Kind Attn: MRD LifeSciences™ provides a platform to all outstanding candidates who are doing Project/Dissertation work in our lab & help them to publish their papers in National & International Scientific Journals based on their findings of Projects.

NOTE: For **Project/ Dissertation works**, Please see **Module-12**.

MODULE DETAILS

Module 1: "Hands-on Industrial Training with State of Art Lectures on Advanced Biotech Techniques *i.e.* Mixed Module" (Program Code: CRT-01).
(THIS IS OUR MOST EFFECTIVE MODULE)

Mixed Module* (Includes the techniques from Microbiology/Molecular Biology/ Biochemical -Proteomics/Enzymology & RDT)

Techniques Details: (For Duration of 30 Days; Fee: 10,000/- + GST)

S. No.	Lab Schedule
1	Bio-Instrumentation for Wet Lab.
2	Media Preparation.
3	Serial Dilution Method.
4	Pure Culture of Microbes through Streaking Method.
5	Primary & Secondary Screening of Microbes.
6	Growth Kinetic Studies of Microbes.
7	Antibiotics Sensitivity Test.
8	Minimum Inhibitory Concentration (MIC) Test.
9	Genomic DNA Isolation. (A) DNA Isolation from Microbes. (B) DNA Isolation from Plant Sample.
10	Agarose Gel Electrophoresis for Genomic DNA.
11	RNA Isolation from Plant Samples.
12	Denaturing Gel Electrophoresis of RNA.
13	Qualitative Analysis of Nucleic Acid.
14	Quantitative Analysis of Nucleic Acid.
15	Protein Isolation & Buffer Preparation.
16	SDS-PAGE.
17	Western Blotting.
18	Restriction Digestion.
19	Ligation.
20	Competent Cell Preparation.
21	Transformation.
22	Blue-White Screening.
23	Cloning & Gene expression.
24	Polymerase Chain Reaction (PCR).

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25	Electrophoresis of PCR Products.
26	Estimation of Protein by Bradford Method.
27	Estimation of Protein by Lowry's Method.
28	Estimation of Reducing Sugar by DNS Method.
29	Fermentation & Downstream Processing (DSP).
30	Chromatography Techniques.

Techniques Details: (For Duration of 15 Days; Fee: 5800/- + GST)

S. No.	Lab Schedule
1	Bio-Instrumentation for Wet Lab.
2	Media Preparation & Culturing of Microbes.
3	Serial Dilution Method.
4	Pure Culture of Microbes through Streaking Method.
5	Primary & Secondary Screening of Microbes.
6	Antibiotics Sensitivity Test.
7	Minimum Inhibitory Concentration (MIC) Test.
8	Genomic DNA Isolation. (A) DNA Isolation from Microbes. (B) DNA Isolation from Plant Sample.
9	Agarose Gel Electrophoresis for Genomic DNA.
10	Qualitative Analysis of Nucleic Acid.
11	Quantitative Analysis of Nucleic Acid.
12	Protein Isolation & Buffer Preparation.
13	SDS-PAGE.
14	Western Blotting.
15	Restriction Digestion of DNA by Restriction Endonucleases.
16	Estimation of Protein by Bradford/Lowry's Method.
17	Estimation of Reducing Sugar by DNS Method.
18	Polymerase Chain Reaction (PCR).
19	Electrophoresis of PCR Products.

Module 2: "Hands-on Industrial Training with State of Art Lectures on Basic & Advanced Industrial Microbiology" (Program Code: CRT-02).

Techniques Details: (For Duration of 30 Days; Fee: 8500/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions for Working in Microbiology Lab.
2	Bio-Instrumentation for Wet Lab.
3	Working with Autoclave, Hot-Air Oven, Laminar Air Flow, Microscope and other Microbiological Laboratory Instruments.
4	Handling of Micropipettes, Petri plates, Spreaders, Inoculation Loop and other Microbiological Tools.
5	Identification and Classification of Microbes.
6	Media Preparation.
7	Types of Culture Media.

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8	Solid and Liquid Media Preparation.
9	Preparation of Cotton Plug, Plugging for Bacterial Cultures.
10	Sterilization Process.
11	Chemical Sterilization Process.
12	Physical Sterilization Process.
13	Isolation and Culturing of Microbes from Soil Sample (Through Serial Dilution Method).
14	Isolation and Culturing of Microbes from Water Sample (Through Serial Dilution Method).
15	Isolation and Culturing of Microbes from Air (Through Exposure Method).
16	Pure Culture Technique.
17	Pour Plate Technique.
18	Spread Plate Technique.
19	Various Streaking Methods.
20	Maintenance of Pure Culture.
21	Slant Preparation & Sub Culturing of Microbes.
22	Morphological Behaviour of Microbes.
23	Staining Techniques. (A) Gram Staining. (B) Endospore Staining.
24	Biochemical Tests. (A) Catalase Test. (B) Mannitol Fermentation Test. (C) VP Test. (D) MR Test. (E) Glucose Fermentation Test.
25	Optimization of Culture Conditions of Microbes.
26	Study of Growth Pattern of Microbes.
27	Effect of pH, Temperature, Salinity, Precursors, Inhibitors and Elicitors on Growth of Microbes.
28	Effect of Physical and Chemical Mutagen on Growth of Microbes.
29	Primary Screening of Active Microbes.
30	Secondary Screening of Active Microbes.
31	Fermentation Techniques.
32	Isolation and Characterization of Antibiotics from Microbes.
33	Antibiotics Sensitivity Test.
34	Evaluation and Determination of Minimum Inhibitory Concentration (MIC).

Techniques Details: (For Duration of 15 Days; Fee: 5500/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions for Working in Microbiology Lab.
2	Bio-Instrumentation for Wet Lab.
3	Working with Autoclave, Hot-Air Oven, Laminar Air Flow, Microscope and other Microbiological Laboratory Instruments.
4	Handling of Micropipettes, Petri plates, Spreaders, Inoculation Loop and other Microbiological Tools.
5	Identification and Classification of Microbes.
6	Media Preparation.

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7	Types of Culture Media.
8	Solid and Liquid Media Preparation.
9	Preparation of Cotton Plug, Plugging for Bacterial Cultures.
10	Sterilization Process.
11	Chemical Sterilization Process.
12	Physical Sterilization Process.
13	Isolation and Culturing of Microbes from Soil Sample (Through Serial Dilution Method).
14	Isolation and Culturing of Microbes from Water Sample (Through Serial Dilution Method).
15	Isolation and Culturing of Microbes from Air (Through Exposure Method).
16	Pure Culture Technique.
17	Pour Plate Technique.
18	Spread Plate Technique.
19	Various Streaking Methods.
20	Maintenance of Pure Culture.
21	Slant Preparation & Sub Culturing of Microbes.
22	Morphological Behaviour of Microbes.
23	Staining Techniques. (A) Gram Staining. (B) Endospore Staining.
24	Study of Growth Pattern of Microbes.
25	Effect of pH, Temperature, Inhibitors and Elicitors on Growth of Microbes.

Module 3: "Hands-on Industrial Training with State of Art Lectures on Basic & Advanced Molecular Biology" (Program Code: CRT-03).

Techniques Details: (For Duration of 30 Days; Fee: 10,000/- + GST)

S. No.	Lab Schedule
1	Working in Molecular Biology Laboratory.
2	General and Safety Instructions.
3	Good Laboratory Practices.
4	Principle and Handling of Laboratory Equipments.
5	Basics of Calculations, Weighing and Measurements.
6	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
7	Process of Sterilization and Decontamination.
8	Extraction and Purification of Genomic DNA from Plants.
9	Electrophoresis of Plant Genomic DNA.
10	Calculation of Yield of DNA per gram of Plant Material.
11	Determination of Contaminants and Concentration of Plant Genomic DNA by Spectrophotometer.
12	Extraction and Purification of Genomic DNA from Microbes.
13	Electrophoresis of Microbial Genomic DNA.
14	Determination of Purity of Microbial Genomic DNA.
15	Determination of Contaminants and Concentration of Microbial Genomic DNA by Spectrophotometer.
16	Extraction and Purification of Plasmid DNA from *E. coli.*

17	Electrophoresis of Plasmid DNA.
18	Determination of Purity of Plasmid DNA.
19	Determination of Contaminants and Concentration of Plasmid DNA by Spectrophotometer.
20	RNA Extraction from Plants.
21	Denaturing Gel Electrophoresis of RNA.
22	Determination of Purity of RNA.
23	SDS-PAGE.
24	Blotting Techniques (Southern/ Northern/ Western).
25	Restriction Digestion of DNA by Restriction Endonucleases.
26	Separation of Digested Fragments by Electrophoresis.
27	Ligation of Digested Fragments into Plasmid.
28	Competent Cell Preparation.
29	Transfer of DNA into *E. coli.*
30	Blue-White Selection of Bacterial Colonies.
31	Polymerase Chain Reaction (PCR).
32	Electrophoresis of PCR Products.
33	**(RT-PCR)**
33-A	Preparation of DNA for RT-qPCR.
33-B	Primer Designing.
33-C	Programming of RT-qPCR.
33-D	Preparation of reaction mixture.
33-E	DNA amplification.
33-F	Data Analysis (C_T Values analysis).

Techniques Details: (For Duration of 15 Days; Fee: 5500/- + GST)

S. No.	Lab Schedule
1	Working in Molecular Biology Laboratory.
2	General and Safety Instructions.
3	Good Laboratory Practices.
4	Principle and Handling of Laboratory Equipments.
5	Basics of Calculations, Weighing and Measurements.
6	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
7	Process of Sterilization and Decontamination.
8	Extraction and Purification of Genomic DNA from Plants.
9	Electrophoresis of Plant Genomic DNA.
10	Calculation of Yield of DNA per gram of Plant Material.
11	Determination of Contaminants and Concentration of Plant Genomic DNA by Spectrophotometer.
12	Extraction and Purification of Genomic DNA from Microbes.
13	Electrophoresis of Microbial Genomic DNA.
14	Determination of Purity of Microbial Genomic DNA.
15	Determination of Contaminants and Concentration of Microbial Genomic DNA by Spectrophotometer.
16	Extraction and Purification of Plasmid DNA from *E. coli*.
17	Electrophoresis of Plasmid DNA.
18	Determination of Purity of Plasmid DNA.
19	Determination of Contaminants and Concentration of Plasmid DNA by

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	Spectrophotometer.
20	Restriction Digestion of DNA by Restriction Endonucleases.
21	Polymerase Chain Reaction (PCR).
22	Electrophoresis of PCR Products.

Module 4: "Hands-on Industrial Training with State of Art Lectures on Basic & Advanced Biochemical Techniques & Proteomics" (Program Code: CRT-04).

Techniques Details: (For Duration of 30 Days; Fee: 8000/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions.
2	Good Laboratory Practices.
3	Principle and Handling of Laboratory Equipments.
4	Basics of Calculations, Weighing and Measurements.
5	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
6	Process of Sterilization and Decontamination.
7	Isolation of Proteins from Plants.
8	Extraction of Total Protein from Microbial Systems.
9	Partial Purification of Plant Proteins by Precipitation Method.
10	Calculation of Yield of Protein per gram of Plant Material by Bradford's Method.
11	Calculation of Yield of Protein per gram of Plant Material by Lowry's Method.
12	SDS-PAGE.
13	Western Blotting for Purified Proteins.
14	Extraction and Estimation of Bioactive Compounds from Various Plants.
15	Determination of Potency of Bioactive Compounds.
16	Extraction of Antibiotics from Active Microbes.
17	Determination of Efficacy and Potency of Antibiotics.
18	Growth Kinetic Studies of Microbes.
19	Fermentation.
20	Downstream Processing (DSP).
21	Salt Precipitation.
22	Dialysis.
23	Solvent Precipitation.
24	Paper Chromatography.
25	Column Chromatography.
26	Thin Layer Chromatography (TLC).

Techniques Details: (For Duration of 15 Days; Fee: 5200/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions.
2	Good Laboratory Practices.
3	Principle and Handling of Laboratory Equipments.
4	Basics of Calculations, Weighing and Measurements.
5	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
6	Process of Sterilization and Decontamination.

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7	Isolation of Proteins from Plants and Microbial Systems.
8	Extraction of Total Protein from Various Parts of Plants.
9	Partial Purification of Plant Proteins by Precipitation Method.
10	Calculation of Yield of Protein per gram of Plant Material by Bradford's Method.
11	SDS-PAGE.
12	Extraction and Estimation of Bioactive Compounds from Various Plants.
13	Determination of Potency of Bioactive Compounds.
14	Solvent Precipitation.
15	Paper Chromatography.
16	Thin Layer Chromatography (TLC).

Module 5: "Hands-on Industrial Training with State of Art Lectures on Enzymology" (Program Code: CRT-05).

Techniques Details: (For Duration of 30 Days; Fee: 8500/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions.
2	Good Laboratory Practices.
3	Principle and Handling of Laboratory Equipments.
4	Basics of Calculations, Weighing and Measurements.
5	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
6	Process of Sterilization and Decontamination.
7	Introduction to Enzymology.
8	Pure Culture Preparation.
9	Screening of Putative Cultures for Enzyme Production.
10	Fermentation (Submerged/Solid State).
11	Downstream Processing (DSP).
12	Extraction of Crude Enzyme.
13	Partial Purification of Enzyme.
14	Precipitation of Enzyme (Salt/Solvent).
15	Dialysis.
16	Characterization of Purified Enzyme.
17	Total Protein Estimation.
18	Bradford's Method.
19	Lowry's Method.
20	Enzyme Assay.
21	Enzyme Kinetics.
22	Effect of pH on Enzyme Activity.
23	Effect of Temperature on Enzyme Activity.
24	Effect of Substrate Concentration on Enzyme Activity.
25	Effect of Activator on Enzyme Activity.
26	Effect of Inhibitor on Enzyme Activity.
27	SDS PAGE.

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Techniques Details: (For Duration of 15 Days; Fee: 5500/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions.
2	Good Laboratory Practices.
3	Principle and Handling of Laboratory Equipments.
4	Basics of Calculations, Weighing and Measurements.
5	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
6	Process of Sterilization and Decontamination.
7	Introduction to Enzymology.
8	Pure Culture Preparation.
9	Screening of Putative Cultures for Enzyme Production.
10	Fermentation (Submerged/Solid State).
11	Downstream Processing (DSP).
12	Extraction of Crude Enzyme.
13	Partial Purification of Enzyme.
14	Precipitation of Enzyme by Solvent Method.
15	Enzyme Assay.
16	Effect of pH on Enzyme Activity.
17	Effect of Temperature on Enzyme Activity.
18	Total Protein Estimation by Bradford's Method.

Module 6: "Hands-on Industrial Training with State of Art Lectures on Recombinant DNA Technology (RDT)" (Program Code: CRT-06).

Techniques Details: (For Duration of 30 Days; Fee: 8500/- + GST)

S. No.	Lab Schedule
1	Working in Molecular Biology Laboratory.
2	General and Safety Instructions.
3	Good Laboratory Practices.
4	Principle and Handling of Laboratory Equipments.
5	Basics of Calculations, Weighing and Measurements.
6	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
7	Process of Sterilization and Decontamination.
8	Extraction and Purification of Genomic DNA from Microbes.
9	Electrophoresis of Microbial Genomic DNA.
10	Determination of Purity of Microbial Genomic DNA.
11	Determination of Contaminants and Concentration of Microbial Genomic DNA by Spectrophotometer.
12	Extraction and Purification of Plasmid DNA from *E. coli.*
13	Electrophoresis of Plasmid DNA.
14	Determination of Purity of Plasmid DNA.
15	Determination of Contaminants and Concentration of Plasmid DNA by Spectrophotometer.
16	Restriction Digestion of Plasmid DNA by Restriction Endonucleases.
17	Separation of Digested Fragments by Electrophoresis.

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18	Ligation of Digested Fragments into Plasmid.
19	Construction of Recombinant DNA Molecule.
20	Transformation of Recombinant Plasmid in *E. coli.*
21	Competent Cell Preparation.
22	Transfer of DNA by Heat-Shock Method.
23	Blue-White Selection of Bacterial Colonies.
24	Gene Expression Study in *E. coli*.
25	Extraction and Purification of Ultra Pure PCR Grade DNA from Plants.
26	Determination of Purity of PCR Grade DNA.
27	Determination of Concentration of DNA & Dilution to Unity for PCR.
28	Optimization of Protocol for PCR.
29	Polymerase Chain Reaction (PCR).
30	Principle, Handling & Precautions of PCR Machine.
31	Electrophoresis of PCR Products.

Module 7: "Hands-on Industrial Training with State of Art Lectures on Basic Biotech Techniques *i.e.* Mixed module" (Program Code: CRT-07).

Techniques Details: (For Duration of 30 Days; Fee: 7500/- + GST)

S. No.	Lab Schedule
	Section-A : Bio-Instrumentations.
1	Introduction to Biotechnology and Allied Fields.
2	Introduction to General Lab Rules and Sterilization Techniques.
3	Handling and Operation of Bio-Instruments such as- Digital Weighing Balance, Micro- controller pH Meter, Digital pH Meter, Autoclave, Centrifuge Machine, Distillation Unit, Bacterial Incubator, Hot Air Oven, Water Bath, Shaker Incubator, BOD Incubator, Micro-Pipettes, Vortex Mixer, Magnetic Stirrer, Hot Plate Stirrer, Microscope, Colorimeter, White Light Transilluminator & Laminar Air Flow.
4	Operating Highly Sophisticated Instruments such as Electrophoresis Units (Horizontal & Vertical), Digital UV-Visible PC based Spectrophotometer, Blotting Apparatus, UV Transilluminator, Thermal Cycler (PCR Machine) & Gel Doc. System.
	Section-B : Industrial Microbiology & Fermentation Technology.
5	Basics of Calculations, Weighing and Measurements.
6	Process of Sterilization and Decontamination.
7	Media Preparation.
8	Pouring & Plugging for Bacterial Cultures.
9	Isolation and Culturing of Microbes from Soil Sample (Through Serial Dilution Method).
10	Isolation and Culturing of Microbes from Water Sample (Through Serial Dilution Method).
11	Isolation and Culturing of Microbes from Air (Through Exposure Method).
12	Pure Culture of Microbes through Streaking Method.
13	Slant Preparation & Sub Culturing of Microbes.
14	Staining Techniques.
15	Fermentation (Submerged & Solid State).
16	Downstream Processing (DSP).

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	Section-C : Molecular Biology & Proteomics.
17	Working in Molecular Biology Laboratory.
18	General and Safety Instructions.
19	Good Laboratory Practices.
20	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
21	LB-Media Preparation, Inoculation and Culturing of *E. coli*.
22	Plasmid Isolation from *E. coli*.
23	DNA Isolation from Plant Sample.
24	Agarose Gel Electrophoresis for Plasmid/Genomic DNA.
25	Restriction Digestion of DNA by Restriction Endonucleases.
26	Isolation of Proteins from Plants and Microbial Systems.
27	Extraction of Total Protein from Various Parts of Plants.
28	Partial Purification of Plant Proteins by Precipitation Method.
29	Total Protein Estimation by Bradford's Method.
30	Paper Chromatography.
31	Thin Layer Chromatography (TLC).

Module 8: "Hands-on Industrial Training with State of Art Lectures on HPLC, PCR & Gel Doc System + RT-PCR (Additional)" (Program Code: CRT-08).

Techniques Details: (For Duration of 15 Days; Fee: 5800/- & 8500/- + GST)

S. No.	(HPLC)
1	Introduction to Separation Techniques.
2	Introduction to Chromatographic Techniques.
3	Types of Chromatographic Techniques.
4	Explanation of Titrimetric Calculations.
5	Introduction to HPLC Components.
6	Types of Pumps and Functions of their Components.
7	Reservoirs and their Uses.
8	Types of Injectors & their Functions.
9	Types of Detectors & their Functions.
10	Types of Mobile Phase to Separate the Compounds.
11	Types of Stationary Phase to Separate the Compounds.
12	Types of Column.
13	Preparation of Mobile Phase to Separate the Compounds.
14	Method Development for the Separation of Unknown Compounds.
15	How to Select the Mobile Phase.
16	How to Select the Stationary Phase.
17	How to Select the Flow Rate.
18	How to Select the Gradient & Isocratic Methods.
19	How to Select the Sample Volume.
20	How to Select the Wave Lengths or Detectors.
21	Sample Preparation.
22	Data Analysis.
23	HPLC Troubleshooting.
	(PCR)
1	Extraction and Purification of Ultra Pure PCR Grade DNA from Plants.

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2	Electrophoresis of Plant Genomic DNA.
3	Calculation of Yield of DNA per gram of Plant Material.
4	Determination of Purity of PCR Grade DNA.
5	Determination of Concentration of DNA & Dilution to Unity for PCR.
6	Optimization of Protocol for PCR.
7	Polymerase Chain Reaction (PCR).
8	Principle, Handling & Precautions of PCR Machine.
9	Electrophoresis of PCR Products.
	(Gel Doc System)
1	Principle, Handling & Precautions of Gel Doc.
2	Composed Components & their Functions.
3	Imaging and Documentation of Nucleic Acid and Protein.
4	Applications of Gel Doc System.
	(RT-PCR)
1	Preparation of DNA for RT-qPCR.
2	Primer Designing.
3	Programming of RT-qPCR.
4	Preparation of reaction mixture.
5	DNA amplification.
6	Data Analysis (C_T Values analysis).

Module 9: "Hands-on Industrial Training with State of Art Lectures on Specialized Biotech Techniques" (Program Code: CRT-09).
(THIS IS ONE OF THE MOST EFFECTIVE AS WELL AS JOB ORIENTED* MODULE)

Techniques Details: (For Duration of 45 Days; Fee: 12,000/- + GST)

S. No.	Lab Schedule
1	Bio-Instrumentation for Wet Lab.
2	Media Preparation.
3	Serial Dilution Method.
4	Pure Culture of Microbes through Streaking Method.
5	Antibiotics Sensitivity Test.
6	Minimum Inhibitory Concentration (MIC) Test.
7	MDR Test.
8	RNA Isolation from Plant Samples.
9	Denaturing Gel Electrophoresis of RNA.
10	Quantitative Analysis of Nucleic Acid.
11	SDS-PAGE.
12	Blotting Techniques (Southern/ Northern/ Western).
13	Extraction and Purification of Plasmid DNA from *E. coli.*
14	Restriction Digestion.
15	Ligation.
16	Competent Cell Preparation.
17	Transformation.
18	Blue-White Screening.
19	Cloning & Gene expression.
20	Extraction and Estimation of Bioactive Compounds from Various Plants.

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21	Extraction of Antibiotics from Active Microbes.
22	Downstream Processing (DSP).
23	Salt Precipitation.
24	Dialysis.
25	**Polymerase Chain Reaction (PCR/Thermal Cycler)**
25-A	Extraction and Purification of Ultra Pure PCR Grade DNA from Plants.
25-B	Electrophoresis of Plant Genomic DNA.
25-C	Calculation of Yield of DNA per gram of Plant Material.
25-D	Determination of Purity of PCR Grade DNA.
25-E	Determination of Concentration of DNA & Dilution to Unity for PCR.
25-F	Optimization of Protocol for PCR.
25-G	Polymerase Chain Reaction (PCR).
25-H	Principle, Handling & Precautions of PCR Machine.
25-I	Electrophoresis of PCR Products.
26	**Gel Documentation System (Gel Doc/Gel Imager)**
26-A	Principle, Handling & Precautions of Gel Doc.
26-B	Composed Components & their Functions.
26-C	Imaging and Documentation of Nucleic Acid and Protein.
26-D	Applications of Gel Doc System.
27	Paper Chromatography.
28	Thin Layer Chromatography (TLC).
29	Column Chromatography.
30	**High Performance Liquid Chromatography (HPLC)**
30-A	Introduction to HPLC Components.
30-B	Types of Pumps and Functions of their Components.
30-C	Reservoirs and their Uses.
30-D	Types of Injectors & their Functions.
30-E	Types of Detectors & their Functions.
30-F	Types of Mobile Phase to Separate the Compounds.
30-G	Types of Stationary Phase to Separate the Compounds.
30-H	Types of Column.
30-I	Preparation of Mobile Phase to Separate the Compounds.
30-J	Method Development for the Separation of Unknown Compounds.
30-K	How to Select the Mobile Phase.
30-L	How to Select the Stationary Phase.
30-M	How to Select the Flow Rate.
30-N	How to Select the Gradient & Isocratic Methods.
30-O	How to Select the Sample Volume.
30-P	How to Select the Wave Lengths or Detectors.
30-Q	Sample Preparation.
30-R	Data Analysis.
30-S	HPLC Troubleshooting.
31	**ELISA Reader**
31-A	Introduction of ELISA.
31-B	Types of ELISA.
31-C	Sample preparation.
31-D	Diagnose of disease with kits.
31-E	Operational steps of ELISA Reader.
31-F	Data analysis.

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Techniques Details: (For Duration of 60 Days*; Fee: 15,000/- + GST)

S. No.	Lab Schedule
1	Bio-Instrumentation for Wet Lab.
2	Working in Research Laboratory.
3	General and Safety Instructions.
4	Good Laboratory Practices.
5	Principle and Handling of Laboratory Equipments.
6	Basics of Calculations, Weighing and Measurements.
7	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
8	Process of Sterilization and Decontamination.
9	Media Preparation.
10	Types of Culture Media.
11	Solid and Liquid Media Preparation.
12	Serial Dilution Method.
13	Pure Culture Technique.
14	Pour Plate Technique.
15	Spread Plate Technique.
16	Various Streaking Methods.
17	Antibiotics Sensitivity Test.
18	Minimum Inhibitory Concentration (MIC) Test.
19	MDR Test.
20	RNA Isolation from Plant Samples.
21	Denaturing Gel Electrophoresis of RNA.
22	Quantitative Analysis of Nucleic Acid.
23	SDS-PAGE.
24	Blotting Techniques (Southern/ Northern/ Western).
25	Extraction and Purification of Plasmid DNA from *E. coli.*
26	Restriction Digestion.
27	Ligation.
28	Competent Cell Preparation.
29	Transformation.
30	Blue-White Screening.
31	Cloning & Gene expression.
32	Extraction and Estimation of Bioactive Compounds from Various Plants.
33	Extraction of Antibiotics from Active Microbes.
34	Downstream Processing (DSP).
35	Salt Precipitation.
36	Dialysis.
37	**Polymerase Chain Reaction (PCR/Thermal Cycler)**
37-A	Extraction and Purification of Ultra Pure PCR Grade DNA from Plants.
37-B	Electrophoresis of Plant Genomic DNA.
37-C	Calculation of Yield of DNA per gram of Plant Material.
37-D	Determination of Purity of PCR Grade DNA.
37-E	Determination of Concentration of DNA & Dilution to Unity for PCR.
37-F	Optimization of Protocol for PCR.
37-G	Polymerase Chain Reaction (PCR).
37-H	Principle, Handling & Precautions of PCR Machine.

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37-I	Electrophoresis of PCR Products.
38	**Gel Documentation System (Gel Doc/Gel Imager)**
38-A	Principle, Handling & Precautions of Gel Doc.
38-B	Composed Components & their Functions.
38-C	Imaging and Documentation of Nucleic Acid and Protein.
38-D	Applications of Gel Doc System.
39	Paper Chromatography.
40	Thin Layer Chromatography (TLC).
41	Column Chromatography.
42	**High Performance Liquid Chromatography (HPLC)**
42-A	Introduction to HPLC Components.
42-B	Types of Pumps and Functions of their Components.
42-C	Reservoirs and their Uses.
42-D	Types of Injectors & their Functions.
42-E	Types of Detectors & their Functions.
42-F	Types of Mobile Phase to Separate the Compounds.
42-G	Types of Stationary Phase to Separate the Compounds.
42-H	Types of Column.
42-I	Preparation of Mobile Phase to Separate the Compounds.
42-J	Method Development for the Separation of Unknown Compounds.
42-K	How to Select the Mobile Phase.
42-L	How to Select the Stationary Phase.
42-M	How to Select the Flow Rate.
42-N	How to Select the Gradient & Isocratic Methods.
42-O	How to Select the Sample Volume.
42-P	How to Select the Wave Lengths or Detectors.
42-Q	Sample Preparation.
42-R	Data Analysis.
42-S	HPLC Troubleshooting.
43	**ELISA Reader**
43-A	Introduction of ELISA.
43-B	Types of ELISA.
43-C	Sample preparation.
43-D	Diagnose of disease with kits.
43-E	Operational steps of ELISA Reader.
43-F	Data analysis.
44	**(RT-PCR)**
44-A	Preparation of DNA for RT-qPCR.
44-B	Primer Designing.
44-C	Programming of RT-qPCR.
44-D	Preparation of reaction mixture.
44-E	DNA amplification.
44-F	Data Analysis (C_T Values analysis).

Module 10: "Hands-on Industrial Training with State of Art Lectures on Bioprocess Engineering/ Bioprocess Technology/ Fermentation Technology/" (Program Code: CRT-10).

(MOST EFFECTIVE MODULE as per INDUSTRIAL DEMAND)

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Techniques Details: (For Duration of 30 Days; Fee: 10,000/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions.
2	Good Laboratory Practices.
3	Principle and Handling of Laboratory Equipments.
4	Basics of Calculations, Weighing and Measurements.
5	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
6	Process of Sterilization and Decontamination.
7	Isolation and Purification of Bacteria from Soil.
8	Screening of Purified Cultures for Amylase Production. (A) Primary Screening (B) Secondary Screening
9	Optimization of Physiochemical Factors for Maximum Production of Amylases. (A) pH (B) Temperature (C) Incubation Time (D) Substrate Concentration (E) Carbon Source (F) Nitrogen Source
10	Introduction to Fermentation Processes.
11	Design of Fermenter & Types.
12	Sterilization of Fermenter. (A) Sterilization of pH probe (B) Sterilization of DO probe (C) Sterilization of culture vessel (D) Sterilization of optimized media (E) Sterilization of connectors and loops (F) Sterilization of syringe
13	Inoculum Development.
14	Instrumentation & Process Control. (A) Connection of pH probe (B) Connection of DO probe (C) Connection of air pump (D) Optimized pH setting (E) Optimized DO setting (F) Optimized temperature setting
15	Production of Amylase. (A) Submerged fermentation (Batch). (B) Solid state fermentation.
16	Downstream Processes. (A) Preparation of Cell Free Extract. (B) Precipitation of Enzyme. (C) Dialysis.
17	Determination of Specific activity. (A) Total activity calculation by DNS Method. (B) Total Protein estimation by Lowry's Method.
18	Characterization of Purified Enzyme. (A) pH

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	(B) Temperature (C) Activators (D) Inhibitors
19	Determination of Molecular Weight of Purified Enzyme by SDS PAGE.

Techniques Details: (For Duration of 15 Days; Fee: 6200/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions.
2	Good Laboratory Practices.
3	Principle and Handling of Laboratory Equipments.
4	Basics of Calculations, Weighing and Measurements.
5	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
6	Process of Sterilization and Decontamination.
7	Isolation and Purification of Bacteria from Soil.
8	Screening of Purified Cultures for Amylase Production. (A) Primary Screening (B) Secondary Screening
9	Introduction to Fermentation Processes.
10	Pre-fermentation studies. (A) Optimization of temperature (B) Optimization of pH
11	Sterilization of Fermenter. (A) Sterilization of pH probe (B) Sterilization of DO probe (C) Sterilization of culture vessel (D) Sterilization of optimized media (E) Sterilization of connectors and loops (F) Sterilization of syringe
12	Inoculum Development.
13	Instrumentation & Process Control. (A) Connection of pH probe (B) Connection of DO probe (C) Connection of air pump (D) Optimized pH setting (E) Optimized DO setting (F) Optimized temperature setting
14	Production of Amylase by submerged fermentation.
15	Determination of Total Enzyme activity.

Module 11: "Hands-on Industrial Training with State of Art Lectures on Genomics & Proteomics" (Program Code: CRT-11).

Techniques Details: (For Duration of 30 Days; Fee: 8500/- + GST)

SL. No	Section A: (Genomics)
	(PCR)
1	Extraction and Purification of Ultra Pure PCR Grade DNA.

2	Electrophoresis of Genomic DNA.
3	Calculation of Yield of DNA.
4	Determination of Purity of PCR Grade DNA.
5	Determination of Concentration of DNA.
6	Preparation of DNA for PCR.
7	Programming of PCR protocol in Thermal Cycler.
8	Preparation of reaction mixture.
9	DNA amplification.
10	Analysis of PCR products, Spectrophotometrically, Electrophoretically.
11	**(Gel Doc System)**
11-A	Principle, Handling & Precautions of Gel Doc.
11-B	Composed Components & their Functions.
11-C	Imaging and Documentation of Nucleic Acid and Protein.
11-D	Applications of Gel Doc System.
	(Cloning)
12	Restriction Digestion of Vector.
13	Insertion of PCR product into vector.
14	Ligation.
15	Preparation of competent cells.
16	Transformation of ligated vector into competent cells.
17	Blue-White screening.
18	Plasmid Isolation.
	Section B: (Proteomics)
19	Fermentation (Submerged & Solid State).
20	Downstream Processing (DSP).
21	Extraction of Crude Enzyme.
22	Partial Purification of Enzyme.
23	Precipitation of Enzyme (Salt & Solvent).
24	Dialysis.
25	Enzyme Assay.
26	Enzyme Kinetics.
26-A	Effect of pH on Enzyme Activity.
26-B	Effect of Temperature on Enzyme Activity.
26-C	Effect of Substrate Concentration on Enzyme Activity.
26-D	Effect of Activator on Enzyme Activity.
26-E	Effect of Inhibitor on Enzyme Activity.
27	SDS PAGE.

Module 12: "Hands-on Industrial Project/Dissertation work with State of Art Lectures" (Program Code: CRT-12).

NOTE: Candidates (CRT-12) will work on an assigned *Live Project* for Option-2 to 5. Projects will be related to following areas-

➢ Genetic Diversity	➢ Molecular Biology
➢ Industrial Microbiology	➢ Enzymology

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➢ Plant metabolites	➢ Antibiotics
➢ Waste Management	➢ Bioremediation
➢ Biochemistry	➢ Genetic Engineering
➢ Forensic Science	➢ Food Technology
➢ Biofertilizer	➢ Nanotechnology
➢ Pharmaceutics & Pharmacology	➢ Herbal Pharmaceutics
➢ Infection Biology	➢ & Other high demand areas.

NOTE: MRD LifeSciences™ provides a platform to all outstanding candidates who are doing Project/Dissertation work in our lab & help them to publish their papers in National & International Scientific Journals based on their findings of Projects.

Publications: A Strong Research Paper Publication Facility (National & International Scientific Journals). Accepted 124, Among 106 Research Papers in International Journals & 8 in National Journals have been already published. To get the pdf, please go through the following link- **http://mrdlifesciences.com/publications.php**

Module IFT: "Hands-on Industrial Training with State of Art Lectures on Basic & Advanced Industrial Food Technology" (Program Code: CRT-IFT).

Techniques Details: (For Duration of 30 Days; Fee: 8500/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions for Working in Food-Tech Lab.
2	Bio-Instrumentation for Food-Tech Lab.
3	Working with Autoclave, Hot-Air Oven, Laminar Air Flow, Microscope and other Food-Tech Instruments.
4	Handling of Micropipettes, Petri plates, Spreaders, Inoculation Loop and other Food-Tech Tools.
5	Media Preparation.
6	Culturing of Microbes.
7	Types of Culture Media.
8	Solid and Liquid Media Preparation.
9	Preparation of Cotton Plug, Plugging for Bacterial Cultures.
10	Sterilization Process (Chemical & Physical Process).
11	Pouring of Media on Plates.
12	Isolation and Preservation of Cultures.
13	Purification of Bacterial Isolates by Streaking Method.
14	Identification of Contaminated Bacteria from Food Sources by Gram Staining Method.
15	Quantification of Microbes: - Sampling and Serial Dilution; Bacterial Counts in Food Products.
16	Microbiological Quality of Milk/ Milk Products.
17	Enumeration and Isolation of E. coli from Processed Meat/ Chicken.
18	Qualitative Analysis of Carbohydrates.
19	Quantitative Analysis of Carbohydrates.

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20	Quantitative Analysis of Protein (Lowry's and Bradford Method).
21	Quantitative Analysis of Lipids (Triglycerides, Cholesterol, Phospholipids, etc.).
22	Determination of Moisture in Spices Powder by Distillation and HAO Method.
23	Determination of Total Fat in Liquid Milk.
24	Determination of Protein Content in Ice-cream.
25	Detection of Adulterants in Edible Oils and Ghee.
26	Detection of Soluble Colour in Spices Powder by TLC.
27	Determination of Vitamin C in Fruit Juices.
28	Determination of Iron Content in Foods.
29	Determination of Lead in Spiced Powder.
30	Estimation of Milk Fat by Gerber Method
31	Preparation and Analysis of Yoghurt.
32	Analysis of Food Products by Column Chromatography.
33	Qualitative and Quantitative Analysis of Food Products by HPLC.

Techniques Details: (For Duration of 15 Days; Fee: 5800/- + GST)

S. No.	Lab Schedule
1	General and Safety Instructions for Working in Food-Tech Lab.
2	Bio-Instrumentation for Food-Tech Lab.
3	Working with Autoclave, Hot-Air Oven, Laminar Air Flow, Microscope and other Food-Tech Instruments.
4	Handling of Micropipettes, Petri plates, Spreaders, Inoculation Loop and other Food-Tech Tools.
5	Media Preparation.
6	Culturing of Microbes.
7	Types of Culture Media.
8	Solid and Liquid Media Preparation.
9	Preparation of Cotton Plug, Plugging for Bacterial Cultures.
10	Sterilization Process (Chemical & Physical Process).
11	Pouring of Media on Plates.
12	Isolation and Preservation of Cultures.
13	Purification of Bacterial Isolates by Streaking Method.
14	Identification of Contaminated Bacteria from Food Sources by Gram Staining Method.
15	Quantification of Microbes: -Sampling and Serial Dilution; Bacterial Counts in Food Products.
16	Microbiological Quality of Milk/ Milk Products.
17	Qualitative Analysis of Carbohydrates.
18	Quantitative Analysis of Carbohydrates.
19	Quantitative Analysis of Protein (Lowry's and Bradford Method).
20	Determination of Protein Content in Ice-cream.
21	Determination of Vitamin C in Fruit Juices.
22	Determination of Lead in Spiced Powder.
23	Preparation and Analysis of Yoghurt.
24	Qualitative and Quantitative Analysis of Food Products by HPLC.

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Module PAA (Pharmacy): "Hands-on Industrial Training with State of Art Lectures in Pharmaceutical & Analytical Analysis" (Program Code: CRT-PAA).

Techniques Details: (For Duration of 45 Days; Fee: 12,000/- + GST)

1	General and Safety Instructions.
2	Good Laboratory Practices.
3	Principle and Handling of Laboratory Equipments.
4	Basics of Calculations, Weighing and Measurements.
5	Preparation of Reagents, Stock Solutions & Methods of Labelling and Storage.
6	Sterilization Techniques (Chemical and Physical Sterilization).
7	Solvent and Buffer Preparation
8	Culture Media Preparation.
9	Antibiotics Sensitivity Test.
10	Minimum Inhibitory Concentration (MIC) Test.
11	Microbial Assay of Antibiotics and Vitamins.
12	Extraction of Bioactive Compound by Solvent Extraction Method.
13	IC50 Calculations.
14	Formation of Herbal Drugs.
15	Phytochemical Analysis.
16	Antibacterial Property of Phytochemicals.
17	Analysis of Normal and Abnormal Urine Sample.
18	Protein Isolation & Purification.
19	SDS-PAGE.
20	Analysis of Protein by Bradford Test (Spectrophotometer/ Colorimeter).
21	Analysis of Protein by Lowry's Test (Spectrophotometer/ Colorimeter).
22	Hemoglobin Estimation by Copper Sulphate Method.
23	Dialysis.
24	Immobilization – Enzyme/Yeast/Bacteria.
25	Formation of Crystals of Salts.
26	Determination of Angle of Repose.
27	Effect of pH on the Solubility of Drug.
28	Formation of Asprin.
29	Solvent Precipitation.
30	Paper Chromatography.
31	Column Chromatography.
32	Thin Layer Chromatography (TLC).
33	**High Performance Liquid Chromatography (HPLC)**
33-A	Introduction to HPLC Components.
33-B	Types of Pumps and Functions of their Components.
33-C	Reservoirs and their Uses.
33-D	Types of Injectors & their Functions.
33-E	Types of Detectors & their Functions.
33-F	Types of Mobile Phase to Separate the Compounds.
33-G	Types of Stationary Phase to Separate the Compounds.
33-H	Types of Column.
33-I	Preparation of Mobile Phase to Separate the Compounds.
33-J	Method Development for the Separation of Unknown Compounds.

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33-K	How to Select the Mobile Phase.
33-L	How to Select the Stationary Phase.
33-M	How to Select the Flow Rate.
33-N	How to Select the Gradient & Isocratic Methods.
33-O	How to Select the Sample Volume.
33-P	How to Select the Wave Lengths or Detectors.
34	Discussions.

Module AG: "Hands-on Industrial Training with State of Art Lectures in Agriculture" (Program Code: CRT-AG).

Techniques Details: (For Duration of 30 Days; Fee: 8500/- + GST)

S. No.	Lab Schedule
1	Working in Agricultural Aspects.
2	General and Safety Instructions.
3	Good Laboratory Practices.
4	Principle and Handling of Laboratory Equipment's.
5	Standardization of Solutions and Reagents.
6	Preparation of Reagents, Stock Solutions and Methods of Labelling and Storage.
7	Process of Sterilization and Decontamination.
8	**Soil, Plant,Water and Seed Testing:-**
(A)	Collection and Preparation of Soil Samples.
(B)	Estimation of pH, EC, Organic Carbon, NPKS, Micronutrients and Exchangeable Sodium in Soil/Water.
(C)	Estimation of Cations and Anions.
(D)	Plant/Seed Sampling and Sample Preparation for Analysis.
(E)	Digestion of Plant Material and Estimation of N, P, K in Plant/Seed.
9	**Bio-pesticides & Bio-fertilizers:-**
(A)	Isolation and Purification of Azospirillum, Azotobacter, Rhizobium, Phosphate-Solubilizers and Cyanobacteria.
(B)	Mass Multiplication and Inoculum Production of Biofertilizers.
10	**Micro Propagation Technologies:-**
(A)	Preparation and Sterilization of Growth Regulators.
(B)	Preparation of Working Media and Experimentation on Determining Optimum Concentration of Growth Regulators.
(C)	Callus Induction and Regeneration of Whole Plants from Different Parts of Plants.
(D)	Media Preparation for Tissue/Ovary Culture, Anther/Ovule Culture.
(E)	Isolation and Purification of Genomic DNA from Plant.
11	**Biochemistry:-**
(A)	Qualitative Test of Sugars & Proteins in Plants.
(B)	Estimation of Reducing and Non reducing in Sugar Cane Juice and Jaggery.
(C)	Quantitative Determination of Protein in Pulses / Oil Seeds.
(D)	Quantitative Determination of Fats and Oils in Pulses / Oil Seeds.
(E)	Estimation of Ca in Plants.
(F)	Experiments on Diffusion, Osmosis and Imbibition.
12	**Microbiology:-**
(A)	Preparation of Nutrient Broth, Czapek-Dox and Richard's Media.

(B)	Enumeration and Measurement of Bacteria and Fungi.
(C)	Study of Microscope and Microscopic Techniques.
(D)	Simple and Gram's Staining of Bacteria.
13	**Entomology:-**
(A)	Dissection of Grasshopper / Cockroach for the Study of Digestive and Reproductive System.
14	**Mushroom Cultivation:-**
(A)	Production of Spawn.
(B)	Cultivation of White Button Mushroom.
(C)	Isolation of Nematodes from Plant.

Techniques Details: (For Duration of 15 Days; Fee: 5200/- + GST)

S. No.	Lab Schedule
1	Working in Agricultural Aspects.
2	General and Safety Instructions.
3	Good Laboratory Practices.
4	Principle and Handling of Laboratory Equipment's.
5	Standardization of Solutions and Reagents.
6	Preparation of Reagents, Stock Solutions and Methods of Labelling and Storage.
7	Process of Sterilization and Decontamination.
8	**Soil Testing:-**
(A)	Collection and Preparation of Soil Samples.
(B)	Estimation of pH, EC, Organic Carbon, NPKS, Micronutrients and Exchangeable Sodium in Soil.
9	**Bio-pesticides & Bio-fertilizers:-**
(A)	Isolation and Purification of Azospirillum/ Azotobacter/ Rhizobium/ Phosphate-Solubilizers and Cyanobacteria.
10	**Micro Propagation Technologies:-**
(A)	Preparation of Working Media and Experimentation on Determining Optimum Concentration of Growth Regulators.
(B)	Isolation and Purification of Genomic DNA from Plant.
11	**Biochemistry:-**
(A)	Qualitative Test of Sugars & Proteins in Plants.
(B)	Estimation of Reducing and Non reducing in Sugar Cane Juice and Jaggery.
(C)	Quantitative Determination of Protein in Pulses / Oil Seeds.
(D)	Quantitative Determination of Fats and Oils in Pulses / Oil Seeds.
(E)	Experiments on Diffusion/ Osmosis/ Imbibition.
12	**Microbiology:-**
(A)	Preparation of Nutrient Broth, Czapek-Dox and Richard's Media.
(B)	Study of Microscope and Microscopic Techniques.
(C)	Simple and Gram's Staining of Bacteria.
13	Mushroom Cultivation.

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Module QA&QC: "Hands-on Industrial Training with State of Art Lectures in Quality Assurance & Quality Control" (Program Code: CRT-QA & QC).

Techniques Details: (For Duration of 30 Days; Fee: 10,000/- + GST)

S. No.	Lab Schedule
1	Orientation and Overview of the Pharmaceuticals Industry.
2	Managing Environmental Health and Safety Compliance.
3	Case Studies on Total Quality Management (TQM).
4	Case Studies on Out of Specifications (OOS).
5	Case Studies on Out of Trend (OOT).
6	Development of Stability Study Protocol.
7	In Process Quality Control Tests for Pharmaceutical Formulations (Tablets, Capsules, Parenterals, Semisolid, etc.).
8	Finished Product Quality Control Tests for Pharmaceutical Formulations (Tablets, Capsules, Parenterals, Semisolid, etc.).
9	Assay of Raw Materials as per Official Monographs.
10	Testing of Related and Foreign Substances in Drugs and Raw Materials.
11	To Carry-out Pre-formulation Study for Tablets, Parenterals.
12	To Study the Effect of pH on the Solubility of Drugs.
13	Quality Control Tests for Primary and Secondary Packaging Materials.
14	Accelerated Stability Studies.
15	Determination of PKa Value of Drugs.
16	Organic Contaminants Residue Analysis by HPLC.
17	Estimation of Metallic Contaminants.
18	Assay of Official Compounds by UV-Visible Spectrophotometry.
19	Interpretation of Given Spectra of IR, NMR and Mass.
20	Identification of Antibiotic Residue by TLC.
21	Equipment Qualification & Validation of Autoclave, Hot Air Oven, Tablet Compression Machine.
22	Validation of An Analytical Method for a Drug.
23	Validation of a Processing Area.
24	Qualification of Analytical Instruments.
25	Cleaning Validation of Equipments.
26	Preparation of Master Formula Record (MFR).
27	Preparation of Batch Manufacturing Record (BMR).
28	Qualification of Pharmaceutical Testing Equipments (Dissolution Testing Apparatus, Friability Apparatus, Disintegration Tester).
29	Check List for Bulk Pharmaceutical Vendors.
30	Check List for Sterile Production Area.
31	Check List for Water for Injection.
32	Good Laboratory Practice (GLP).

Module CBT: "Hands-on Industrial Training with State of Art Lectures on Customized Biotech Techniques" (Program Code: CRT-CBT).

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Techniques Details: (For Duration of One Week/ 7 Days)

A. Bio-Instrumentation (Fee : Rs. 1,800/- + GST) ● Introduction to Biotechnology and Allied Fields. ● Introduction to General Lab Rules and Sterilization Techniques. ● Handling and Operation of Bio-Instruments such as- Digital Weighing Balance, Micro- controller pH Meter, Digital pH Meter, Autoclave, Centrifuge Machine, Distillation Unit, Bacterial Incubator, Hot Air Oven, Water Bath, Shaker Incubator, BOD Incubator, Micro-Pipettes, Vortex Mixer, Magnetic Stirrer, Hot Plate Stirrer, Microscope, Colorimeter, White Light Transilluminator & Laminar Air Flow. ● Operating Highly Sophisticated Instruments such as Electrophoresis Units (Horizontal & Vertical), Digital UV-Visible PC based Spectrophotometer, Blotting Apparatus, UV Transilluminator, Thermal Cycler (PCR Machine) & Gel Doc. System.
B. PCR & Gel Doc (Fee : Rs. 2,000/- + GST) ● Preparation of DNA for PCR ● Programming of PCR protocol in Thermal Cycler ● Preparation of reaction mixture ● DNA amplification ● Analysis of PCR products, Spectrophotometrically, Electrophoretically ● Gel Documentation.
C. ELISA Reader (Fee : Rs. 2,000/- + GST) ● Introduction of ELISA ● Types of ELISA ● Sample preparation ● Diagnose of disease with kits ● Operational steps of ELISA Reader ● Data analysis.
D. Bioprocess Technology (Fee : Rs. 2,000/- + GST) ● Production of target enzyme by shake flask & solid state fermentation ● Extraction of crude enzyme ● Purification of crude enzyme, Salt precipitation, Dialysis ● Assay of purified enzyme.
E. Recombinant DNA Technology (RDT) (Fee : Rs. 2,000/- + GST) ● Restriction of Genomic DNA & Vector ● Insertion of insert into restricted vector ● Ligation ● Preparation of competent cells ● Transformation of ligated vector into competent cells.● Blue-White screening.
F. HPLC (Fee : Rs. 5,200/- + GST) ● Introduction to Chromatographic Techniques & HPLC Components ● Types of Pumps, Injectors, Detectors & their Functions ● Types of Mobile & Stationary Phase to Separate the Compounds ● Types of Column ● Method Development for the Separation of Unknown Compounds ● How to Select the Mobile, Stationary Phase & Flow Rate ● How to Select the Gradient & Isocratic Methods ● How to Select the Sample Volume ● How to Select the Wave Lengths or Detectors ● Sample Preparation ● Data Analysis ● HPLC Troubleshooting.
G. RT-PCR (Fee : Rs. 5,800/- + GST) ● Preparation of DNA for RT-qPCR ● Primer Designing ● Programming of RT-qPCR ● Preparation of reaction mixture ● DNA amplification ● Data Analysis (C_T Values analysis).

Module BI: "Hands-on Industrial Training with State of Art Lectures in Bioinformatics" (Program Code: CRT-BI).

Please download bioinfo training module via following link- http://www.mrdlifesciences.com/module.php#ModuleBI

*****Thanks*****

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