

THE GRADUATE SCHOOL
INDIAN AGRICULTURAL RESEARCH INSTITUTE
(A Deemed to be University under section 3 of UGC Act, 1956)
NEW DELHI – 110012

File No. ICAR-IARI/TGS/Diploma.2024

Date : 20/11/2024

Applications are invited for admission to following Diploma & Certificate courses at ICAR-IARI, New Delhi:

Featured Courses:

1. Post Graduate Diploma in Soil Testing & Nutrient Management.
2. Post Graduate Diploma in Data Science & Analytics.

Detailed Terms and Requirements for the courses:

- **Soil Testing and Nutrient Management**
 - **Duration:** One Year.
 - **Number of Students Intake:** 20 (UR-9, OBC-5, SC-3, ST-1, EWS-2, PwBD-1*)
 - **Fee for the Course:** 1,20,000 /- (One Lakh Twenty Thousand only).
 - **Age Limit:** 35 Years (Maximum)
 - **Eligibility/Educational Requirement:** B.Sc Agriculture/Allied Sciences/Science.
 - **Place of Program/Venue:** Division of Soil Science and Agricultural Chemistry, IARI, New Delhi.
 - **Mode of Training (Offline/Residential) :** Non-Residential
 - **Language :** English
- **Data Science and Analytics**
 - **Duration:** One Year.
 - **Number of Students Intake:** 20(UR-9, OBC-5, SC-3, ST-1, EWS-2, PwBD-1*)
 - **Fee for the Course:** 1,20,000 /- (One Lakh Twenty Thousand only).
 - **Age Limit:** No Age Limit.

- **Eligibility/Educational Requirement:** Employed professionals/Individuals holding B.Sc/B.E./B.Tech in any branch with mathematics till 12th class BCA/BA (Mathematics/Statistics) or equivalent from any University or Institute or Institute recognized by ICAR/UGC.
- **Place of Program/Venue :** ICAR-Indian Agricultural Statistics Research Institute (IASRI)
- **Mode of Training (Offline/Residential) :** Non-Residential
- **Language :** Hindi & English

Other General Conditions:

- **Mode of Selection :**
 - (i) Minimum 60% marks or 6.0 out of 10.0 OGPA throughout the academic career (10th/12th and UG) with relaxation of 10% marks for the candidates for SC/ST/PwBD category.
 - (ii) Weightage of Score: Academic (80%, out of which (10th – 20%, 12th –20%, UG - 40%)) and Personal Interview (20%)
 - (iii) Reservation of seats for OBC-NCL, SC, ST and Persons with Benchmark Disability (PwBD) category as per Government of India rules.
- **Date of Start of Application :** 20th November 2024
- **Last Date of filling Application :** 20th January 2025

Mode of Application:

- Scanned copy of filled application form along with the educational marksheets/degree may be sent to diplomacourses.iari@gmail.com

Disclaimer:

- No T.A./D.A. will be provided for taking part in the admission process.
- Filling the application form does not guarantee admission to the course. IARI reserves right to admit students.
- All rights regarding the admission process are reserved by The Director, IARI.

Note: Any further queries can be mailed upon diplomacourses.iari@gmail.com

**(Rajeev Lal)
JD (Admin.) & Sr. Registrar**

**The Graduate School
Indian Agricultural Research Institute
New Delhi-110012**

**APPLICATION FOR ADMISSION TO
ONE YEAR POST GRADUATE
DIPLOMA COURSE**

Affix your passport
size photo here

1. Name of the Diploma course applying for _____

2. Full Name (in Block Letter) _____
3. Name of father / Guardian / Husband _____
4. (a) Address for correspondence (in Block Letters) _____

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Phone No: _____ Email I.D: _____

(b) Permanent Address (in Block Letter) _____

5. (a) Date of Birth _____
(b) Age _____
(c) Nationality _____
(d) Sex _____
6. Category _____

7. Academic Qualifications:

Qualification	Discipline	Passing Year	Name of School/College	University	Percentage/ CGPA
10					
10+2/ Diploma					
Degree					
Others					

8. I declare that the particulars given above are correct and that I will, if admitted, abide by the rules & regulations of IARI.

Place: _____

Date: _____

Signature of the Applicant



PG Diploma

Post Graduate Diploma in Data Science & Analytics

2024-2025

**1 year
Offline mode**



Background

Data Science and Analytics is an interdisciplinary field that leverages scientific methods, algorithms, and systems to extract insights and knowledge from data in various forms, including structured, unstructured, and semi-structured data. Data science integrates multiple domains such as mathematics, statistics, computer science and domain expertise to analyse vast amounts of data, make predictions, and solve complex problems. In this course, key stages in the data science workflow; such as data collection, cleaning, analysis, modeling, and interpretation, will be emphasized, with a focus on enabling data-driven decision-making and task automation.

Students will gain hands-on experience with widely-used programming languages like Python, R, and SQL, exploring their respective strengths and applications. Essential tools such as Jupyter Notebooks, RStudio, and Anaconda will be introduced, alongside key libraries like pandas, scikit-learn, TensorFlow, and PyTorch, which support data manipulation and machine learning. The curriculum also delves into the intersection of data science with Artificial Intelligence (AI) and big data technologies, examining how AI enhances the capabilities of data science. Additionally, specialized applications of data science in the agricultural sector will be covered, providing a practical perspective on its transformative potential in this domain.

About ICAR

The Indian Council of Agricultural Research (ICAR) is an autonomous organisation under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers Welfare, Government of India. Formerly known as Imperial Council of Agricultural Research, it was established on 16 July 1929 as a registered society under the Societies Registration Act, 1860 in pursuance of the report of the Royal Commission on Agriculture. The ICAR has its headquarters at New Delhi.

The Council is the apex body for co-ordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country. With 113 ICAR institutes and 74 agricultural universities spread across the country this is one of the largest national agricultural systems in the world.

About ICAR-IARI

ICAR - Indian Agricultural Research Institute (IARI) is India's largest and foremost Institute in the field of research, higher education and training in agricultural sciences. The main functions of the Institute cover the areas of basic and applied research in the major branches of agricultural sciences; under graduate programs viz. B.Sc. Community Science, B.Sc. Agriculture, B.Tech (Agri-Engineering) B.Sc. (Biotechnology); as well as post graduate education at the M.Sc., M. Tech. and Ph.D. levels for which the Institute has been accorded the status of a Deemed to be University under the University Grants Commission (UGC) Act of 1956; specialized post graduate training courses; and extension education and transfer of technology in selected areas. The Institute has inherited a great tradition of agricultural research. The Institute, which moved to New Delhi in 1936 with five Sections, now conducts its research and educational activities through a network of 26 disciplines, a Project Directorate, two Regional Centres, eight Units, one KVK, and eight Regional Stations. In the NIRF 2024 rankings, IARI not only retained its top rank in the "Agriculture and allied sector" category but also earned a coveted place in the top 50 rank-band in the "Research Institution" and "Innovation" categories. The Graduate School, IARI runs 56 degree programmes (04 in Undergraduate, 26 in Masters and 26 in Ph.D), in New Delhi Campus (including IARI, New Delhi and 03 sister institutes namely, IASRI, NIPB, NBPGR) and 16 regional hubs.

About ICAR-IASRI

ICAR-Indian Agricultural Statistics Research Institute (IASRI) is a pioneer institute of ICAR undertaking research, teaching and training in Agricultural Statistics, Computer Application and Bioinformatics. Ever since its inception way back in 1930, as small Statistical Section of the then Imperial Council of Agricultural Research, the Institute has grown in stature and made its presence felt both nationally and internationally. ICAR-IASRI has been mainly responsible for conducting research in Agricultural Statistics and Informatics to bridge the gaps in the existing knowledge. It has also been providing education/ training in Agricultural Statistics and Informatics to develop trained human resources in the country. The research and education are used for improving the quality and meeting the challenges of agricultural research in newer emerging areas. The Institute conducts Ph.D. and M.Sc. degree courses in Agricultural Statistics, Bioinformatics and Computer Application in collaboration with the Graduate School of ICAR-IARI. The institute also conducts in-service courses in the aforementioned disciplines.

Educational Eligibility

Age	Educational Qualification	Number of intake of students	Tuition fee	Diploma awarding organisation	Collaboration Divisions/institutions/industry
Maximum age : No Age Limit	Minimum eligibility to apply: Employed professionals / Individuals holding B.Sc./B.E./B.Tech. in any branch with mathematics till 12th class /BCA/ BA(Mathematics/Statistics) or equivalent from any University or Institution recognized by ICAR/UGC.	Minimum:15 Maximum:20	Rs.120000/-	ICAR-IARI	ICAR-IASRI

Selection Criteria

Minimum 60% marks or 6.0 out of 10.0 OGPA throughout the academic career (10th /12th and UG), with relaxation of 10% marks for candidates of ST/SC/PwBD category.

Weightage of Score: Academic (80%) and personal interview (20%).

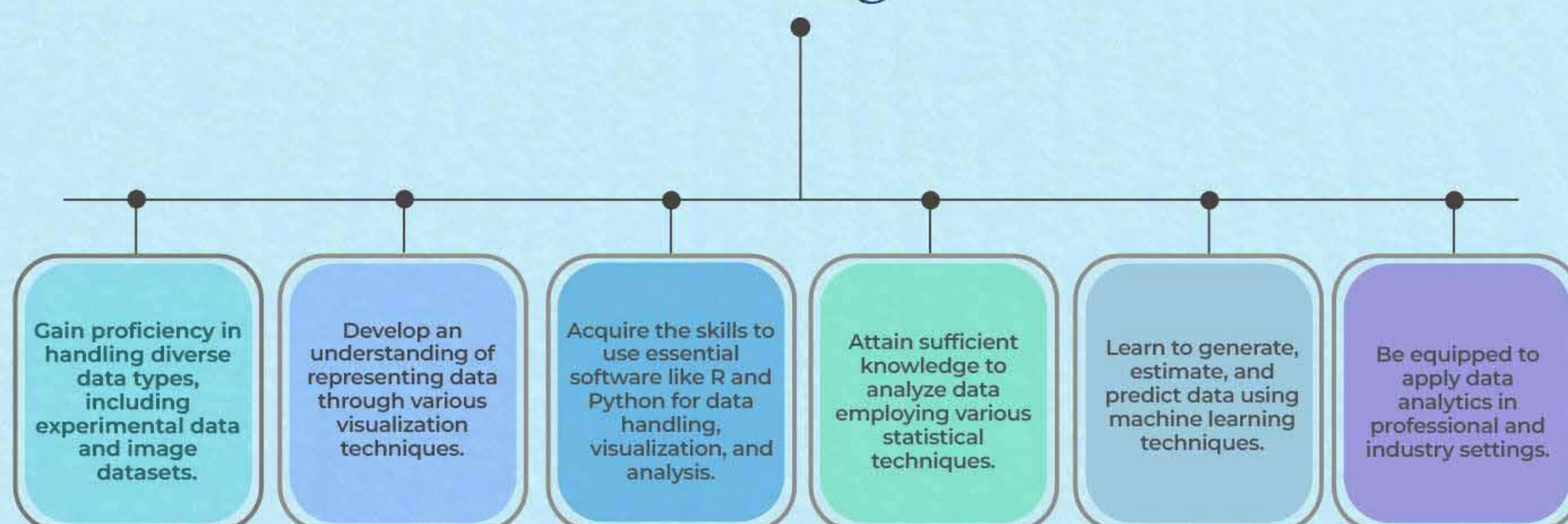
Reservation of seats for OBC-NCL, SC, ST and Persons with Benchmark Disability (PwBD) category as per Govt. of India rules.

*No T.A/D.A will be provided for taking part in admission process

How to Apply

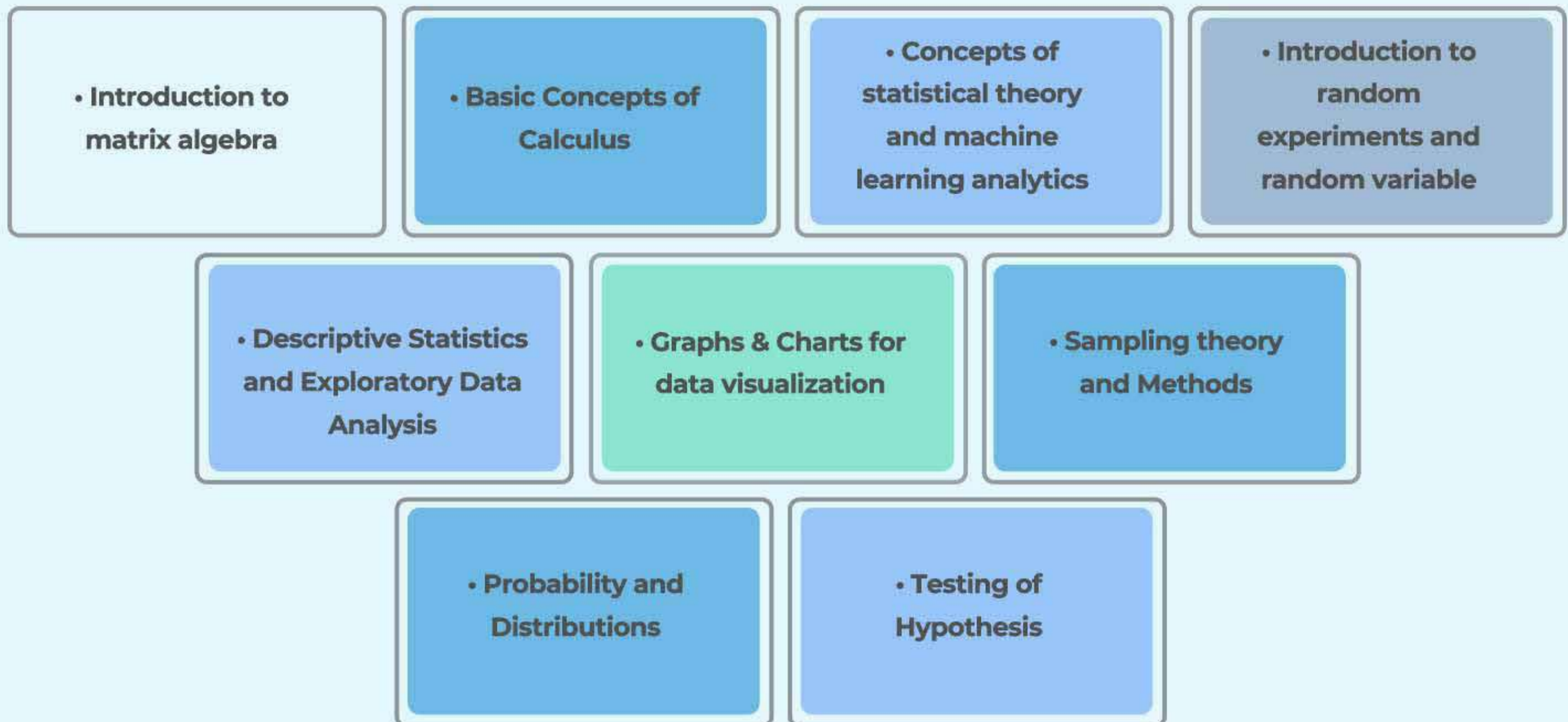
For details refer : <https://iari.res.in/bms/latest-news/index.php>. The candidate need to fill the proforma and send the filled in proforma along with all degree documents(10/12/UG/ PG/any other diploma/certificate course) and SC/ST/OBC-NCL/EWS/PwBD certificate(if applicable) to diplomacourses.iari@gmail.com. For further details contact: Dr. Rajender Parsad, Director, ICAR-IASRI, Library Avenue, Pusa, New Delhi-110012, E-mail: director.iasri@icar.gov.in; Phone: +91-11-25841479

Student Learning Outcomes

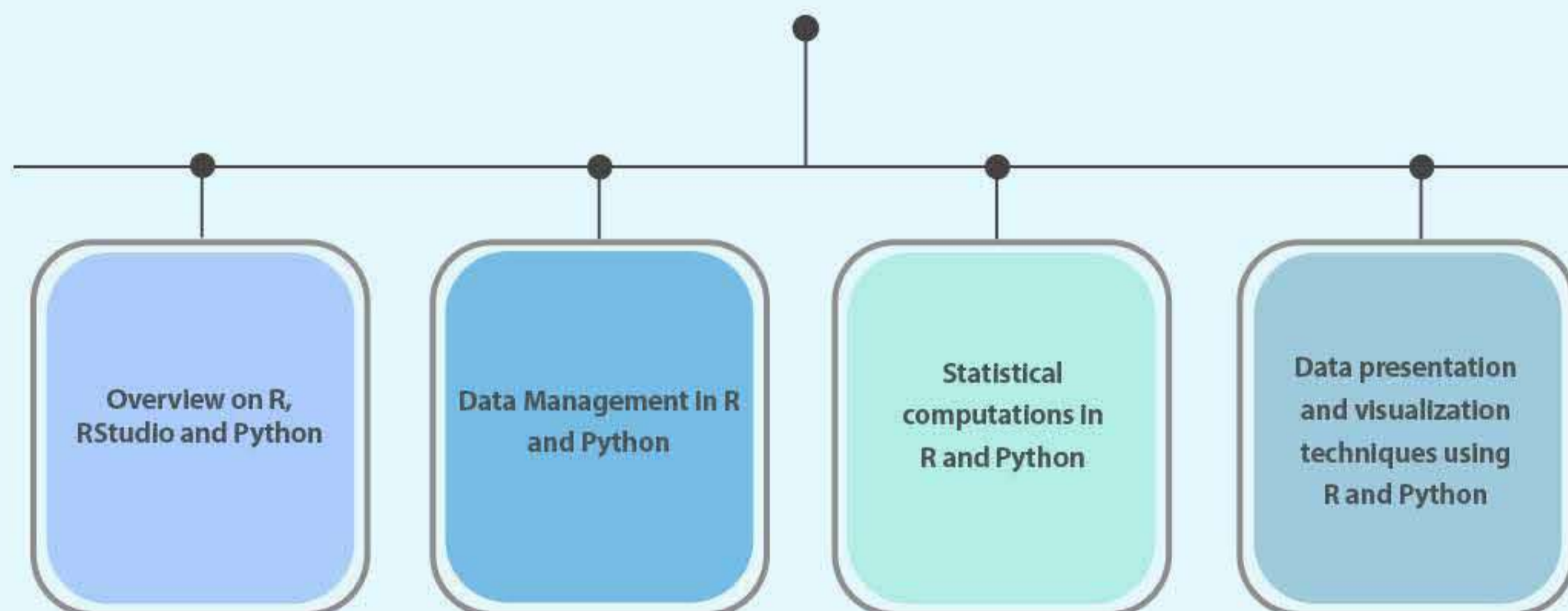


Syllabus

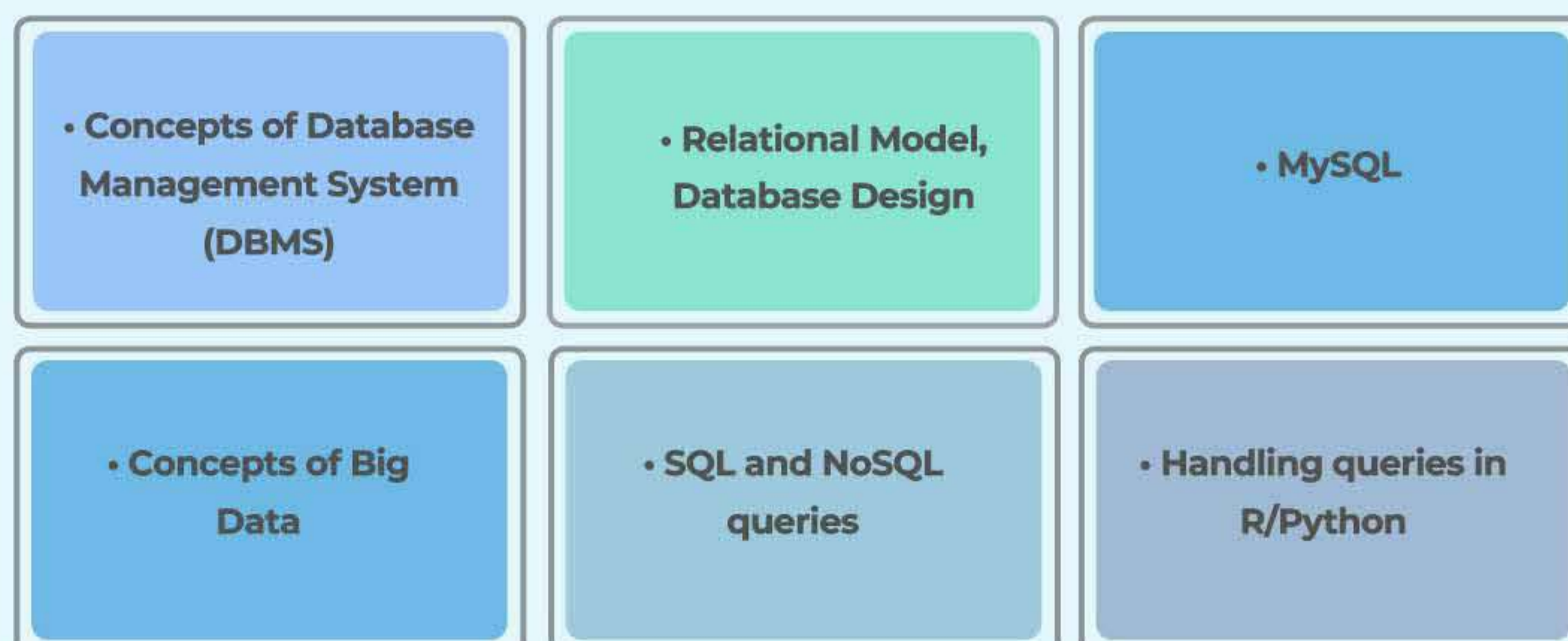
PGDSA 1: Basic Concepts and Exploratory Data Analysis



PGDSA 2: Software/Tools for Data Science-I



PGDSA 3: Database Handling and Management



PGDSA 4: Machine Learning Techniques

Basics of machine learning, Types of machine learning: supervised learning, unsupervised learning, semi-supervised learning, reinforcement learning

Models of regression; Linear regression - least squares; Polynomial regression - learning curves; Regularized linear models - Ridge, LASSO

Problems - regression, classification, clustering

Machine learning Algorithms

KNN - K-Nearest Neighbors

SVM - Support Vector Machines

FNN - Feedforward Neural Networks

AdaBoost - Adaptive Boosting

XGBoost - eXtreme Gradient Boosting

CatBoost - Categorical Boosting

LGBM - Light Gradient Boosting Machine

RF - Random Forest

Clustering

Association Rule Mining

Model Evaluation and Validation

Cross-validation, train-test splits.

Hyperparameter tuning

Bias-variance tradeoff

PGDSA 5: Case studies & Project Work Level 1

Case study in Market Intelligence using machine learning

Case study in weather data using machine learning

Case study in Biological Data using machine learning

PGDSA 6: Optimization Techniques

Gradient and search-based optimization

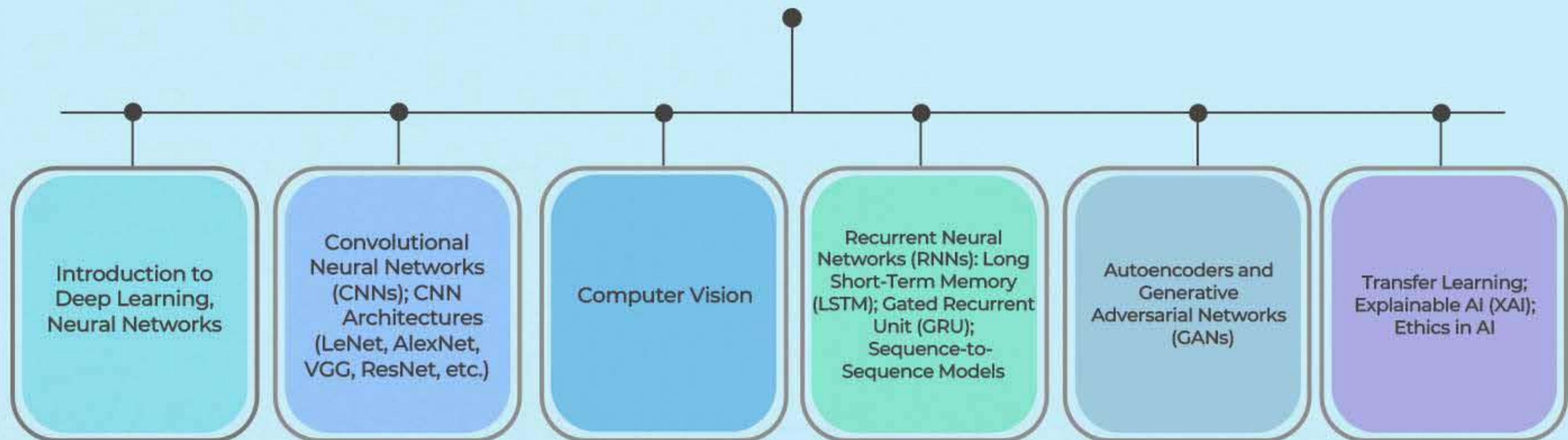
Linear, quadratic, nonlinear, and mixed integer programming Multi-objective and multi-criteria decision-making

— PGDSA 7: Software/Tools for Data Science-II —

Python libraries for deep learning implementations : TensorFlow, Keras, PyTorch, MXNet, Caffe: Theano, CNTK and OpenCV etc

Java Script , Xjango frame work etc.

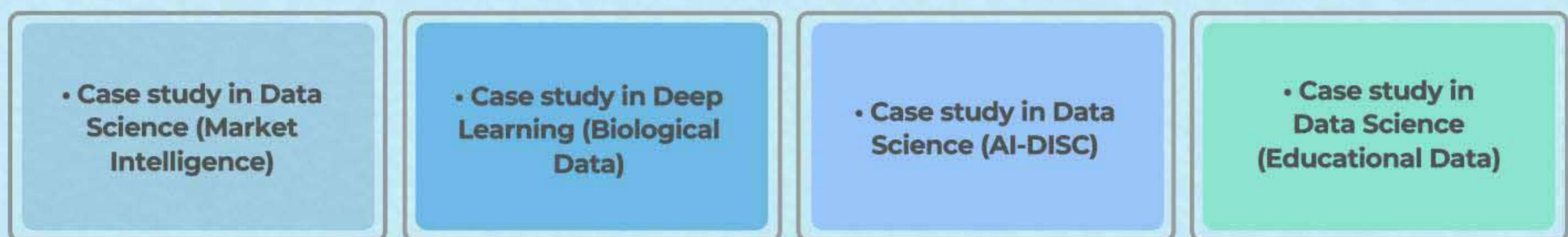
— PGDSA 8: Deep Learning Techniques —



— PGDSA 9: Big Data Analytics —



— PGDSA 10: Case studies & Project Work Level 2 —

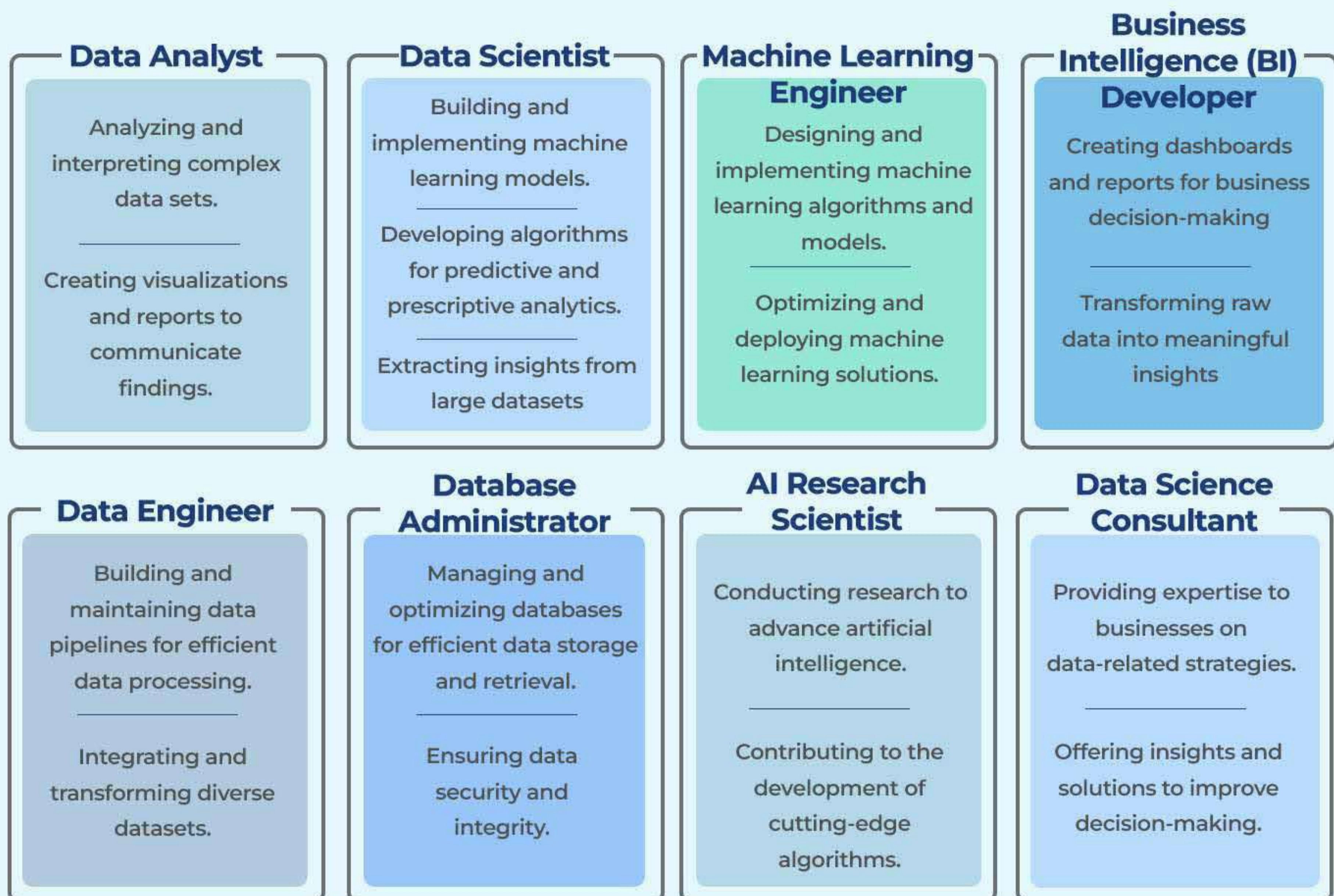


— Evaluation pattern —

S.NO.	Type of exam	Marks
01	Mid-Term	20
02	Final Theory	30
03	Practical	25
04	Assignment	15
05	Quiz	10

Employment Opportunity

Data science offers a wide range of career opportunities due to its increasing importance in various industries. Here are some key career paths and opportunities in data science:



To pursue a career in data science, it's essential to develop a strong foundation in mathematics, statistics, programming (Python, R, etc.), and data manipulation tools. Continuous learning and staying updated on industry trends are crucial in this rapidly evolving field. Additionally, gaining practical experience through internships, projects, and certifications can enhance your marketability in the job market.

Proforma From

**The Graduate School
Indian Agricultural Research Institute
New Delhi-110012**

**APPLICATION FOR ADMISSION TO
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DIPLOMA COURSE**

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Phone No: _____ Email I.D: _____

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6. Category _____

7. Academic Qualifications:

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10+2/ Diploma					
Degree					
Others					

8. I declare that the particulars given above are correct and that I will, if admitted, abide by the rules & regulations of IARI.

Place: _____

Date: _____

Signature of the Applicant

Post Graduate Diploma in Soil Testing and Nutrient Management

PHIPPS LABORATORY
मृदा विज्ञान एवं कृषि रसायन विज्ञान संभाग
DIVISION OF SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

2024-25
1 Year Offline mode

**Division of Soil Science
and Agricultural Chemistry**

**ICAR-IARI
New Delhi**



Visit our website

https://intranet1.iari.res.in/attachments/Application_for_admission_to_Diploma_06122024.pdf



Background

Soil Testing and Nutrient Management play a pivotal role in ensuring sustainable agricultural production and environmental conservation. The PG Diploma Course in Soil Testing and Nutrient Management is a specialized program designed to provide students with in-depth knowledge and practical skills in soil analysis, nutrient diagnostics, and sustainable fertilization strategies. With a focus on modern soil testing techniques, this course equips learners to assess soil fertility, manage plant nutrition effectively, and adopt innovative approaches to enhance crop productivity while minimizing environmental impacts. In addition, the course imparts knowledge on the formation of soil and its various properties which influence the availability of nutrients and their management in soil. The course also includes knowledge and skill development on production methods of different chemical and organic fertilizers, their application, and management in soil for optimum soil fertility and crop productivity. Students will gain hands-on training, engage in case studies, and explore real-world scenarios, ensuring they are well-prepared for careers in agriculture, research, and agri-entrepreneurship. This course is ideal for those seeking to address global challenges in agriculture and contribute to sustainable food systems through scientific and practical expertise.

About ICAR

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About Division of Soil Science and Agricultural Chemistry

The history of the Division of Soil Science and Agricultural Chemistry is traced back to the Chemical Section headed by Imperial Agricultural Chemist, which came into existence in 1905 with the establishment of the Imperial Agricultural Research Institute housed in the Phipps Laboratory, grand office named after the American Philanthropist Mr. Henry Phipps. The Great Bihar Earthquake of 1934 led to the shifting of the Imperial Institute to New Delhi where the building continues to carry the name of Phipps Laboratory. After independence in 1947, the Chemical Section was renamed the Division of Soil Science and Agricultural Chemistry. The main objective of this Division is to carry out research on the fundamental and applied aspects of the physical, chemical, and biological properties of soil; fertilizers and manures and their interaction with soil and plants; improvement and maintenance of soil fertility for sustained optimum agricultural production; utilization of organic residues (wastes) as manure and production of biogas as fuel; soil test crop response correlation studies; advice to the farmers on soil test-based fertilizer recommendations. Since its existence, it has made outstanding contributions to both theoretical concept development and practical value on technologies development in many fields of soil science and agricultural chemistry.

Information

Educational Eligibility

Age Maximum age: 35 Years (Maximum)

Eligibility/ Educational Requirement: B.Sc. Agriculture/Allied Sciences/Science

Duration: One Year

Number of Students Intake: 20 (UR-9, OBC-5, SC-3, ST-1, EWS-2, PwBD-1*)

Fee for the Course: 1,20,000 /- (One Lakh Twenty Thousand only)

Age Limit: 35 Years (Maximum)

Place of Program Venue: Division of Soil Science and Agricultural Chemistry, ICAR-IARI, New Delhi

Mode of Training (Offline/Residential): Non-Residential

Language: English

Selection Criteria:

Minimum 60% marks or 6.0 out of 10.0 OGPA throughout the academic career (10th/12th and UG), with relaxation of 10% marks for candidates of ST/SC/PwBD category

Weightage of Score: Academic (80%, out of which (10th -20%, 12th -20%, UG - 40%)) and personal interview (20%)

Reservation of seats for OBC-NCL, SC, ST, and Persons with Benchmark Disability (PwBD category) as per Govt. of India rules

Date of start of application: 20th November, 2024

Last date of filling application: 31st December, 2024

How to Apply:

Scanned copy of the filled application form along with the educational mark sheets/degree may be sent to diplomacourses.iari@gmail.com

Syllabus



STNM-1

Introduction to Soil

Soil genesis

Soil physical properties

Silicate clays

Soil organic matter

Soil organisms

Soil pollution

Soil erosion



STNM-2

Principles of Soil Fertility and Plant Nutrition

Soil fertility and productivity

Nutrient functions

Deficiency symptoms

Nutrient movement

Nutrient cycling



Syllabus

STNM-3

Methods for Soil, Plant and Water Analysis

Soil chemical analysis

Plant analysis

Irrigation water quality

Volumetric analysis

Titration

Colorimetry

Emission spectroscopy

Absorption spectroscopy



STNM-4

Fertilizers, Manures and Bio-fertilizers

Macro and micronutrient fertilizers

Controlled release fertilizers

Fertilizer control order

Manures and composts

Non-conventional sources

Biofertilizers

Preparation techniques



Syllabus

STNM-5

Principles and Practices of Nutrient Management

Soil test data interpretation

Fertilizer recommendation

Critical nutrient concept

Targeted yield concept

INM, SSNM, DRIS

Decision support system

Nutrient use efficiency

Sensor-based fertility assessment

PUSA STFR Meter



STNM-6

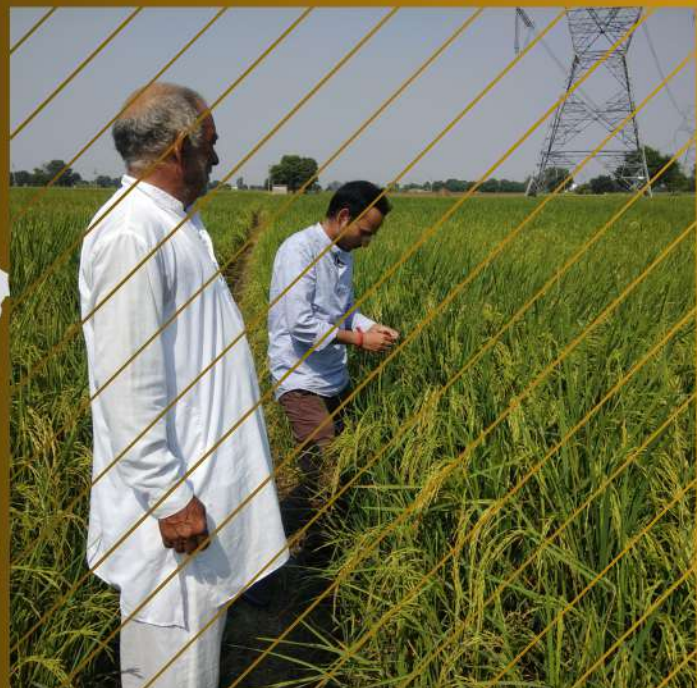
Field Experience Training

15 days working experience
in a village

Soil sample collection

Preparation of soil fertility
map

Fertilizer recommendation
for the crops grown in the
adopted village



Syllabus

STNM-7 Internship

Internship in soil testing and nutrient management related laboratory/industries/institute

Association with soil testing laboratories of the fertilizer industries like IFFCO, KRIBHCO, Mahindra, Goderaj etc.

Understanding the functioning of soil testing lab of fertilizer industries

Work independently to fulfill lab requirement as a trained man power.

Internship certificate from the associated industry



Evaluation pattern

S. No.	Type of exam	Marks
1.	Quiz	10
2.	Mid-Term	25
3.	Final Theory	40
4.	Practical	20
5.	Assignment	05

Learning outcomes

- To develop basic knowledge of soil formation and various physical, chemical, and biological properties that influence the availability of nutrients in the soil and their management
- Demonstrate analytical skill for soil, plant, water, and fertilizer samples and handling instruments in soil and fertilizer testing laboratories, fertilizer industry, soil and plant research laboratory(s) of the country
- Demonstrate skills in preparation, preservation, and handling of fertilizer/novel slow-release fertilizers, biofertilizers, and manures in government organizations and industry
- Knowledge and skills accumulated during the program led to the development of agri-entrepreneurship and start-ups to provide jobs to youth

Employment opportunity

KVK

NGO

Fertilizer industry

State agriculture department

State soil testing laboratory

Private soil testing laboratory

Self-entrepreneurship

Diploma to Degree

Proforma From

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