Re-Accredited B++ (3.86 CGPA by NAAC)
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–: પરિપત્ર :–

યુનિવર્સિટી સંલગ્ન વિજ્ઞાન વિદ્યાશાખા હેઠળની તમામ કોલેજોનાં આચાર્યશ્રીઓને જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૨૫–૨૬ થી વનસ્પતિશાસ્ત્ર વિષયમાં સ્નાતક કક્ષાએ વિદ્યાર્થીઓએ કરવાની Internship ની માર્ગદર્શિકા વનસ્પતિશાસ્ત્ર વિષયની અભ્યાસ સમિતિના ચેરમેનશ્રીએ અભ્યાસ સમિતિવતી અને વિજ્ઞાન વિદ્યાશાખાના અધ્યક્ષશ્રીએ વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ વિદ્યાશાખાવતી ડીનશ્રીએ મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ એકેડેમિક કાઉન્સિલની તા.૨૪/૧૨/૨૦૨૪ની સભાના ઠરાવ ક્રમાંકઃ૩૫૩ અન્વયે માન.કુલપતિશ્રીને આપેલ સત્તા અંતર્ગત માનનીય કુલપતિશ્રી દ્વારા મંજૂર કરેલ છે.જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

(બિડાણઃ ઉપર મુજબ)

ક્રમાંકઃઓથોરીટીઝ/પરિપત્ર/૧૬૩૮૨/૨૦૨૫
તા.૨૭/૦૬/૨૦૨૫

કુલસચિવ

પ્રતિ,
૧) યુનિવર્સિટી સંલગ્ન વિજ્ઞાન વિદ્યાશાખા હેઠળની તમામ કોલેજોનાં આચાર્યશ્રીઓ.
..... આપશ્રીની કોલેજના સંબંધિત શિક્ષકોને જાણ કરી અમલ કરવા સારૂ.
૨) અધ્યક્ષશ્રી, વિજ્ઞાન વિદ્યાશાખા.
૩) પરીક્ષા નિયામકશ્રી,પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.
.....તરફ જાણ તેમજ અમલ સારૂ.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

B.Sc. BOTANY THIRD YEAR INTERNSHIP PROGRAM

B.SC BOTANY THIRD YEAR INTERNSHIP PROGRAM

The third-year internship in a B.Sc Botany syllabus is key for hands-on learning and career preparation. It typically involves practical training in areas like plant biotechnology, conservation, taxonomy, or ecological research, often conducted in research institutes, botanical gardens, or agricultural firms. Students learn advanced techniques such as plant tissue culture, genetic analysis, or field-based ecological surveys, enhancing their scientific and analytical skills. The internship fosters real-world application of theoretical knowledge, teamwork, and problem-solving abilities. It also exposes students to industry practices, preparing them for careers in research, agriculture, or environmental management. Designing the syllabus should emphasize practical exposure, skill development, and alignment with current botanical research trends.

Internship Outcomes Of Botany Subject

1. **Enhanced Research Skills:** Students develop proficiency in conducting botanical experiments, including hypothesis formulation, data collection, and analysis, fostering critical thinking.

2. **Practical Field Experience:** Internships provide hands-on exposure to plant identification, taxonomy, and ecological surveys, strengthening field-based research capabilities.

3. **Laboratory Techniques Mastery:** Undergraduates gain expertise in techniques like microscopy, chromatography, and tissue culture, essential for plant physiology and biotechnology studies.

4. **Understanding Plant Diversity:** Research projects deepen knowledge of plant anatomy, genetics, and biodiversity, aligning with syllabus topics like plant taxonomy and embryology.

5. **Environmental Awareness:** Internships focusing on conservation or ecology enhance students' understanding of plant-environment interactions and sustainable practices.

6. **Data Analysis Proficiency:** Students learn to interpret experimental results using statistical tools, improving their ability to draw evidence-based conclusions.

7. **Scientific Communication:** Preparing reports and presentations hones skills in communicating research findings effectively, a key outcome of the B.Sc. syllabus.

8. **Career Preparation:** Exposure to real-world applications in agriculture, pharmaceuticals, or environmental sectors aligns with job prospects like horticulturist or researcher.

9. **Collaboration and Teamwork:** Working with mentors and peers during internships builds teamwork and networking skills, fostering professional relationships.

10. **Innovation in Plant Science:** Research encourages creative problem-solving, such as exploring plant responses to climate change, contributing to advancements in Botany.

Given that the duration of the internship is decided to be **120hrs** by the University, a student needs to spend at least **15 (8hrs × 15 days), or 20 (6hrs × 20 days)** working days for this. We need to go through the possible institutions/industries/organizations which will allow students to go there and learn/work there in order to complete their internship. Since these institutions often have faculty-led projects seeking interns, checking their websites for specific application guidelines is crucial.

Below is a list of prominent government, private, and institutions of national importance or advanced institutions in India, with a focus on Gujarat, offering opportunities in life sciences and botany for undergraduate internships, research, or higher academics. These institutions are selected based on their relevance to botany and life sciences, with a focus on research, training, of academic graduation programs suitable for B.Sc. (Botany) students.

(I). Government Institutions in India (National Level)

1. Botanical Survey of India (BSI), Kolkata

Focus: Plant taxonomy, floristic surveys, and conservation.

Relevance: Offers internships and research opportunities in plant diversity, identification, and herbarium management. Regional centers, like the Western Regional Centre in Pune, may provide opportunities for botany students.

Website: www.bsi.gov.in

2. CSIR-National Botanical Research Institute (NBRI), Lucknow

Focus: Plant diversity, plant-environment interactions, and biotechnological approaches for plant improvement.

Relevance: Provides internships and training in plant biotechnology, mycology, and phytochemistry, aligning with B.Sc. botany syllabus.

Website: www.nbri.res.in

3. **Indian Agricultural Research Institute (IARI), New Delhi**

Focus: Agricultural botany, crop improvement, and plant pathology.

Relevance: Offers research internships in plant breeding, genetics, and sustainable agriculture for undergraduates.

Website: www.iari.res.in

4. **Indian Institutes of Science Education and Research (IISERs)**

Location: Pune, Kolkata, Mohali, Bhopal, Thiruvananthapuram, Tirupati, Berhampur.

Focus: Interdisciplinary life sciences, including plant biology and ecology.

Relevance: IISERs provide summer research internships for B.Sc. students in plant sciences and biotechnology, declared as Institutes of National Importance.

Website: www.iiserpune.ac.in (example for IISER Pune)

5. **National Institute of Plant Genome Research (NIPGR), New Delhi**

Focus: Plant genomics, molecular biology, and biotechnology.

Relevance: Offers short-term training and internships for undergraduates in plant molecular biology and genomics.

Website: www.nipgr.ac.in

(II) Government Institutions in Gujarat

1. **Gujarat Biotechnology Research Centre (GBRC), Gandhinagar**

Focus: Biotechnology, genomics, and bioinformatics with applications in plant and environmental sciences.

Relevance: Provides hands-on training programs (e.g., GWAS in plants, molecular biology) suitable for botany undergraduates.

Website: gbrc.gujarat.gov.in

2. **Indian Institute of Science Education and Research (IISER), Gandhinagar**

Focus: Interdisciplinary life sciences, including plant biology and ecology.

Relevance: Approved in 2024, IISER Gandhinagar offers research opportunities in life sciences, with potential for botany-related projects.

Website: (Under development; refer to www.iiserpune.ac.in for similar programs)

3. Gujarat State Biotechnology Mission (GSBTM), Gandhinagar

Focus: Biotechnology development, including plant biotechnology and environmental applications.

Relevance: Supports internships and training in plant tissue culture and biotechnology for undergraduates.

Website: bt.gujarat.gov.in

4. Other Advanced Institutions/ in Gujarat

(1). Institute of Advanced Research (IAR), Gandhinagar

Offers DBT-undergraduate internships in plant biotechnology and molecular biology.

Website: iar.ac.in

(2). Gujarat Biotechnology University (GBU), Gandhinagar

Offers research-oriented training and internships in plant tissue culture and biotechnology, suitable for B.Sc. students.

Website: gbu.edu.in

(3). Internship/Training Programs at NAU for B.Sc. Botany Students

(A). Experiential Learning Programme (ELP) in Horticulture and Plant Sciences

This Internship program includes hands-on training in plant propagation, nursery management, and tissue culture, relevant to botany students. Students work on campus farms or greenhouses, gaining skills in plant breeding and cultivation.

Application: Coordinated through the N.M. College of Agriculture or College of Horticulture.

(B). Rural Agricultural Work Experience (RAWE)

RAWE involves fieldwork in rural settings, focusing on plant diversity, crop management, and ecological studies. Botany students can participate in plant identification and conservation projects.

Application: Organized by the academic department; students register through their college (e.g., N.M. College of Agriculture).

(C). Research Internship at NAU Research Centers

Offers exposure to lab techniques (e.g., microscopy, biochemical analysis) and field research, aligning with syllabus topics like plant physiology and biotechnology.

Location: Main campus (Navsari) or research stations like the Center of Excellence on Soil and Water Management.

Application: Contact faculty directly via email (available on nau.in under "Research" or "Faculty" sections) or apply through the Dean's office at N.M. College of Agriculture.

(D). Internship with Industry Partners (e.g., IFFCO, GSFC)

Internships with agribusiness companies like Indian Farmers Fertiliser Cooperative (IFFCO), Gujarat State Fertilizers & Chemicals (GSFC), and PI Industries. Botany students can work on projects related to plant nutrition, biofertilizers, or crop physiology.

(E). Training at Krishi Vigyan Kendras (KVKs)

NAU's five KVKs (Navsari, Pariya, Ambheti, Surat, Waghai, Vyara, Dediapada) offer training programs in plant conservation, Mushroom cultivation, and medicinal plant cultivation.

(F). Summer Training in Biotechnology and Plant Tissue Culture

NAU's Department of Agricultural Biotechnology offers short-term training in plant tissue culture, molecular biology, and genetic engineering, suitable for botany students interested in plant biotechnology.

Location: NAU's biotechnology labs in Navsari.

Application: Check nau.in for training announcements or contact the Department of Agricultural Biotechnology (email faculty listed under "Faculty" on the website).

<u>(III). Private Industries and Research labs in the south Gujarat.</u>

For undergraduate botany students, internships in such settings are vital for gaining practical experience in advanced techniques like plant biotechnology or ecological research, bridging

theoretical knowledge with real-world applications. They also enhance employability by building professional skills and industry connections.

1. Bhuma Research In Ayurvedic And Herbal Medicine (BRAHM) Research and Development Laboratory Surat.
2. Meril Life Sciences.
3. In the field of genetics and cell biology can be good venue at Gene care Diagnostics & Reseach Centre at Surat.
4. Jai Research Foundation (JRF) at Valwada, Gujarat.

(IV). Botanical Gardens In Gujarat.

The gardens provide a space for hands-on exploration, helping students build skills like observation, analysis, and research key for their future careers or studies.

Notable Botanical Gardens in Gujarat.

1. Waghai Botanical Garden Dang.
2. Sneh Rashmi Botanical Garden, Ugat, Surat.
3. Sampatbhai Dahyabhai Botanical Garden B.K.M.Science College Valsad.
4. Botanical Garden at The Maharaja Sayajirao University of Baroda, Vadodara.

(V) Organic farming, Natural Farming, Nurseries, Apiculture.

Internships in organic and natural farming students are essential for learning sustainable agricultural practices, soil management, and eco-friendly pest control. These programs provide hands-on experience in cultivating crops without synthetic inputs, fostering skills in biodiversity conservation and organic certification processes. Students gain practical exposure to Gujarat's agricultural initiatives, aligning with real-world applications of their academic knowledge.

1. Organic farming internship at Krishi Vigyan Kendra KVK, Navsari Agricultural University.
2. Natural farming internship at The Gujarat Natural Farming Science University Halol.
3. Fruit Nursery Chanvai Valsad.
4. Centre of Excellence For Floriculture Chanvai Valsad.
5. Manmohan Apiary-Honey Bee Centre Fanaswada Valsad.
6. Biology Department B.K.M.Science College Valsad.

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