CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY(A), HYDERABAD-500075

1.3.2 Number of value-added courses for imparting transferable and life skills offered during last five years

INDEX AY:2021-2022

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY(A), HYDERABAD-500075

1.3.2 Number of value-added courses for imparting transferable and life skills offered during last five years

INDEX AY:2021-2022

1.3 Curriculum Enrichment 2021-22

List of value added courses completed by BTech Biotechnology students during 2021-22

S.No	Tilte of the course	Code
1	Bio interface Engineering	CBIT/21BT V019
2	Bioreactor Design and Analysis	CBIT/21BT V061
3	Conservation economics	CBIT/21BT V016
4	Emotional Intelligence	CBIT/21BT V058
5	Forest and their management	CBIT/21BT V017
6	Human Molecular Genetics	CBIT/21BT V047
7	Introduction to Environmental Engineering and science	CBIT/21BT V068
8	Maternal infant young child Nutrition	CBIT/21BT V045
9	Metabolic Engineering	CBIT/21BT V039
10	Nanotechnology in Agriculture	CBIT/21BT V051
11	Biomedical Nanotechnology	CBIT/21BT V007
12	Patent Law for Engineers	CBIT/21BT V043
13	Soft Nanotechnology	CBIT/21BT V055

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Title of The Value-Added Course: Bio interface Engineering

No. of enrolled Participants- 2

Duration of the Course: 8 WEEKS

ACADEMIC YEAR:2022

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Gandipet, Hyderabad-500 075.

Name of the value added courses (with 30 or more contact hours) offered	Course code(if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Bio interface Engineering	CBIT/21BTV019	2022	1	**8 WEEKS**	2	2

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Syllabus

Bio interface Engineering

Course Duration: 8 Weeks
Credits: 2

Week 1: Intermolecular Forces

Week 2: Adhesion and Wetting Phenomena

Week 3: Characterization of interfaces

Week 4: Protein-surface interactions

Week 5: Protein Aggregation

Week 6: Cell-surface interactions

Week 7: Surface modification and characterization

Week 8: Surface modification and characterization

Books and references:

1. J. N. Israelachvili, Intermolecular and Surface Forces, 3rd edition, Academic Press, 2011.
2. Willem Norde, Colloids and Interfaces in Life Sciences and Bio nanotechnology, 2nd edition, CRC Press, 2011.
3. W. Adamson, and A. P. Gast, Physical Chemistry of Surfaces, John Wiley, New York, 1997.

HEAD
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List of participants

S.No	Name of the student	Roll No
1	K. Anjana Srija	160118805003
2	M Jahanavi	160118805009

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Dept. of Bio-Technology
Chaitanya Bharathi Institute of Techno
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TITLE OF THE VALUE-ADDED COURSE:

Bioreactor Design and Analysis

No. of enrolled Participants- 1

Duration of the Course: 8 WEEKS

ACADEMIC YEAR:2022

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Chaitanya Bharathi Institute of Techno
Gandipet, Hyderabad-500 075.

Name of the value-added courses (with 30 or more contact hours) offered	Course code(if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Bioreactor Design and Analysis	CBIT/21BT V061	2022	1	**8 WEEKS**	1	1

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Syllabus

Bioreactor Design and Analysis

Course Duration : 8 weeks

Credits : 2

Week 1: Introduction to the course

Week 2: Design of batch bioreactors

Week 3: Design of fed-batch bioreactors

Week 4: Design of continuous mode of bioreactors

Week 5: Mass transfer in bioreactors, Rheology of fermentation broths, Heterogeneous reactions in bioprocesses

Week 6: Heterogeneous reactions in bioprocesses (contd.), Heat transfer in bioreactors

Week 7: Heat transfer in bioreactors (contd.) Scale-up of bioreactors: criteria for scale-up, scale-up parameters

Week 8: Scale-up of bioreactors (contd.), non-ideal reactors: design and analysis

Books and references:

1. Michael L. Shuler and FikretKargi, Bioprocess Engineering: Basic Concepts, Prentice Hall, 1992
2. James M. Lee, Biochemical Engineering, Prentice Hall, 1992
3. Pauline Doran, Bioprocess Engineering Principles, 2nd Edition, Academic Press 2012
4. James E. Bailey and David F. Ollis, Biochemical Engineering Fundamentals, McGraw Hill 1986.
5. S. Liu, Bioprocess Engineering: Kinetics, Biosystems, Sustainability, and Reactor Design, Elsevier, 2016
6. Octave Levenspiel, Chemical Reaction Engineering, Wiley 2016.

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1	A Jahanavi	160118805010

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TITLE OF THE VALUE-ADDED COURSE:

Conservation economics

No. of enrolled Participants- 1

Duration of the Course: 12 WEEKS

ACADEMIC YEAR:2022

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Y Lajasri
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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Conservation economics	CBIT/21BT V016	2022	1	**12 WEEKS**	1	1

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Syllabus

Conservation Economics

Course Duration: 12 Weeks
Credits : 3

Week 1 What is Economics?

Week 2 What is Conservation?

Week 3 Modern impacts necessitating conservation

Week 4 Threats to wildlife

Week 5 How can Economics help?

Week 6 Markets: Places where Economics works

Week 7 Markets, welfare and conservation

Week 8 Public sector and conservation

Week 9 Industrial organisation and conservation

Week 10 Labour market economics and conservation

Week 11 Practical issues in Economics and Conservation

Week 12 Case Studies

Books and references:

1. Economics, Krugman and Wells
2. Economics, Hubbard & O'Brien
3. Principles of Economics, N. Gregory Mankiw
4. Basic Economics, Thomas Sowell

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Title of the value-added course:

Emotional Intelligence

No. of enrolled Participants- 1

Duration of the Course: 8 WEEKS

ACADEMIC YEAR:2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Emotional Intelligence	CBIT/21BTV058	2022	1	**8 WEEKS**	1	1

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Syllabus

Course Duration: 8 weeks

Credits : 2

Week 1: Introduction to emotion, intelligence & wisdom

Week 2: Concept, theory, measurement and applications of intelligence

Week 3: Emotional intelligence: concept, theory and measurements

Week 4: Correlates of emotional intelligence

Week 5: Emotional intelligence, culture, schooling and happiness

Week 6: For enhancing emotional intelligence EQ mapping

Week 7: Managing stress, suicide prevention, through emotional intelligence, spirituality and meditation

Week 8: Application of emotional intelligence at family, school and workplace

Books and references: NIL

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List of participants

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1	Krishna Priya V	160118805014

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Title of the value-added course:

Forest and their management

No. of enrolled Participants- 1

Duration of the Course: 12 WEEKS

ACADEMIC YEAR:2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Forest and their management	CBIT/21BTV017	2022	1	**12 WEEKS**	1	1

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Syllabus

Forests and their management

Course Duration: 12 Weeks
Credits: 3

Week 1: Introduction

Week 2: Basics of silviculture

Week 3: Forest soils

Week 4: Forest mensuration

Week 5: Forest surveying

Week 6: Forest protection

Week 7: Silvicultural management - I

Week 8: Silvicultural management - II

Week 9: Logging and yield

Week 10: Silvicultural practices

Week 11: Newer trends in forestry

Week 12: Revision

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1	K. Anjana Srija	160118805003

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TITLE OF THE VALUE-ADDED COURSE:

Human Molecular Genetics

No. of enrolled Participants- 1

Duration of the Course: 4 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Human Molecular Genetics	CBIT/21BT V047	2022	1	**4 WEEKS**	1	1

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Syllabus

Human Molecular Genetics

Course Duration: 4 Weeks

Credits: 1

Week 1: Fundamentals of central dogma (DNA, RNA and proteins; mutations), Chromosome structure and function (organization; structure-function relationship; chromosome abnormalities).

Week 2: Genes in pedigree (Mendelian pedigree patterns, complications to pedigree patterns), DNA cloning and hybridizationtechniques (vector-based cloning; nuclei acid hybridizations; PCR-based DNA analyses)

Week 3: Mutation and instability of human DNA (mutation and polymorphism; pathogenic mutations, repeat expansions), Molecularpathology (types of mutations; animal models for human disease)

Week 4: Identifying human disease genes (functional cloning versus positional cloning; mutation screening), Complex diseases; The Human Genome and HapMap projects

Books and references:

1. Human Molecular Genetics 4 Tom Strachan, Andrew P. Read Garland Science/Taylor & Francis Group, 2011

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TITLE OF THE VALUE-ADDED COURSE:

Introduction to Environmental Engineering and science

No. of enrolled Participants- 1

Duration of the Course: 12 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Introduction to Environmental Engineering and science	CBIT/21BT V068	2022	1	**12 WEEKS**	1	1

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Syllabus

Introduction to Environmental Engineering and Science –

Fundamental and Sustainability Concepts

Course Duration: 12 weeks

Credits : 3

Week 1: Sustainability Concepts – Innovations and Challenges

Week 2: Environmental Measurements from Different Disciplines

Week 3: Ecology, Population & Environmental Chemistry

Week 4: Physical Process in Environment

Week 5: Environmental Biological Concepts

Week 6: Environmental Risk Assessments with Concepts of EIA and LCA

Week 7: Water – Quantity and Quality

Week 8: Water Treatment Basics

Week 9: Basics of Wastewater Collection, Treatment & Resource Recovery

Week 10: Basics of Solid Waste, Soil and Noise Pollution

Week 11: Basics of Air Pollution Issues – Global and Local

Week 12: Case Studies and Course Wrap-up

Books and references:

1. Introduction to Environmental Engineering and Science by Gilbert M Masters and Wendell P Ela, Paperback: 696 pages, Publisher: Pearson Education India; 3rd edition, ISBN-10:9332549761, ISBN-13: 978-9332549760.
2. Environmental Engineering, by Howard Peavy, Donald Rowe, and George Tchobanoglous, Paperback: 736 pages, Publisher: McGraw Hill Education; ISBN-10: 9351340260,ISBN-13: 978-9351340263.

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1	K. Anjana Srija	160118805003

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TITLE OF THE VALUE-ADDED COURSE:

Maternal infant young child Nutrition

No. of enrolled Participants- 2

Duration of the Course: 12 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Maternal infant young child Nutrition	CBIT/21BT V045	2022	1	**12 WEEKS**	2	2

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Syllabus

Maternal Infant Young Child Nutrition

Course Duration: 12 Weeks
Credits : 3

Week 1: Maternal Infant Young Child Nutrition - Introduction

Week 2: Science of nutrition

Week 3: Types of malnutrition and hidden hunger

Week 4: Importance of first 1,000 days

Week 5: Science of Breastfeeding

Week 6: Cross cradle hold and 45 points of breastfeeding counseling.

Week 7: Other breastfeeding holds

Week 8: Manual expression, storage and feeding of the expressed breastmilk. Nipple/Breast conditions

Week 9: Newborn care and Kangaroo mother care

Week 10: Complementary feeding

Week 11: Maternal Nutrition-pre-pregnancy pregnancy-lactating mothers Adolescent Nutrition

Week 12: Assessment of anthropometric measurement and growth charts - Percentile & Z Score

Books and references: WHO Growth Charts

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1	Nalli Deepika	160118805005
2	Krishna Priya V	160118805014

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TITLE OF THE VALUE-ADDED COURSE:

Metabolic Engineering

No. of enrolled Participants- 1

Duration of the Course: 8 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Metabolic Engineering	CBIT/21BT V039	2022	1	**8 WEEKS**	1	1

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Syllabus

Metabolic Engineering

Course Duration: 8 Weeks
Credits : 2

Week 1: Introduction to Metabolic Engineering, Basic concepts; Scopes and Applications; Metabolism overview _1 (Cellular Transport processes, Fueling Reactions)

Week 2: Cellular Metabolism Overview_2 (Biosynthetic reactions, Polymerization, Growth Energetics); Regulation of Metabolic Pathways

Week 3: Reconstruction of Genome-scale metabolic network

Week 4: Examples of pathway manipulations by metabolic engineering: Ethanol, Aminoacids, antibiotics, vitamines, biopolymers, etc.

Week 5: Examples of pathway manipulations by metabolic engineering: Improvements of cellular properties, Biodegradation,

Week 6: Metabolic Flux Analysis: Flux Balance Analysis (FBA), Flux Variability Analysis, Flux Map

Week 7: Experimental determination of Metabolic Fluxes: Isotope labeled substrate, Isotope mapping Mapping Matrix, Isotope Distribution Vector

Week 8: Application of metabolic Flux Analysis.

Books and references:

1. Metabolic Engineering, Principles and Methodologies; G N Stephanopoulos, A AAristidou, J Nielsen
2. Advances in Biochemical Engineering/Biotechnology; Metabolic Engineering, Volume Editor: Jens Nielsen
3. Systems Metabolic Engineering, Methods and Protocols; H S Alper
4. Metabolic Pathway design, A Practical Guide; P Carbonell

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List of participants

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1	A. Jahnavi	160118805010

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TITLE OF THE VALUE-ADDED COURSE:

Nanotechnology in Agriculture

No. of enrolled Participants- 1

Duration of the Course: 8 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Nanotechnology in Agriculture	CBIT/21BT V051	2022	1	**8 WEEKS**	1	1

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Syllabus

Nanotechnology in Agriculture

Course Duration: 8 weeks

Credits : 2

Week 1: History of agriculture and the role of chemicals in modern agriculture

Week 2: Overview of nanotechnology

Week 3: Application of nanotechnology in modern day agriculture practices I

Week 4: Application of nanotechnology in modern day agriculture practices II

Week 5: Application of nanotechnologies in animal production

Week 6: Nanotechnology and shelf life of agricultural and food products

Week 7: Nanotechnologies for water quality and availability

Week 8: Green nanotechnology and the role of good governance and policies for effective nanotechnology development**.**

Books and references:

1. E-Reference materials will be provided during the course

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List of participants

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1	M. Jahnavi	160118805009

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TITLE OF THE VALUE-ADDED COURSE:

Biomedical Nanotechnology

No. of enrolled Participants- 2

Duration of the Course: 4 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Biomedical Nanotechnology	CBIT/21BT V007	2022	1	**4 WEEKS**	2	2

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Syllabus

Biomedical Nanotechnology

Course Duration: 4 Week

Credits : 1

Week 1: Introduction to nano, Nano-biomimicry, Synthesis of nanomaterials by physical and chemical methods, Synthesis of nanomaterials by biological methods, Characterisation of nanomaterials.
Week 2: DNA nanotechnology, Protein & glyco nanotechnology, Lipid nanotechnology, Bio-nanomachines, Carbon nanotube and its bio-applications.
Week 3: Nanomaterials for cancer diagnosis, Nanomaterials for cancer therapy, Nanotechnology in tissue engineering, Nano artificial cells, Nanotechnology in organ printing.
Week 4: Nanotechnology in point-of-care diagnostics, Nano pharmacology& drug targeting, Cellular uptake mechanisms of nanomaterials, In vitro methods to study antibacterial and anticancer properties of nanomaterials, Nanotoxicology.

Books and references:

1. Malsch, N.H., "Biomedical Nanotechnology", CRC Press. (2005).
2. Mirkin, C.A. and Niemeyer, C.M., "Nanobiotechnology II: More Concepts and Applications", Wiley-VCH. (2007).
3. Kumar, C. S. S. R., Hormes, J. and Leuschner C., "Nanofabrication Towards Biomedical Applications: Techniques, Tools, Applications, and Impact", WILEY -VCH Verlag GmbH & Co. (2005).
4. Lamprecht, A., "Nanotherapeutics: Drug Delivery Concepts in Nanoscience", Pan Stanford Publishing Pte. Ltd. (2009).
5. Jain, K.K., "The Handbook of Nanomedicine", Humana press. (2008).

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List of participants

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1	K. Anjana Srija	160118805003
2	Mohith Arikatla	160118805037

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TITLE OF THE VALUE-ADDED COURSE:

Patent Law for Engineers

No. of enrolled Participants- 1

Duration of the Course: 12 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Patent Law for Engineers	CBIT/21BTV043	2022	1	**12 WEEKS**	1	1

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Syllabus

Patent Law for Engineers and Scientists.

Course Duration: 12 Weeks
Credits : 3

Week 1: Introduction to the Indian Patent System Patent Laws as Concepts; Understanding the Patents Act, 1970; Understanding the Patents Rules, 2003; Preliminary Sections; Preliminary Rules; What's New in the Patents (Amendment) Rules, 2016; Easy way to read the Patents Act and Rules

Week 2:Patentability of Inventions Statutory Exceptions to Patentability; Novelty and Anticipation; Inventive Step; Capable of Industrial Application; Person Skilled in the Art

Week 3:Patent Specification Provisional and Complete Specifications; Structure of a Patent Specification—Title, Abstract, Description, Claims, etc.; Reading a Patent Specification—Fair basis, Enabling Disclosure, Definiteness, Priority; Introduction to Patent Drafting.

Week 4:Patent Prosecution: Patent Applications Patent Application—Who Can Apply, True and First Inventor, How to Make a Patent Application, what to include in a Patent Application, Types of Patent Applications, Patents of Addition, Dating of Application;

Week 5:Patent Prosecution: Publication and Examination - I Publication of Application; Request for Examination; Examination of Application—First Examination Report.

Week 6:Patent Prosecution: Publication and Examination – II Expedited Examination of Application; Search for Anticipation—Procedure, withdrawal of Application; Consideration of Report of Examiner.

Week 7:Patent Prosecution: Powers of Controller Powers of Controller—Examination Stage, Consideration of report by examiner, Refuse or Amend Applications, Division of Applications, Dating of Application, Anticipation, Potential Infringement; Putting Applications in Order; Amendments during Prosecution

Week 8:Patent Prosecution: Opposition Pre-grant opposition; post-grant opposition; Wrongful obtaining of invention; Mention of Inventor; Opposition in General.

Week 9:Patent Prosecution: Practice at the Patent Office- I Secrecy Provisions; Grant of Patents; Rights Conferred by Grant; Rights of Co-Owners; Term of Patent; Restoration of Lapsed Patents;

Week 10:Patent Office and Patent Prosecution, Surrender; Revocation—Grounds for Revocation; Register of Patents, Patent Office and its Establishment; Patent Agents; Use and Acquisition by Government; Penalties.

Week 11:Compulsory Licensing Compulsory Licensing—Working of Patents, Grounds for Grant of Compulsory License, Revocation; Patent Licensing;

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Week 12:Patent Enforcement, International Arrangements and Other Miscellaneous Provisions Intellectual Property Appellate Board; Declaratory Suits, Infringement Suits; International Application—Convention Application, PCT Application, Application Designating India, Multiple Priorities; PCT Timeline; Fees—Application, In Relation to Grant of Patents; Timelines, Application,
Examination, Publication etc.

Books and references

- Feroz Ali, The Law of Patents, LexisNexis
- Ronald D. Slusky, Invention Analysis and Claiming – A Patent Lawyer's Guide, Second Edition, American Bar Association, 2012.
- Feroz Ali, The Touchstone Effect – The Impact of Pre-grant Opposition on Patents, LexisNexis, 2009.

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TITLE OF THE VALUE-ADDED COURSE:

Soft Nanotechnology

No. of enrolled Participants- 2

Duration of the Course: 8 WEEKS

ACADEMIC YEAR: 2022

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Name of the value-added courses (with 30 or more contact hours) offered	Course code (if any)	Year of offering	No. of times offered during the same year	Duration of course in Hours	Number of students enrolled in the year	Number of Students completing the course in the year
Soft Nanotechnology	CBIT/21BT V055	2022	1	**8 WEEKS**	2	2

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Syllabus

Soft Nano Technology

Course Duration: 8 weeks

Credits : 2

Week 1: Introduction to Patterning of Thin Films Application of Nano Patterned Films and Surfaces Basic Concepts of Wetting: Cassie and Wenzel Regimes Basic Concepts of Surface Tension

Week 2: Different Nano Fabrication Regimes including self-assembly Micelle formation

Introduction to Photo Lithography

Week 3: Discussion on Photo Lithography: Photo Resists Spin Coating Exposure Development

Week 4: Nano Imprint Lithography

Week 5: Soft Lithography: Introduction Different Techniques

Week 6: Soft Lithography Techniques

Week 7: Basic Concepts of Atomic Force Microscopy

Week 8: Different Imaging Modes of Atomic Force Microscopy

Books and references:

1. Alternative Lithography", C. M. Sotomayor Torres (Ed.), Kluwer Academic Press, 2003.
2. Creating Micro and Nano Patterns on Polymeric Materials", A del Campo and E. Arzt (Ed), Wiley, 2011.
3. "Micro Fluidics and Micro Scale Transport Process", Suman Chakraborty (Ed), CRC Press, 2013

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List of participants

S. No	Name of the student	Roll No
1	Krishna Priya V	160118805014
2	D Niveditha	160118805018

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SUMMARY REPORT OF VALUE-ADDED COURSES – 2021-22

Course 1: Web Development
Code: CBIT/21ITV001
Duration: 30 Hours (Jan – Apr 2022)

SNO	Registered & completed student Name	Total no. of students registered & completed
1.	Kairamkonda Vaishnavi	08
2.	Sai Teja Gundumalla	
3.	Lanjapally Saikuma	
4.	Adarsh Shetkar	
5.	Akhil Reddy Vancha	
6.	Thodupunuri Laxmi	
7.	Reddy Pavan Dath	
8.	Bharath Kumar Polaboina	

Syllabus:

Introduction to HTML5

In this module we will learn the basics of HTML5. We'll start with instructional videos on how to set up your development environment, go over HTML5 basics like valid document structure, which elements can be included inside other elements and which can not, discuss the meaning and usefulness of HTML5 semantic tags, and go over essential HTML5 tags.

Introduction to CSS3

A lot of people "tinker" with CSS. In this module, we'll take you from the very basics of CSS3 to some fairly advanced concepts like floating and CSS rule conflict resolution. We'll go over the 'box model', background property, etc. We'll finish off the module with learning about Responsive Design using our own CSS code as well as start introducing Twitter Bootstrap with its essential Grid System.

Coding the Static Restaurant Site

Ready for some REAL fun? This module is it! We'll go over some basics of interacting with a client when managing a web site project and then go visit a real client at their place of business (a Chinese restaurant), help the owner figure out what she wants in a site, and get acquainted with the restaurant in general. We'll spend the rest of the module building a real web site for this business from scratch and you'll get to sit next to me and watch as the site comes together.

Introduction to Javascript

What fun would a web site be if there was no functionality to it? In this module, we are going to concentrate on learning the fundamentals of the Javascript language. A lot of even seasoned developers "tinker" with Javascript without really understanding how the language works. That leads to viewing the language as more of a nuisance instead of a powerful tool. That is why we are going to concentrate not only on the "how" but also on the "why", so you are empowered by the Javascript language features, not confused by them. We'll cover just about everything - from common language constructs and Javascript types to objects, functions, arrays, closures, and scope isolation.

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Using Javascript to Build Web Applications

In this module, we are going to take all those newly learned Javascript language skills and learn how to utilize them within the context of a web page. We'll start by learning how to properly manipulate the web page components using the Javascript Document Object Model API. We will then move on to learning one of the most popular ways of serving up data to a web site - Ajax. We'll learn about the protocol that the language of the web speaks in (HTTP), how to set up and handle Ajax requests and responses, as well as how to process JSON data. We'll finish the module by connecting our restaurant web site from Module 3 to a real backend service that will allow us to pull the data for the restaurant menu dynamically from the server without having to reload the entire page.

Course 2: Fundamentals of computer systems
Code: CBIT/21ITV002
Duration: 30 Hours (jan-apr 2022)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Sai Varun Reddy Thota	02
2	Polasani Rohit Reddy	

Syllabus:

Week 1: Introduction to Boolean Logic

Week 2: Introduction to Boolean Algebra

Week 3: Introduction to Sequential Logic

Week 4: Machine Language Specification

Week 5: HACK – A Simple Computer Microarchitecture

Week 6: Assembly Language Fundamentals

Week 7: Introduction to Stack Based Virtual Machine

Week 8: Language and Interpreter for Virtual Machines

Week 9: Introduction to JACK – High Level Language

Week 10: Front-end JACK Compiler

Week 11: Back-end JACK Compiler

Week 12: Introduction to Operating Systems

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Course 3: Java(Basics)
Code: CBIT/21ITV003
Duration: 30 Hours(jan-apr 2022)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Gundumalla Sai Teja	01

Syllabus

Week1 :Overview of Object-Oriented Programming and Java
Week2 :Java Programming Elements
Week3 :Input-Output Handling in Java
Week4 :Encapsulation
Week5 :Inheritance
Week6 :Exception Handling
Week7 :Multithreaded Programming
Week8 :Java Applets and Servlets
Week9 :Java Swing and Abstract Windowing Toolkit (AWT)
Week10 Networking with Java
Week11:Java Object Database Connectivity (ODBC)
Week12:Interface and Packages for Software Development

Books and references

1. Java: The Complete Reference Hebert Schildt, Mc Graw Hill
2. Object-Oriented Programming with C++ and Java Debasis Samanta, Prentice Hall India.

Course 4: Digital marketing agency/start a social media business
Code: CBIT/21ITV004
Duration: 30 Hours (jan-may 2022)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Abhinav stavaru	01

Syllabus:

Week 1:
- Introduction to Marketing
- Consumer Behavior
- Introduction to Digital Marketing

Week 2:3 Topics
- Search Engine Optimization 1
- Search Engine Optimization 2
- Search Engine Optimization 3

Week 3:3 Topics
- Search_Engine_Marketing : Part 1
- Search_Engine_Marketing : Part 2
- Display Advertising

Week 4:4 Topics
- Social Media Marketing
- Social Media Marketing (Word of Mouth)
- Social Media Platforms Part 1
- Social Media Platforms Part 2

Week 5:4 Topics

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- Online Reputation Management
- Mobile Marketing Part 1
- Mobile Marketing Part 2
- Website Planning & Creation

Week 6:4 Topics
- Email Marketing Part 1
- Email Marketing Part 2
- Introduction to E Commerce Part 1
- Introduction to E Commerce Part 2

Week 7:5 Topics
- E-COMMERCE Strategy 1
- E-COMMERCE Strategy 2
- Content Marketing
- Content Creation Process
- Influencer Marketing

Week 8:1 Topic
- Digital Marketing Strategies

Week 9:1 Topic
- Digital Analytics & Measurements

Week 10:2 Topics
- Measuring Campaign Effectiveness
- Attribution Model

Week 11:2 Topics
- Digital Marketing Plan
- Case Studies

Week 12:2 Topics
- New Technologies & Advancement in Digital Marketing
- Review of Digital Marketing Course

Course5: Big data computing

Code: CBIT/21ITV005

Duration: 30 Hours (aug-oct 2021)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Manoj Kumar Palivuri	01

Syllabus:

Week 1: Introduction to Big Data:

Week 2: Introduction to Enabling Technologies for Big Data:

Week 3: Introduction to Big Data Platforms:

Week 4: Introduction to Big Data Storage Platforms for Large Scale Data Storage

Week 5: Introduction to Big Data Streaming Platforms for Fast Data:

Week 6: Introduction to Big Data Applications (Machine Learning):

Week 7: Introduction of Big data Machine learning with Spark:

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Week 8: Introduction to Big Data Applications (Graph Processing):

Course 6: Cyber security

Code: CBIT/21ITV006

Duration: 30 Hours(16-20 May 2022.)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Sathwik Pothunoori	03
2	Shivathmika Pavushetty	
3	Krishna Prasanna	

Syllabus:

Week 1: Introduction to Cyber Space

History of Internet [Dr. Jeetendra Pande, Uttarakhand Open University]
Cyber Crime [Dr. Jeetendra Pande, Uttarakhand Open University]
Information Security [Dr. Jeetendra Pande, Uttarakhand Open University]
Computer Ethics and Security Policies [Dr. Jeetendra Pande, Uttarakhand Open University]
Quiz

Week 2: Choosing the Best Browser according to the requirement and email security

Guidelines to choose web browsers [Mr. Arun Kumar- CISSP]
Securing web browser [Mr. Arun Kumar- CISSP]
Antivirus [Mr. Arun Kumar- CISSP]
Email security [Dr. Ajay Prasad, UPES, Dehradun]
Quiz

Week 3: Guidelines for secure password and wi-fi security

Guidelines for setting up a Secure password [Mr. Arun Kumar- CISSP]
Two-steps authentication [Mr. Arun Kumar- CISSP]
Password Manager [Mr. Arun Kumar- CISSP]
Wi-Fi Security [Dr. Jeetendra Pande]
Quiz

Week 4: Guidelines for social media and basic Windows security

Guidelines for social media security [Dr. V.V. Rao, Scientist- CERT-In]
Tips and best practices for safer Social Networking [Dr. V..V. Rao, Scientist- CERT-In]
Basic Security for Windows [Dr. Jeetendra Pande, Uttarakhand Open University]
User Account Password [Dr. Jeetendra Pande, Uttarakhand Open University]
Quiz

Week 5: Smartphone security guidelines

Introduction to mobile phones [Dr. Jeetendra Pande, Uttarakhand Open University]
Smartphone Security [Dr. Jeetendra Pande, Uttarakhand Open University]
Android Security [Dr. Jeetendra Pande, Uttarakhand Open University]
IOS Security [Dr. Jeetendra Pande, Uttarakhand Open University]
Quiz

Week 6: Cyber Security Initiatives in India

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Counter Cyber Security Initiatives in India
Cyber Security Exercise
Cyber Security Incident Handling
Cyber Security Assurance
Quiz

Week 7: Online Banking, Credit Card and UPI Security
Online Banking Security
Mobile Banking Security
Security of Debit and Credit Card
UPI Security
Quiz

Week 8: Micro ATM, e-wallet and POS Security
Security of Micro ATMs [Dr. Jeetendra Pande, Uttarakhand Open University]
e-wallet Security Guidelines [Dr. Jeetendra Pande, Uttarakhand Open University]
Security Guidelines for Point of Sales(POS) [Dr. Jeetendra Pande, Uttarakhand Open University]
Quiz

Week 9: Social Engineering
Social Engineering [Dr. Jeetendra Pande, Uttarakhand Open University]
Types of Social Engineering [Dr. Jeetendra Pande,Uttarakhand Open University]
How Cyber Criminal Works [Er. Jayash Sharma, Anand Engineering College]
How to prevent for being a victim of Cyber Crime [Er. Jayash Sharma, Anand Engineering College]
Quiz

Week 10: Cyber Security Threat Landscape and Techniques
Cyber Security Threat Landscape [Dr. A Murli Rao, IGNOU]
Emerging Cyber Security Threats [Dr. A Murli Rao, IGNOU]
Cyber Security Techniques [Ms. Tripti Misra and Ms. Shahina Anwaru, Assistant Professor- UPES, Dehradun]
Firewall [Dr. Ajay Prasad, UPES, Dehradun]
Quiz

Week 11: IT Security Act and Misc. Topics
IT Act [Dr. Darpan Anand, Associate Professor- Chandigarh University]
Hackers-Attacker-Countermeasures [Dr. A Murli Rao, Head- Computer Division, IGNOU]
Web Application Security [Dr. A Murli Rao, Head- Computer Division, IGNOU]
Digital Infrastructure Security [Dr. A Murli Rao, Head- Computer Division, IGNOU]
Defensive Programming [Dr. A Murli Rao, Head- Computer Division, IGNOU]
Quiz

Week 12: Information Destroying and Recovery Tools
Recovering from Information Loss [Dr. Jeetendra Pande, Uttarakhand Open University]
Destroying Sensitive Information [Dr. Jeetendra Pande, Uttarakhand Open University]
CCleaner for Windows [Dr. Jeetendra Pande, Uttarakhand Open University]
Quiz

Books and references

1. Introduction to Cyber Security available at http://uou.ac.in/foundation-course
2. Fundamentals of Information Security http://uou.ac.in/progdetail?pid=CEGCS-17
3. Cyber Security Techniques http://uou.ac.in/progdetail?pid=CEGCS-17
4. Cyber Attacks and Counter Measures: User Perspective http://uou.ac.in/progdetail?pid=CEGCS-17
5. Information System http://uou.ac.in/progdetail?pid=CEGCS-17

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Course7: SQL& MySQL for beginner

Code: CBIT/21ITV007

Duration: 30 Hours (jan-2022)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Sathwik Pothunoori	01

Syllabus:

Installing PHP and SQL
Our first technical task is to work through the installation steps including installing a text editor, installing MAMP or XAMPP (or equivalent), creating a MySql Databas
Introduction to Structured Query Language (SQL)
We learn about single table queries and the basic syntax of the SQL language.
Database Design
Covering database design with multiple tables, foreign keys, and the JOIN operation..
Many-To-Many
We learn how to model many-to-many relationships like those needed to represent users, roles, and courses.

Course8: Innovation, business models and entrepreneurship

Code: CBIT/21ITV008

Duration: 30 Hours (Aug-oct-22)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Gopala Sushank	02
2	Bhavana Boda	

Syllabus:

Innovation, Business Models and Entrepreneurship

Analysing the Current Business Scenario, Innovation and Creativity - An Introduction, Innovation in Current Environment, Types of Innovation , School of Innovation. Challenges of Innovation, Steps of Innovation Management, Idea Management System, Divergent Vs Convergent Thinking, Design Thinking and Entrepreneurship.

Experimentation in Innovation Management, Idea Championship, Participation for Innovation, Co-creation for Innovation , Proto typing to Incubation.

What is a Business Model ,Who is an Entrepreneur ,Social Entrepreneurship ,Blue Ocean Strategy-I, Blue Ocean Strategy-II.

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Marketing of Innovation, Technology Innovation Process, Technological Innovation Management Planning, Technological Innovation Management Strategies, Technology Forecasting.

Sustainability Innovation and Entrepreneurship, Innovation Sustainable Conditions, Innovation: Context and Pattern, SME'S strategic involvement in sustainable development, Exploration of business models for material efficiency services. Management of Innovation, creation of IPR ,Management of Innovation, creation of IPR, Types of IPR, Patents and Copyrights, Patents in India.

Business Models and value proposition, Business Model Failure: Reasons and Remedies, Incubators : Business Vs Technology, Managing Investor for Innovation , Future markets and Innovation needs for India.

Course9: Technical support fundamentals

Code: CBIT/21ITV009

Duration: 30 Hours (jul,22)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Manoj Kumar Palivuri	01

Syllabus:

Introduction to IT

Welcome to Technical Support Fundamentals, the first course of the IT Support Professional Certificate! By enrolling in this course, you are taking the first step to kickstarting your career in tech. In the first week of the course, we'll learn about how computers were invented, how they've evolved over time, and how they work today. We will also learn about what an "IT Support Specialist" is and what they do in their job. By the end of this module, you will know how to count like a computer using binary and understand why these calculations are so powerful for society. So let's get started!

Hardware

In the second week of this course, we'll learn about what's inside a computer. We'll learn all about the hardware components or different pieces inside a computer. We'll discover what each component does and how they work together to make a computer function. By the end of this module, you will also know how to build a computer from scratch!

Operating System

In the third week of the course we will become familiar with operating systems. We discuss the operating systems that are most widely used today and learn how an operating system interacts with computer hardware. We will learn about the startup process of an operating system and show you how to install the Windows, Linux and Mac OS X operating systems from scratch. At the end of this module you will interact directly with the Windows and Linux operating systems via the Qwiklabs environment.

Networking

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In the fourth week of this course, we'll learn about computer networking. We'll explore the history of the Internet and what "The Web" actually is. We'll also discuss topics like Internet privacy, security, and what the future of the Internet may look like. You'll also understand why the Internet has limitations even today. By the end of this module, you will know how the Internet works and recognize both the positive and negative impacts the Internet has had on the world.

Software

In the fifth week of this course, we'll learn about computer software. We'll learn about what software actually is and the different types of software you may encounter as an IT Support Specialist. We'll also explore how to manage software and revisit the concept of "abstraction." By the end of this module, you'll use the Qwiklabs environment to install, update and remove software on both Windows and Linux operating systems.

Troubleshooting

Congratulations, you've made it to the last week of the course! In the final week, we'll learn about the importance of troubleshooting and customer support. We'll go through some real-world scenarios that you might encounter at a Help Desk or Desktop Support role. We'll learn why empathizing with a user is super important when working in a tech role. Finally, we'll learn why writing documentation is an important aspect of any IT role. By the end of this module, you will utilize soft skills and write documentation to communicate with others.

Course 10: Problem solving using computational thinking

Code: CBIT/21ITV010

Duration: 30 Hours (jun-22)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Harsha Vardhan K	01

Syllabus:

Pillars of Computational Thinking

Computational thinking is an approach to solving problems using concepts and ideas from computer science, and expressing solutions to those problems so that they can be run on a computer. As computing becomes more and more prevalent in all aspects of modern society -- not just in software development and engineering, but in business, the humanities, and even everyday life -- understanding how to use computational thinking to solve real-world problems is a key skill in the 21st century.

Computational thinking is built on four pillars: decomposition, pattern recognition, data representation and abstraction, and algorithms. This module introduces you to the four pillars of computational thinking and shows how they can be applied as part of the problem solving process.

Expressing and Analysing Algorithms

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When we use computational thinking to solve a problem, what we're really doing is developing an algorithm: a step-by-step series of instructions. Whether it's a small task like scheduling meetings, or a large task like mapping the planet, the ability to develop and describe algorithms is crucial to the problem-solving process based on computational thinking. This module will introduce you to some common algorithms, as well as some general approaches to developing algorithms yourself. These approaches will be useful when you're looking not just for any answer to a problem, but the best answer. After completing this module, you will be able to evaluate an algorithm and analyze how its performance is affected by the size of the input so that you can choose the best algorithm for the problem you're trying to solve.

Fundamental Operations of a Modern Computer

Computational thinking is a problem-solving process in which the last step is expressing the solution so that it can be executed on a computer. However, before we are able to write a program to implement an algorithm, we must understand what the computer is capable of doing -- in particular, how it executes instructions and how it uses data. This module describes the inner workings of a modern computer and its fundamental operations. Then it introduces you to a way of expressing algorithms known as pseudocode, which will help you implement your solution using a programming language.

Applied Computational Thinking Using Python

Writing a program is the last step of the computational thinking process. It's the act of expressing an algorithm using a syntax that the computer can understand. This module introduces you to the Python programming language and its core features. Even if you have never written a program before -- or never even considered it -- after completing this module, you will be able to write simple Python programs that allow you to express your algorithms to a computer as part of a problem-solving process based on computational thinking.

Course11: Getting started in google analytics
Code: CBIT/21ITV011

Duration: 30 Hours (jul-22)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Manoj Kumar Paliviri	01

Syllabus:

1. Create a Google Analytics account and connect your website.
2. Add a View to eliminate internal traffic.
3. Understand 'The Funnel' and how it is used in Google Analytics.
4. Explore the various user-defined parameters in the Audience Overview report.
5. Interpret the data from various Audience reports to make effective decisions.
6. Interpret the data from Acquisition and Behavior reports to make effective decisions.

Course12: Artificial intelligence: ethics & societal challenges

Code: CBIT/21ITV012

Duration: 30 Hours

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SNO	Registered & completed student Name	Total no. of students registered & completed
1	G Sai Varun Yadav	01

Syllabus:

Week 0 : Introduction: History, Can Machines think?, Turing Test, Winograd Schema Challenge, Language and Thought, Wheels & Gears

Week 1 : Introduction: Philosophy, Mind, Reasoning, Computation, Dartmouth Conference, The Chess Saga, Epiphenomena

Week 2 : State Space Search: Depth First Search, Breadth First Search, Depth First Iterative Deepening

Week 3 : Heuristic Search: Best First Search, Hill Climbing, Solution Space, TSP, Escaping Local Optima, Stochastic Local Search

Week 4 : Population Based Methods: Genetic Algorithms, SAT, TSP, emergent Systems, Ant Colony Optimization

Week 5 : Finding Optimal Paths: Branch & Bound, A*, Admissibility of A*, Informed Heuristic Functions

Week 6 : Space Saving Versions of A*: Weighted A*, IDA*, RBFS, Monotone Condition, Sequence Alignment, DCFS, SMGS, Beam Stack Search

Week 7 : Game Playing: Game Theory, Board Games and Game Trees, Algorithm Minimax, AlphaBeta and SSS*

Week 8 : Automated Planning: Domain Independent Planning, Blocks World, Forward &Backward Search, Goal Stack Planning, Plan Space Planning

Week 9 : Problem Decomposition: Means Ends Analysis, Algorithm Graphplan, Algorithm AO*

Week 10 : Rule Based Expert Systems: Production Systems, Inference Engine, Match-Resolve-Execute, Rete Net

Week 11 : Deduction as Search: Logic, Soundness, Completeness, First Order Logic, Forward Chaining, Backward Chaining

Week 12 : Constraint Processing: CSPs, Consistency Based Diagnosis, Algorithm Backtracking, Arc Consistency, Algorithm Forward Checking

Course 13: SQL for data science

Code: CBIT/21ITV013

Duration: 30 Hours (feb 22)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Manoj Kumar Paliviri	01

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Syllabus:

Getting Started and Selecting & Retrieving Data with SQL

In this module, you will be able to define SQL and discuss how SQL differs from other computer languages. You will be able to compare and contrast the roles of a database administrator and a data scientist, and explain the differences between one-to-one, one-to-many, and many-to-many relationships with databases. You will be able to use the SELECT statement and talk about some basic syntax rules. You will be able to add comments in your code and synthesize its importance.

Filtering, Sorting, and Calculating Data with SQL

In this module, you will be able to use several more new clauses and operators including WHERE, BETWEEN, IN, OR, NOT, LIKE, ORDER BY, and GROUP BY. You will be able to use the wildcard function to search for more specific or parts of records, including their advantages and disadvantages, and how best to use them. You will be able to discuss how to use basic math operators, as well as aggregate functions like AVERAGE, COUNT, MAX, MIN, and others to begin analyzing our data.

Subqueries and Joins in SQL

In this module, you will be able to discuss subqueries, including their advantages and disadvantages, and when to use them. You will be able to recall the concept of a key field and discuss how these help us link data together with JOINs. You will be able to identify and define several types of JOINs, including the Cartesian join, an inner join, left and right joins, full outer joins, and a self join. You will be able to use aliases and pre-qualifiers to make your SQL code cleaner and efficient.

Modifying and Analyzing Data with SQL

In this module, you will be able to discuss how to modify strings by concatenating, trimming, changing the case, and using the substring function. You will be able to discuss the date and time strings specifically. You will be able to use case statements and finish this module by discussing data governance and profiling. You will also be able to apply fundamental principles when using SQL for data science. You'll be able to use tips and tricks to apply SQL in a data science context.

Course14: Getting started with AWS machine learning

Code: CBIT/21ITV014

Duration: 30 Hours (jul 21)

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Manoj Kumar Paliviri	01

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Syllabus:

Introduction to Machine Learning

Machine Learning Pipeline

Amazon AI Services: Computer Vision

Amazon AI Services: NLP

Introduction to Amazon SageMaker

Course15: Game theory

Code: CBIT/21ITV015

Duration: 30 Hours –jun22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Sarath Chandra Kaluvuru	01

Syllabus:

Week 1: Normal Games and Nash Equilibrium.

Week 2: Mixed Strategies.

Week 3: Sequential Games.

Week 4: Games with Incomplete Information.

Week 5: Auctions

Week 6: Repeated Games

Week 7: Cooperative Games

Week 8: Bargaining and Negotiation

Course16: Google cloud digital Leader Training

Code: CBIT/21ITV016

Duration: 30 Hours jul-22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Varun Sing	01

Syllabus:

Week 1: Introduction to the course, So, What's the Cloud anyway? Start with a Solid Platform

Week 2: Use GCP to build your Apps

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Week 3: Where do I store this stuff?

Week 4: There's an API for that! You can't secure the Cloud right?

Week 5: It helps to network!

Week 6: It helps to network (continued)

Week 7: Let Google keep an eye on things. You have the data, but what are you doing with it?

Week 8: Let machines do the work

Course17: Java programming

Code: CBIT/21ITV017

Duration: 30 Hours sep 21

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Kontemukkula Nikhith	01

Syllabus:

Week 1 : Overview of Object-Oriented Programming and Java
Week 2 : Java Programming Elements
Week 3 : Input-Output Handling in Java
Week 4 : Encapsulation
Week 5 : Inheritance
Week 6 : Exception Handling
Week 7 : Multithreaded Programming
Week 8 : Java Applets and Servlets
Week 9 : Java Swing and Abstract Windowing Toolkit (AWT)
Week 10 : Networking with Java
Week 11: Java Object Database Connectivity (ODBC)
Week 12: Interface and Packages for Software Development

Course18: Introduction to C

Code: CBIT/21ITV018

Duration: 30 Hours –sep 21

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Kontemukkula Nikhitha	01

Week 1 : Introduction, Straight-Line Code, Variables, Operators, Expressions and Conditionals.
Week 2 : Loops
Week 3 : Functions
Week 4 : One-Dimensional Arrays and Pointers
Week 5 : Recursion
Week 6 : Multi-dimensional Arrays, Linked Lists

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Week 7 : Operating on Files
Week 8 : Organizing C projects, working with multiple source directories, makefiles.

Course19: Engineering virtual program

Code: CBIT/21ITV019

Duration: 30 Hours –jun-22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Harshitha Perumalla	01

Course20: Programming with C and C++
Code: CBIT/21ITV020

Duration: 30 Hours –dec 21

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Harshitha Perumalla	01

Syllabus:
Week 1: Programming in C++ is Fun.
Week 2: C++ as Better C.
Week 3: OOP in C++.
Week 4: OOP in C++.
Week 5: Inheritance.
Week 6: Polymorphism.
Week 7: Type Casting.
Week 8: Exceptions and Templates.
Week 9: Streams and STL.
Week 10: Modern C++.
Week 11: Lambda and Concurrency.
Week 12: Move, Rvalue and STL Containers.
Study webs of active learning for young aspiring minds

Course21: Internship and job preparation

Code: CBIT/21ITV021

Duration: 30 Hours –jan 22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Manoj Kumar Paliviri	02
2	Internship & Job Preparation	

Course22: Study webs of active learning for young aspiring minds

Code: CBIT/21ITV022

Duration: 30 Hours

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SNO	Registered & completed student Name	Total no. of students registered & completed
1	Pavan Sai Vamsi	01

Course 23: AI for everyone

Code: CBIT 21ITV023

Duration: 30 Hours –apr 22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Nithyanand Reddy Pagidi	01

Syllabus:

Week 1: Introduction: Philosophy of AI. Definitions

Week 2: Modeling a Problem as Search Problem. Uninformed Search

Week 3: Heuristic Search. Domain Relaxations

Week 4: Local Search. Genetic Algorithms

Week 5: Adversarial Search

Week 6: Constraint Satisfaction

Week 7: Propositional Logic & Satisfiability

Week 8: Uncertainty in AI. Bayesian Networks

Week 9: Bayesian Networks Learning & Inference. Decision Theory

Week 10: Markov Decision Processes

Week 11: Reinforcement Learning

Week 12: Introduction to Deep Learning & Deep RL

Course 24: Advanced python programming

Code: CBIT 21ITV024

Duration: 30 Hours apr-may 22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	P Nityanand	01

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Syllabus:

Week 01 : Informal introduction to programming, algorithms and data structures via gcd, Downloading and installing Python, gcd in Python: variables, operations, control flow - assignments, condition-als. loops, functions.

Week 02 : Python: types, expressions, strings, lists, tuples | Python memory model: names, mutable and immutable values | List operations: slices etc| Binary search | Inductive function definitions: numerical and structural induction | Elementary inductive sorting: selection and insertion sort | In-place sorting.

Week 03 : Basic algorithmic analysis: input size, asymptotic, complexity,O() notation | Arrays vs lists | Merge sort | Quicksort | Stable sorting.

Week 04 : Dictionaries | More on Python functions: optional arguments, default values | Passing functions as arguments | Higher order functions on lists: map, lter, list comprehension.

Week 05 : Exception handling | Basic input/output | Handling files | String processing.

Week 06 : Backtracking: N Queens, recording all solutions | Scope in Python: local, global, nonlocal names | Nested functions | Data structures: stack, queue | Heaps.

Week 07 : Abstract datatypes | Classes and objects in Python | "Linked" lists: find, insert, delete | Binary search trees: find. insert, delete | Height-balanced binary search trees.

Week 08 : Efficient evaluation of recursive definitions: memoization | Dynamic programming: examples | Other programming languages: C and manual memory management | Other programming paradigms: functional programming

Course25: Statistics for data science

Code: CBIT/21ITV025

Duration: 30 Hours nov 21

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Manoj Kumar Paliviri	01

Syllabus:

1: Course intro: Regression, classification, survival, unsupervised learning, empirical applications

2: General techniques: K-nearest neighbour, Bias-variance trade off, overfitting

3: Linear regression- Multiple linear regression, dummy variable, interactions, hypothesis testing

4: Linear models for classification- logistic regression, LDA, QDA, ROC curve

5: Resampling techniques: Cross validation, Bootstrap

6: Model selection: AIC, BIC, Regularisation (lasso +ridge), Stepwise regression

7: Tree-based methods: Trees, random forest, boosting

8: Bayesian inference: prior, posterior, map, regularisation in Bayesian setup, intro to mcmc

9: Unsupervised learning: PCA, K-means clustering, hierarchical clustering, Gaussian mixture model

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10: Survival analysis: Kaplan Maier plot, Cox proportional hazard model, log rank test

11: Interactive session

12: Neural network

Course 26: Design and Analysis of Algorithms

Code: CBIT/21ITV026

Duration: 30 Hours aug-oct 21

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Padaganti Vaishnavi	01

Syllabus:

Week 1 Module 1: Introduction | Module 2: Examples and motivation | Module 3: Examples and motivation | Module 4: Asymptotic complexity: informal concepts | Module 5: Asymptotic complexity: formal notation | Module 6: Asymptotic complexity: examples | Assignments MCQ/Fill in blanks (unique answer)

Week 2 Module 1: Searching in list: binary search | Module 2: Sorting: insertion sort | Module 3: Sorting: selection sort | Module 4: Sorting: merge sort | Module 5: Sorting: quicksort | Module 6: Sorting: stability and other issues | Assignments MCQ/Fill in blanks, programming assignment

Week 3 Module 1: Graphs: Motivation | Module 2: Graph exploration: BFS | Module 3: Graph exploration: DFS | Module 4: DFS numbering and applications | Module 5: Directed acyclic graphs | Module 6: Directed acyclic graphs | Assignments MCQ/Fill in blanks, programming assignment

Week 4 Module 1: Shortest paths: unweighted and weighted | Module 2: Single source shortest paths: Dijkstra | Module 3: Single source shortest paths: Dijkstra | Module 4: Minimum cost spanning trees: Prim's algorithm | Module 5: Minimum cost spanning trees: Kruskal's Algorithm | Module 6: Union-Find data structure | Assignments MCQ/Fill in blanks, programming assignment

Week 5 Module 1: Divide and conquer: counting inversions | Module 2: Divide and conquer: nearest pair of points | Module 3: Priority queues, heaps | Module 4: Priority queues, heaps | Module 5: Dijstra/Prims revisited using heaps | Module 6: Search Trees: Introduction | Assignments MCQ/Fill in blanks, programming assignment

Week 6 Module 1: Search Trees: Traversals, insertions, deletions | Module 2: Search Trees: Balancing | Module 3: Greedy : Interval scheduling | Module 4: Greedy : Proof strategies | Module 5: Greedy : Huffman coding | Module 6: Dynamic Programming: weighted interval scheduling | Assignments MCQ/Fill in blanks, programming assignment

Week 7 Module 1: Dynamic Programming: memoization | Module 2: Dynamic Programming: edit distance | Module 3: Dynamic Programming: longest ascending subsequence | Module 4: Dynamic Programming: matrix multiplication | Module 5: Dynamic Programming: shortest paths: Bellman Ford | Module 6: Dynamic Programming: shortest paths: Floyd Warshall | Assignments MCQ/Fill in blanks, programming assignment

Week 8 Module 1: Intractability: NP completeness | Module 2: Intractability: reductions | Module 3: Intractability: examples | Module 4: Intractability: more examples | Module 5: Misc topics | Module 6: Misc topics |

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Course27: Online Privacy

Code: CBIT/21ITV027

Duration: 30 Hours

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Vinoothna Dudam	01

Syllabus:

Week 1: Introduction; Various Privacy breaches, and its effects; Why Online privacy has become an important topic?; Privacy cases / litigations, and outcomes
Week 2: Definition & forms of Privacy; Difference between data security & data privacy; Trade-off between privacy and freedom of speech; Trade-off between privacy and utility; Contextual integrity theory and applications
Week 3: Privacy Attitudes & Awareness
Week 4: Social Media Privacy
Week 5: Social Media Privacy
Week 6: Data anonymity:K-anonymity, L-diversity, T-closeness, Differential privacy
Week 7: Image & Location privacy; Ethics about studying online privacy:Institutional Review Board / Ethics Committee; Conducting {User, Lab, and Online} Studies; Privacy from 3rd party trackers & advertisers
Week 8: Image & Location privacy; Ethics about studying online privacy:Institutional Review Board / Ethics Committee; Conducting {User, Lab, and Online} Studies; Privacy from 3rd party trackers & advertisers
Week 9: User behaviour & Usable privacy; Privacy in National projects like Aadhaar, NATGRID; Differential privacy in US census, Apple; PDP Bill / Srikrishna commission report / GDPR:Implications
Week 10: User behaviour & Usable privacy; Privacy in National projects like Aadhaar, NATGRID; Differential privacy in US census, Apple; PDP Bill / Srikrishna commission report / GDPR:Implications
Week 11: Privacy policies:Length, readability, legality, cost of reading privacy polcies; Nutrition labels of Privacy policies:How to make the policies simple and user friendly
Week 12: Privacy policies:Length, readability, legality, cost of reading privacy polcies; Nutrition labels of Privacy policies:How to make the policies simple and user friendly

Course28: Ethical Hacking

Code: CBIT/21ITV028

Duration: 30 Hours jan-apr 22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Aluvala Keerthi	01

Syllabus:

Week 1 : Introduction to ethical hacking. Fundamentals of computer networking. TCP/IP protocol stack.

Week 2 : IP addressing and routing. Routing protocols.

Week 3 : Introduction to network security. Information gathering: reconnaissance, scanning, etc. Week 4 : Vulnerability assessment: OpenVAS, Nessus, etc. System hacking: password cracking, penetration testing, etc.

Week 5 : Social engineering attacks. Malware threats, penetration testing by creating backdoors. Week 6 : Introduction to cryptography, private-key encryption, public-key encryption.

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Week 7 : Key exchange protocols, cryptographic hash functions, applications.

Week 8 : Steganography, biometric authentication, lightweight cryptographic algorithms.

Week 9 : Sniffing: Wireshark, ARP poisoning, DNS poisoning. Hacking wireless networks, Denial of service attacks.

Week 10 : Elements of hardware security: side-channel attacks, physical unclonable functions.

Week 11 : Hacking web applications: vulnerability assessment, SQL injection, cross-site scripting.

Week 12 : Case studies: various attacks scenarios and their remedies.

Course29: Introduction to Machine learning

Code: CBIT/21ITV029

Duration: 30 Hours jan-apr 22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Vinoothna Dudam	01

Syllabus:

Week 0: Probability Theory, Linear Algebra, Convex Optimization - (Recap)

Week 1: Introduction: Statistical Decision Theory - Regression, Classification, Bias Variance

Week 2: Linear Regression, Multivariate Regression, Subset Selection, Shrinkage Methods, Principal Component Regression, Partial Least squares

Week 3: Linear Classification, Logistic Regression, Linear Discriminant Analysis

Week 4: Perceptron, Support Vector Machines

Week 5: Neural Networks - Introduction, Early Models, Perceptron Learning, Backpropagation, Initialization,Training & Validation, Parameter Estimation - MLE, MAP, Bayesian Estimation
Week 6: Decision Trees, Regression Trees, Stopping Criterion & Pruning loss functions, Categorical Attributes, Multiway Splits, Missing Values, Decision Trees - Instability Evaluation Measures
Week 7: Bootstrapping & Cross Validation, Class Evaluation Measures, ROC curve, MDL, Ensemble Methods - Bagging, Committee Machines and Stacking, Boosting

Week 8: Gradient Boosting, Random Forests, Multi-class Classification, Naive Bayes, Bayesian Networks

Week 9: Undirected Graphical Models, HMM, Variable Elimination, Belief Propagation

Week 10: Partitional Clustering, Hierarchical Clustering, Birch Algorithm, CURE Algorithm, Density-based Clustering

Week 11: Gaussian Mixture Models, Expectation Maximization

Week 12: Learning Theory, Introduction to Reinforcement Learning, Optional videos (RL framework, TD learning, Solution Methods, Applications)

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Course30: Data Science for Engineers

Code: CBIT/21ITV030

Duration: 30 Hours Feb 22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	Aluvala Keerthi	01

Syllabus:

Week 1: Course philosophy and introduction to R
Week 2: Linear algebra for data science
Algebraic view – vectors, matrices, product of matrix & vector, rank, null space, solution of over-determined set of equations and pseudo-inverse)
Geometric view – vectors, distance, projections, eigenvalue decomposition
Week 3: Statistics (descriptive statistics, notion of probability, distributions, mean, variance, covariance, covariance matrix, understanding univariate and multivariate normal distributions, introduction to hypothesis testing, confidence interval for estimates)
Week 4: Optimization
Week 5:

1. Optimization
2. Typology of data science problems and a solution framework

Week 6:

1. Simple linear regression and verifying assumptions used in linear regression
2. Multivariate linear regression, model assessment, assessing importance of different variables, subset selection

Week 7: Classification using logistic regression
Week 8: Classification using kNN and k-means clustering

BOOKS AND REFERENCES:

- Introduction To Linear Algebra – By Gilbert Strang
- Applied Statistics And Probability For Engineers – By Douglas Montgomery

Course31: Social Networks

Code: CBIT/21ITV031

Duration: 30 Hours

SNO	Registered & completed student Name	Total no. of students registered & completed
1	SKM Aqeel	01

Syllabus:

Week 1: Introduction

Week 2: Handling Real-world Network Datasets

Week 3: Strength of Weak Ties

Week 4: Strong and Weak Relationships (Continued) & Homophily

Week 5: Homophily Continued and +Ve / -Ve Relationships

Week 6: Link Analysis

Week 7: Cascading Behaviour in Networks

Week 8: Link Analysis (Continued)

Week 9: Power Laws and Rich-Get-Richer Phenomena

Week 10: Power law (contd..) and Epidemics

Week 11: Small World Phenomenon

Week 12: Pseudocore (How to go viral on web)

Course32: Cloud Computing

Code: CBIT/21ITV032

Duration: 30 Hours jan-apr 22

SNO	Registered & completed student Name	Total no. of students registered & completed
1	SKM Aqeel	01

Syllabus:

Week 1: Introduction to Cloud Computing

Week 2: Cloud Computing Architecture

Week 3: Service Management in Cloud Computing

Week 4: Data Management in Cloud Computing

Week 5: Resource Management in Cloud

Week 6: Cloud Security

Week 7: Open Source and Commercial Clouds, Cloud Simulator

Week 8: Research trend in Cloud Computing, Fog Computing

Week 9: VM Resource Allocation, Management and Monitoring

Week 10: Cloud-Fog-Edge enabled Analytics

Week 11: Serverless Computing and FaaS Model

Week 12: Case Studies and Recent Advancements

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