

- Islomov B.S., Hasanov M.A. Plant Introduction (Textbook). Samarkand: SamSU Publishing, 2022.
- Idrisov X.A., Nazarova S.M. Crop Science. Bukhara: Durdona, 2023.
- Romanova A.B. Introduction of Woody Plants. Krasnoyarsk, 2018.
- Ahmedov O'. et al. Medicinal Plant Cultivation Technology and Ecology. Tashkent: Tafakkur Bo'stoni, 2018.