

Agricultural Research, Education and Extension Organization
Internship Program for Uzbek Researchers- 2025

Agricultural Field	Educational Content	Duration	Center for Education/ Research	Coordinator
Agricultural Technology (Digitization of Agricultural Machinery and Improvement of Agricultural Metrology)	Smart Agriculture:		Agricultural Engineering Research Institute (AERI), Karaj, Iran	Prof. Dr. Hossein Dehghanisani Number: +98-912-1675238 Email: dehghanisani@yahoo.com
	– Precision Agriculture	1 week		
	– Vis/NIR Spectroscopy and Imaging	1 week		
	– Internet of Things – Artificial Intelligence in Agriculture	1 week		
	– Field Visit	1 week		
Biotechnology in Agriculture (Development, Introduction and Transfer of Modern Plant Breeding Technologies & Introgression of Useful Genes from Wild Species to Commercial Cultivars)	– Lectures <ul style="list-style-type: none"> • Introduction to Genetic Engineering and Transgenic Plants • Methods of Plant Genetic Engineering • Genetic Engineering in Horticultural and Ornamental Plants • Genome Editing (CRISPR/Cas) in Plant Improvement • Biosafety and Risk Assessment of Transgenic Plants • GMO Detection and Identification 	1 week	Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.	Dr. Hassan Rahnama Number: +98-912-4615988 Email: hrahnama@abrii.ac.ir
	– Case Studies <ul style="list-style-type: none"> • Development of Herbicide Tolerant Transgenic Canola • Genetic Engineering for Improvement of Safflower Plant • Transgenic Cotton: Using Back-crossing for Introducing Desired Genes to Iranian Cultivars • Genome Editing (CRISPR/Cas) for Developing Herbicide Resistant Rice • Transgenic Potato Resistant to Potato Tuber Moth (PTM) (Development and Risk Assessment) 	1 week		
	– Lab <ul style="list-style-type: none"> • Introduction to Plant Tissue Culture • Tissue culture and Plant Regeneration in <i>B. carinata</i> • Construction of Plasmid Vector (Preparation of Competent Cell, Plasmid Extraction, Gene Cloning, Gel Electrophoresis) • PCR Analysis (Primer Designing, and PCR Analysis) • Agrobacterium Mediated Genetic Transformation of <i>B. napus</i> • Agrobacterium Mediated Genetic Transformation of Soybean • Gene Gun Mediated Transformation of Plants • DNA and RNA Extraction from Plants • Molecular Analysis of Transgenic Plants (PCR, Real Time-PCR and) • Functional Analysis of Transgenic Plants (Bioassay, Protein expression, ...) • GMO Detection in the Lab 	1 week		
	– Final Projects Participants Present Proposal on Genetic Engineering for Improving a Desired Trait in the Target Plant			

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Biotechnology in Agriculture (Using Molecular Genetics and Biotechnology for Enhancing the Conservation and Utilization of Plant Genetic Resources)	<ul style="list-style-type: none"> – Introduction to Molecular Markers and Genetic Diversity <ul style="list-style-type: none"> • Lecture: Overview of plant genetic resources (PGR) and the role of molecular markers in conservation. • Lab: DNA extraction from plant samples (CTAB vs. commercial kits). • Lecture: Types of molecular markers (RAPD, SSR, SNP, AFLP) – pros and cons. • Lab: Quality check (gel electrophoresis, spectrophotometry). • Case Study: How molecular markers helped conserve crop wild relatives. • Workshop: Primer design for SSR markers (using Primer3, OligoCalc). • Group Activity: Design a genetic diversity study for a selected plant species. 	1 week	Agricultural Biotechnology Research Institute of Iran (ABRII)	Dr. Mehrshad Zeinolabedini Number: +98-912-8112770 Email: m_zeinolabedini@yahoo.com
	<ul style="list-style-type: none"> – PCR-Based Markers (SSR, RAPD, AFLP) <ul style="list-style-type: none"> • Lab: PCR optimization for SSR markers (gradient PCR, annealing temp testing). • Lab: Gel electrophoresis and fragment analysis for SSR genotyping. • Lecture: Applications of RAPD and AFLP in genetic diversity studies. • Lab: RAPD fingerprinting (hands-on PCR and gel analysis). • Data Session: Scoring and interpreting RAPD/AFLP banding patterns. • Guest Speaker: Researcher using SSR markers for in-situ conservation. 	1 week		
	<ul style="list-style-type: none"> – SNP Markers and High-Throughput Genotyping <ul style="list-style-type: none"> • Lecture: SNP markers – advantages over SSRs, applications in genomics. • Workshop: Analyzing SNP data (Plink, TASSEL). • Lecture: GWAS (Genome-Wide Association Study) for identifying stress-tolerant genes. • Group Project: Compare SSR vs. SNP data for a given dataset. 	1 week		
	<ul style="list-style-type: none"> – Data Analysis and Population Genetics <ul style="list-style-type: none"> • Lecture: Genetic diversity indices (He, Ho, Fst, AMOVA). • Hands-on: Using GenAlEx for basic diversity stats. • Workshop: STRUCTURE analysis for population clustering. • Lab: Phylogenetic tree construction (MEGA, DARwin). • Case Study: How molecular markers guided breeding programs (e.g., disease resistance in potatoes). • Data Challenge: Interpret a real dataset from a conservation project. 	1 week		



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	<ul style="list-style-type: none">– Marker-Assisted Conservation Strategies<ul style="list-style-type: none">• Lecture: Using markers for seed bank management (genetic integrity monitoring).• Lab: Detecting genetic erosion in ex-situ collections.• Workshop: Designing a marker-assisted breeding scheme.• Guest Lecture: Policy implications (Nagoya Protocol, ITPGRFA).• Group Project: Develop a conservation plan using molecular data.– Applications and Final Projects<ul style="list-style-type: none">• Final Project Work: Analyze a dataset and propose conservation actions.• Presentations: Teams present findings (e.g., genetic diversity report for a threatened species).• Panel Discussion: "From Lab to Field – Challenges in Implementing Marker-Based Conservation."• Certification & Networking: Course wrap-up, resource sharing, career pathways.	1 week		

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<p>Breeding and Seed Production</p> <p>(Enriching Knowledge on Marker Assisted Selection Technologies in Grain Crops and Genes Controlling the Traits of Resistance to the Abiotic Stress)</p>	<ul style="list-style-type: none"> – Foundations of MAS & Abiotic Stress in Grain Crops <ul style="list-style-type: none"> • Lecture: Introduction to MAS – principles, advantages over conventional breeding. • Case Study: Success stories of MAS in rice/wheat breeding. • Lecture: Major abiotic stresses (drought, salinity, heat) and their impact on grain crops. • Lab: DNA extraction from grain crops (CTAB method vs. kits). • Workshop: Primer design for stress-related genes (using Primer-BLAST, OligoCalc). • Group Discussion: Identifying key traits for MAS in local grain crops. – Molecular Markers for MAS <ul style="list-style-type: none"> • Lecture: Types of markers (SSR, SNP, KASP) and their use in MAS. • Lab: PCR optimization for SSR markers (gradient PCR). • Lab: Gel electrophoresis & fragment analysis for SSR genotyping. • Demo: High-throughput SNP genotyping. • Data Session: Comparing marker systems for breeding efficiency. – QTL Mapping & GWAS for Abiotic Stress Traits <ul style="list-style-type: none"> • Lecture: QTL mapping – principles and applications in stress tolerance. • Workshop: Using QTL IciMapping for linkage analysis. • Lecture: Genome-Wide Association Studies (GWAS) for stress gene discovery. • Hands-on: GWAS analysis using TASSEL/GAPIT. • Case Study: Identifying drought-tolerant QTLs in maize/rice. 	<p>1 week</p> <p>1 week</p>	<p>Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.</p>	<p>Dr. Mehrshad Zeinolabedini Number: +98-912-8112770 Email: m_zeinolabedini@yahoo.com</p>



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	<ul style="list-style-type: none"> – Gene Pyramiding & MAS Breeding Schemes • Lecture: Gene pyramiding for multi-stress resistance. • Workshop: Designing MAS schemes for stacking stress genes. • Lab: Marker validation for gene pyramiding (multiplex PCR). • Case Study: IRRI's MAS breeding for salinity tolerance in rice. • Group Activity: Simulate a MAS breeding program for drought tolerance. 	1 week		
	<ul style="list-style-type: none"> – Functional Genomics of Abiotic Stress Genes • Lecture: Key genes involved in stress response. • Lab: RNA extraction & cDNA synthesis for gene expression studies. • Workshop: qPCR analysis of stress-responsive genes. • Bioinformatics: Mining stress-related genes in NCBI, Gramene. • Guest Lecture: CRISPR-edited crops for abiotic stress tolerance. – High-Throughput Phenotyping & MAS Integration • Lecture: Phenomics tools (drones, sensors) for stress screening. • Demo: Infrared thermography for drought stress detection. • Workshop: Correlating phenotypic data with marker profiles. • Case Study: CIMMYT's MAS for heat tolerance in wheat. • Group Project: Design a MAS + phenotyping pipeline. 	1 week		
	<ul style="list-style-type: none"> – Bioinformatics for MAS & Stress Genomics • Workshop: Genome browsers (Ensembl Plants, Phytozome) for gene discovery. • Hands-on: SNP calling from NGS data (GATK, BWA). • Lecture: Machine learning in predicting stress-tolerant genotypes. • Data Challenge: Identify candidate genes from RNA-seq data. • Panel Discussion: "Next-Gen MAS: AI & Big Data in Breeding." – Applications & Final Projects • Final Project: Develop a MAS strategy for a target grain crop & stress. • Presentations: Teams present MAS breeding proposals. • Certification & Networking: Industry experts, career guidance. 	1 week		

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Breeding and Seed Production (To Study the Technology of Growing Pollen Microspores in F1 Generations)	<ul style="list-style-type: none"> • Methods of Haploid Plant Production/ Doubled Haploid • Anther culture • Isolated microspore culture • Plant regeneration to obtain haploid plants • Chromosome doubling of haploid plants and seed production from DH plants • Cytogenetic arts, (Lab. work) 	2 weeks	Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.	Prof. Dr. Mehran E. Shariatpanahi Number: +98-0912-4893255 Email: m_shariatpanahi2002@yahoo.com
	– Microspore Embryogenesis for Doubled Haploids Production in Wheat <ul style="list-style-type: none"> • Microspore Isolation and Culture • Embryogenesis and Plant Regeneration 	2 weeks		

Breeding and Seed Production	<ul style="list-style-type: none"> • Learning bread wheat breeding programs in different agroclimatic zones of Iran • Learning durum wheat breeding programs in different agroclimatic zones of Iran • Learning barley breeding programs in different agroclimatic zones of Iran • Introducing the implementation of salt tolerance experiments indoors and outdoor • Introducing activities in the cereal's chemistry and technology unit • Introducing cereals pathology experiments indoor and outdoor • Introducing agronomic practices and measurements of physiological characteristic 	2 weeks	Seed and Plant Improvement Institute (SPII)	Dr. Goodarz Najafian Number: +98-9125644024 Email: goodarzn@gmail.com
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	<ul style="list-style-type: none"> Introducing Germplasm collection in the CRD Gene bank unit 			
	<ul style="list-style-type: none"> Speed breeding in maize Plant breeding programs in maize and forage crops in SPII 	1 week		
	<ul style="list-style-type: none"> Familiarization with NPGb and its main laboratories and scientific areas of activity. Visiting laboratories and getting acquainted with ongoing scientific projects and research. Germination assay Synthetic bread wheat and Triticale, concepts (Theory) Selecting the appropriate parents (<i>Triticum turgidum</i> sp. AABBm and <i>Aegilops tauschii</i>, DD), Interspecific hybridization, (Field work) 	2 weeks		
Crop Production (Cultivation and Biological Properties of Halophyte Plants)	<ul style="list-style-type: none"> Introduction of halophyte plants (<i>Salicornia</i>, <i>Suaeda</i>, and <i>Quinoa</i>), usages and method of cultivation Main concerns about salt stress treatment method, sampling and so on 	5 weeks	Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.	Dr. Parisa Koobaz Number: +98-912-1373124 Email: parisakoobaz@yahoo.com
	<ul style="list-style-type: none"> Measurement of lipid and phospholipid content, determination of microelements (Na, K and Ca), determine ionic and ionizable polar molecules (anion and cation) 	5 weeks		
	<ul style="list-style-type: none"> Measurement of total terpenoid content in plant samples Determination of fatty acids profile in seed samples of halophyte plants 	5 weeks		
	<ul style="list-style-type: none"> Ascorbic acid measurement (vitamin c) Determination of antioxidant components (phenolic acids, total flavonoids, anthocyanins, carotenoids) 	5 weeks		

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	<ul style="list-style-type: none"> – Identification perspective halophyte and development recommendations for cultivating species 	4 weeks		
Experimental Agrochemistry	<ul style="list-style-type: none"> • Principles and foundations of soil, water and plant testing and interpretation of results • Instrumental analysis laboratory (AAS, GFAAS, HGAAS, ICP-OES, HPLC, Spectrophotometers, and Flame photometers) 	1 week	Soil and Water Research Institute of Iran (SWRI)	Dr. Behnam Rajabpour Number: +98-912-384 1318 Email: behnam.rjbop@gmail.com
	<ul style="list-style-type: none"> • Soil and water chemistry laboratory analysis (sample preparation, pH, EC, soil texture, soil density, OC, CCE, CEC, Heavy metals determination methods). • Chemical and organic fertilizer analysis (sample preparation, pH, EC, and nutrients and etc.) 	1 week		
	<ul style="list-style-type: none"> • Plant analysis laboratory analysis (determination of nutrients for fertilizer recommendation and crop production purposes, and testing the crop health regarding accumulation of pollutants such as nitrate, heavy metals, and pesticides). • Introducing the various types of chemicals, organic, biological fertilizers, and plant growth stimulants (visiting the fertilizer production factories) • Using biological potential to increase agricultural production 	1 week		

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	<ul style="list-style-type: none"> Nutrition physiology and principles of fertilizer recommendations for crops and orchards crops (Field Visiting) Salt affected Soils and their management Determination of water requirement and water management on the farm Land Evaluation for various plants cultivation 	1 week		
Mechanization of Agricultural (Modern Engineering Programs for Designing and Creating 3D Models)	Development of New Design of 3D Adjustable Front Axle Tread of Tractor Using Solid Work	2 weeks	Agricultural Engineering Research Institute (AERI), Karaj, Iran.	Prof. Dr. Hossein Dehghanisani Number: +98-912-1675238 Email: dehghanisani@yahoo.com
	Determination of Minimum Turning Radius and Applied Loads on Front Axle Using Simulation Software	2 weeks		
Plant Physiology and Biochemistry (Enriching Knowledge on Speed Breeding, Doubled Haploid Breeding, Anther & Microspore Culture Technologies in Grain Crops)	– Haploid System and Its Applications in Plant Breeding and Hybrid Seed Production Introduction of in vitro/in vivo- based haploid system	1 week	Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.	Prof. Dr. Mehran E. Shariatpanahi Number: + 98-912-4893255 Email: m_shariatpanahi2002@yahoo.com

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	<ul style="list-style-type: none"> – Methods of Haploid Plant Production/ Doubled Haploid <ul style="list-style-type: none"> • Anther culture • Microspore culture • Shed-microspore culture • Plant regeneration to obtain haploid plants • Chromosome doubling of haploid plants and seed production from DH plants – Using the Reverse Breeding Process in Hybrid Seed Production Access to inbred lines of commercial F1 hybrid seeds through reverse plant breeding engineering 	1 week		
	<ul style="list-style-type: none"> – Microspore Embryogenesis for Doubled Haploids Production <ul style="list-style-type: none"> • Microspore Isolation and Culture • Embryogenesis and Plant Regeneration 	1 week		
	<ul style="list-style-type: none"> – Determination of Microspores Viability and Their Developmental Stage <ul style="list-style-type: none"> • Determining developmental stage of microspores with DAPI staining • Determining viability of microspores with FDA staining – Verification Techniques of Haploid Plants <ul style="list-style-type: none"> • Cytogenetics • Flow cytometry 	1 week		
Plant Science (Plant Protection)	<ul style="list-style-type: none"> • Weed Management (Principle & Procedure) 	1 week	Iranian Research Institute of Plant Protection (IRIPP), Tehran, Iran.	Dr. Mehdi Minbashi Moeini Number: + 98-912-4358697 Email: mehdiminbashi@gmail.com
	<ul style="list-style-type: none"> • Weed Management in Cereals 	1 week		
	<ul style="list-style-type: none"> • Weed Management in Oil Seed Crops 	1 week		
	<ul style="list-style-type: none"> • Principle of Chemical Weed Management 	1 week		

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Plant Science (Plant Protection)	– Introduction of Important Disease of Rice	1 week	Iranian Research Institute of Plant Protection (IRIPP), Tehran, Iran.	Prof. Dr. Shahram Naeimi Number: +98-911-1277742 Email: shnaeimi@yahoo.com
	– Introduction of Fungal and Bacterial Biocontrol Agents for Controlling Rice Disease	1 week		
	– Isolation, Identification, and Formulation of Biocontrol Agents to Control Rice Disease	1 week		
	– Application and Delivery of Microbial Pesticides in the Field	1 week		

Plant Science (Modern Methods for Effective Use of Rainwater)	<ul style="list-style-type: none"> Green Water Harvesting Methods (Rainwater) 	1 week	Agricultural Engineering Research Institute (AERI), Karaj, Iran.	Prof. Dr. Hossein Dehghanisani Number: +98-912-1675238 Email: dehghanisani@yahoo.com
	<ul style="list-style-type: none"> Methods For Estimating the Effective Amount of Precipitation and Water Requirement Teaching the Basics and Training in the CropWat Software 	2 weeks		
	<ul style="list-style-type: none"> Environmental Issues of Water and Soil Drainage And Wastewater Issues 	1 week		

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Silkworm Farming (Innovative Nanoparticle Formulations for Sustainable Silkworm Farming)	<p>– Introduction to ZnO Nanoparticles and NaCMC Polymer Overview of properties, applications, biocompatibility, and safety of ZnO NPs and sodium carboxymethylcellulose</p> <ul style="list-style-type: none"> Theory: Nanoparticle basics, ZnO properties, NaCMC structure & applications Practical: None (Introductory session) Group Activity: Brainstorming applications in bio-med/entomology Outcome: Understanding of materials' relevance and potential 	1 week	Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.	Dr. Marjan Malekmohamadi Number: +98-919-2464977 Email: marjan.malekmohamadi@gmail.com
	<p>– Synthesis of ZnO/NaCMC Nanocomposites Laboratory preparation of nanocomposites, solution formulation, and optimization of ZnO to polymer ratios.</p> <ul style="list-style-type: none"> Theory: Methods of synthesis (sol-gel, precipitation), mixing techniques Practical: Lab synthesis of ZnO NPs and NaCMC blending Group Activity: Preparing different formulations in subgroups Outcome: Ability to synthesize and prepare nanocomposite solutions 	1 week		
	<p>– Physicochemical Characterization of Nanocomposites Techniques including DLS, zeta potential, SEM/TEM, UV-Vis, and FTIR to analyze particle size, surface charge, and structure.</p> <ul style="list-style-type: none"> Theory: Introduction to DLS, Zeta Potential, SEM, FTIR, UV-Vis Practical: Performing characterization tests on synthesized samples Group Activity: Data interpretation from instruments Outcome: Skills in nanoparticle analysis and data analysis 	1 week		

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	<p>– Assessment of Antibacterial and Antioxidant Properties Conducting antibacterial (disk diffusion, MIC) and antioxidant (DPPH, ABTS) assays</p> <ul style="list-style-type: none"> Theory: Antimicrobial mechanisms, assay protocols Practical: Disk diffusion, MIC, DPPH/ABTS antioxidant tests Group Activity: Comparing results between groups Outcome: Ability to evaluate biological performance of nanomaterials 	1 week		
	<p>– Stability Testing of the Nanocomposite Solutions Studying the physical and chemical stability of formulations over time and under various storage conditions</p> <ul style="list-style-type: none"> Theory: Parameters for stability (pH, temperature, time) Practical: Setting up stability trials under varying conditions Group Activity: Longitudinal tracking of formulation properties Outcome: Understanding of formulation durability and shelf-life 	1 week		
	<p>– Optimization for Application on Mulberry Leaves Determining safe and effective concentrations for treating mulberry leaves to feed silkworms</p> <ul style="list-style-type: none"> Theory: Dosing, toxicity, delivery methods via plant material Practical: Testing different concentrations on mulberry leaves Group Activity: Selecting optimal formulations based on results Outcome: Skills in applied formulation and preparation for biological use 	1 week		
	<p>– Introduction to Viral Diseases in Silkworms Overview of common viral pathogens, symptoms, transmission, and impact on silkworm farming</p> <ul style="list-style-type: none"> Theory: Common viruses (NPV, CPV), pathology Practical: Sample observation (images or preserved specimens) Group Activity: Case studies of outbreaks Outcome: Knowledge of disease types and impact on sericulture 	1 week		

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	<p>– Silkworm Immune System and Role of Antioxidants Understanding innate immunity in silkworms and the potential of antioxidant-enhanced diets to boost defense mechanisms.</p> <ul style="list-style-type: none"> Theory: Insect innate immunity, ROS & antioxidants Practical: Enzyme assays (e.g., catalase, SOD) demo or simulation Group Activity: Mapping immune response pathways Outcome: Understanding of immune-boosting via nutrition 	1 week		
	<p>– Designing Feeding Trials with Treated Leaves Setting up controlled experiments with treated and untreated mulberry leaves. Defining control and test groups.</p> <ul style="list-style-type: none"> Theory: Experimental design, treatment-control groups Practical: Treating mulberry leaves, setting up trials Group Activity: Designing and assigning group protocols Outcome: Skills in animal testing setup and trial management 	1 week		
	<p>– Behavioral and Clinical Observation of Silkworms Monitoring changes in feeding behavior, growth rate, survival, and clinical symptoms post-treatment</p> <ul style="list-style-type: none"> Theory: Behavioral parameters, clinical signs Practical: Daily observation and data recording Group Activity: Compiling and comparing growth charts Outcome: Monitoring and documentation skills in biological trials 	1 week		
	<p>– Immunological and Biochemical Assessment Evaluation of immune markers and biochemical parameters in hemolymph to assess immune response.</p> <ul style="list-style-type: none"> Theory: Hemolymph analysis, immune markers Practical: Hemolymph extraction (demo), simulated ELISA or biochemical assays Group Activity: Analyzing biomarker trends Outcome: Familiarity with insect immune evaluation tools 	1 week		
	<p>– Final Data Analysis and Practical Conclusions Comparative analysis of experimental data, evaluation of treatment efficacy, and formulation of practical recommendations.</p> <ul style="list-style-type: none"> Theory: Statistical analysis, interpretation of multi-variable results Practical: Using Excel/GraphPad or similar tools Group Activity: Group presentations of results and discussion Outcome: Competence in data analysis, teamwork, and scientific communication 	1 week		

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Soil and Water (Digital Control of Water-Saving Irrigation Technologies)	<ul style="list-style-type: none"> Irrigation Planning and Water Management on the Farm Drip Irrigation Sprinkler Irrigation Irrigation Machines 	1 week	Agricultural Engineering Research Institute (AERI), Karaj, Iran.	Prof. Dr. Hossein Dehghanisani Number: +98-912-1675238 Email: dehghanisani@yahoo.com
	<ul style="list-style-type: none"> Filtration Pumping Stations On-site Visit to Pressurized Systems 	1 week		
	<ul style="list-style-type: none"> Principles of Water Flow Measurement Soil Moisture Measuring Devices Types of Flumes 	1 week		
	<ul style="list-style-type: none"> Volume Meter Device Flowmeter Device General Soil Science and Soil Destruction (SWC Software) 	1 week		
	<ul style="list-style-type: none"> Water and Soil Qualitative Analysis Method Soil Extraction Soil Texture Measurement (Hydrometric Method) 	1 week		
	<ul style="list-style-type: none"> Pressure Plate Method Water and Soil Quality Spectrophotometer and Flame photometer 	1 week		
	<ul style="list-style-type: none"> ArcGIS Google Earth Google Earth Engine 	1 week		
	<ul style="list-style-type: none"> Remote Sensing Water Accounting 	1 week		
	<ul style="list-style-type: none"> Types of Problematic Soils Canal Lining Methods Irrigation Canals 	1 week		
	<ul style="list-style-type: none"> Irrigation and Drainage Networks Soil Mechanics Laboratory 	1 week		
	<ul style="list-style-type: none"> Water Allocation Coding MATLAB Software 	1 week		
	<ul style="list-style-type: none"> Adaptation to Climate Change in Agriculture Irrigation Modernization Integrated Water Management in the Field and Basin Conjunctive Use of Surface and Underground Water Resources 	1 week		

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Soil Science	<ul style="list-style-type: none"> Principles and foundations of soil, water and plant testing and interpretation of results Instrumental analysis laboratory (AAS, GFAAS, HGAAS, ICP-OES, HPLC, Spectrophotometers, and Flame photometers) 	1 week	Soil and Water Research Institute of Iran (SWRI)	Dr. Behnam Rajabpour Number: +98-912-384 1318 Email: behnam.rjbpp@gmail.com
	<ul style="list-style-type: none"> Soil and water chemistry laboratory analysis (sample preparation, pH, EC, soil texture, soil density, OC, CCE, CEC, Heavy metals determination methods). Chemical and organic fertilizer analysis (sample preparation, pH, EC, and nutrients and etc.) 	1 week		
	<ul style="list-style-type: none"> Plant analysis laboratory analysis (determination of nutrients for fertilizer recommendation and crop production purposes, and testing the crop health regarding accumulation of pollutants such as nitrate, heavy metals, and pesticides). Introducing the various types of chemicals, organic, biological fertilizers, and plant growth stimulants (visiting the fertilizer production factories) Using biological potential to increase agricultural production 	1 week		
	<ul style="list-style-type: none"> Nutrition physiology and principles of fertilizer recommendations for crops and orchards crops (Field Visiting) Salt affected Soils and their management Determination of water requirement and water management on the farm Land evaluation for various plants cultivation 	1 week		
Study of Primary and Secondary Metabolites of Halophytes (Study of Primary and Secondary Metabolites of Halophytic Plants as New Sources of Raw Materials for Agriculture and Medicine)	<ul style="list-style-type: none"> Introduction of halophyte plants (focus on Salicornia, Suaeda, and Quinoa), usage and method of cultivation Main concerns about salt stress treatment method, sampling and so on. 	5 weeks	Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.	Dr. Parisa Koobaz Number: +98-912-1373124 Email: parisakoobaz@yahoo.com
	<ul style="list-style-type: none"> Measurement of Lipid and phospholipid content, microelements (Na, K and Ca) measurement, determine ionic and ionizable polar molecules (anion and cation), vitamin D 	5 weeks		
	<ul style="list-style-type: none"> Extraction and characterization of aroma compounds in plant samples using GC/MS GC-MS-base metabolite profiling (metabolite extraction, derivatization of metabolites and GC-MS analysis) 	6 weeks		
	<ul style="list-style-type: none"> Ascorbic acid measurement (vitamin c) Carbohydrate content measurement (soluble, total and type of concentration) Determination of antioxidant components (phenolic acids, total flavonoids, anthocyanins, and carotenoids) 	5 weeks		
	<ul style="list-style-type: none"> Identification perspective halophyte and development recommendations for cultivating species Determination of promising halophyte plants for medical usages 	3 weeks		



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Sustainable Farming Practices (Cotton Care Agrotechnology System, Drip and Discrete Irrigation Systems)	Integrated Pest and Disease Management in Cotton Cultivation	1 week	Cotton Research Institute of Iran (CRII), Gorgan, Iran.	Dr. Rasmieh Hamid Number: +98-916-1001203 Email: rasmiehhamid@gmail.com
	Irrigation and Nutrient Management Systems in Cotton Production	1 week		
	Optimizing Cotton Production: Seed Treatment, Agronomic Practices, and Harvest Mechanization	2 weeks		