INVERTIS
UNIVERSITY BAREILLY
BUILDING VIBRANT PERSONALITIES

VALUE ADDED COURSES

NAAC CRITERIA 1.3.2
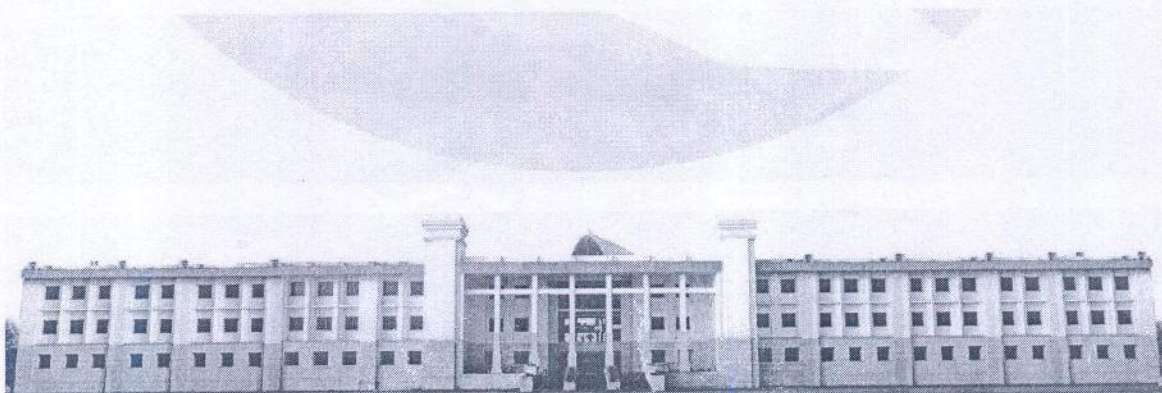
INVERTIS UNIVERSITY

Department of Education

ONLINE TEACHING TOOLS AND TECHNOLOGY

CourseCode:VAPE101   **ContactHours:60**

COURSE OBJECTIVE:

1. Explore different online tools that can be incorporated in theclassroom
2. Examine the uses of the online tools for both teacher-led and student driven activities
3. To inculcate knowledge on the usage of computer application tools in office
4. Communicate clearly and express yourself creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to your goals.
5. Compare, contrast, and evaluate different technologies, tools, and applications.

Course Outline:
Unit I. Computer Application Tools/ Practicals:

- Inculcate knowledge on the usage of computer application tools in office, provide hands on training, developing skills in computer application
- Create awareness, Authentication– Applications,
- Electronic Mail Security, IP Security, Web Security
- E- Tools and Techniques for Research.

Unit II. Skill Enhancement Course :
- Internet: Meaning- Reasons for the growth- features- importance- objectives- types.
- Online Courses, develop online working experience

Unit III: Fundamentals Of Applications :
- Meaning - Nature - Features of Android App
- Application of Android App in Education, Advantages of Android App
- Designing and Development of Android App, Standards of Android App
- Android App Tools for Teaching - Android App in Evaluation.

Unit IV: E-Learning :
- Electronic Learning - Meaning - Nature - Features of E-Learning
- Designing and Development of E-content
- Re-usability of E-content - E-content Tools - Graphics,
- Audio and Video-Creating and Editing - Visual Understanding Environment (VUE).

COURSE OUTCOMES:
After completing this course students will be able to:
- Skill to perform power point presentation.
- Skill to create web page.
- Skill to work on different Application on Android version and window based.

Registrar
Invertis University
Bareilly

INVERTIS UNIVERSITY

Department of Education

MORAL VALUES AND ETHICS

Course Code: VAPE201   **Contact Hours: 60**

COURSE OBJECTIVE:

This introductory course input is intended

1. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings

2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way

3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Thus, this course is intended to provide a much needed orientational input in value education to the young enquiring minds.

UNIT 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

* Understanding the need, basic guidelines, content and process for Value Education

* Self Exploration - what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration

* Continuous Happiness and Prosperity- A look at basic Human Aspirations

* Right understanding, Relationship and Physical Facilities- the basic requirements for fulfilment of aspirations of every human being with their correct priority

* Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario

* Method to fulfill the above human aspirations: understanding and living in harmony at various levels

UNIT 2: Understanding Harmony in the Human Being - Harmony in Myself!

* Understanding human being as a co-existence of the sentient 'I' and the material 'Body'

Registrar
Invertis University
Bareilly

*. Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha

* Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)

* Understanding the characteristics and activities of 'I' and harmony in 'I'

* Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of needs, meaning of Prosperity in detail

* Programs to ensure Sanyam and Swasthya Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

* Understanding Harmony in the family – the basic unit of human interaction

*. Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tript; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship

* Understanding the meaning of Vishwas; Difference between intention and competence

* the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship

* Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah⬚asttva as comprehensive Human Goals

* Visualizing a universal harmonious order in society- Undivided Society (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha)- from family to world family!

- Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT 4: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

* Understanding the harmony in the Nature

* Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature

*Understanding Existence as Co-existence (Sah-asttva) of mutually interacting units in all-pervasive space

*. Holistic perception of harmony at all levels of existence

- Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

*Natural acceptance of human values

* Definitiveness of Ethical Human Conduct

*Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
*Competence in professional ethics:

a. Ability to utilize the professional competence for augmenting universal human order

b. Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,

c. Ability to identify and develop appropriate technologies and management patterns for above production systems.

* Case studies of typical holistic technologies, management models and production systems

* Strategy for transition from the present state to Universal Human Order:

a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers

b. At the level of society: as mutually enriching institutions and organizations

Registrar
Invertis University
Bareilly

INVERTIS UNIVERSITY

Department of Education

TEACHER COMPETENCIES

CourseCode:VAPE301   **ContactHours:60**

COURSE OBJECTIVE:

1. To enable graduates to teach at this level in a changing society.
2. To train future graduates for educational cycles and stages in schools and other socio-educational, family and community contexts.
3. To encourage professional practices based on teacher competencies.
4. To promote professional abilities specially designed to the educational conditions.

Course Outline:

Unit I. Teacher Competencies:

- Teacher Competence: Meaning, Definition and Characteristics
- Core Competencies for educators
- Qualities and Importance of a competent teacher
- Components of teacher competencies

Unit II. Teaching Attitude:
- Impact of teacher competence and teaching effectiveness
- Assessment of teacher competencies
- Factors affecting teaching competencies
- Teacher-Student relationship

Unit III: Professional Development
- Professional Development: Meaning, Definition
- Methods of professional development
- Purpose of professional development
- Need and Importance of professional development of teachers
- Gestures and Postures of a good teacher

COURSE OUTCOMES:
After completing this course students will be able to:
- Understand teacher competencies.
- Understand core competencies and conduct of a teacher.
- Learn how to be an effective teacher.
- Develop professional ethics and values by various methods.

Registrar
Invertis University
Bareilly

INVERTIS UNIVERSITY

Department of Education

Photography

CourseCode:VAPE401   **ContactHours:60**

Objectives/Learning Outcomes

- Demonstrate artistry by creating images that evoke an emotional response.

- Apply the principles of lighting and colour theory to a variety of photographic scenarios by measuring, evaluating, and adjusting light and colour to create quality images.

- Apply the mechanics of exposure to control light and influence the final product.

- Apply principles of composition to produce professional images.

- Select and use photographic equipment and technologies appropriate to the task.

- Demonstrate effective use of written, verbal, and non-verbal communication, employing relevant knowledge, skills, and judgment in a business setting.

- Work as a professional, maintaining high standards of practice, make ethical judgments and decisions, follow legal requirements, and adapt to a rapidly changing work environment through demonstrated commitment to lifelong learning and professional associations.

- Work effectively individually and as a member of team, demonstrating time management, organizational, and interpersonal skills.

- Develop proposals and organize and orchestrate photo shoots through the successful management of resources and time.

- Apply business processes through the application of accounting, marketing, sales, data management, and human resources (HR) practices and principles.

- Use and adapt to a variety of computer software and hardware for both photographic and business purposes.

UNIT I
Photographic equipment – camera- types – formats- lens- their types and functions – film – digital photography-types and functions – accessories.
UNIT II
Shots – focus – shutter – speed – selection of subject – different types of photographs – action – photo editing – procedure – pictures for newspaper and magazines & websites– developing photographers manual and computerized photography.
UNIT- III
Photographing people; portrait and still, wildlife ; environment; sports; landscape; industrial disasters; photography for advertising; conflicts –war, political and social photography.

Suggested Reading-
1. Photojournalism — By the editors of Time-Life Books. New York, 1971.
2. Basic Photography — John Hedgecoe. London: Collins & Brown, 1993.
3. The Color Photo Book — Andreas Feininger. New Jersey: Prentice-Hall, 1969.
4. The Colour Book of Photography — L. Lorelle. London: Focal Press, 1956.

Registrar
Invertis University
Bareilly

INVERTIS UNIVERSITY

Department of Education

TEACHING AIDS

CourseCode:VAPE501   **ContactHours:60**

- The main objectives of these tools to involve the students, promote interaction, and promote faster learning and better comprehension.
- Aids are the much better method for learning because they relate textual matter with visual, audio and videos, thus enhance the learning in a meaningful way.
- How and what tool a teacher can choose to use learning aids in a classroom can vary dramatically.
- It is necessary for a teacher to be skilful and the ability to decide proper aid to support his teaching.

UNIT 1 : Traditional Aids: Teaching/Learning using Books, Periodicals, Blackboard/Chalkboard.

UNIT 2 : Visual Aids: Adding knowledge through Figure, chart, posters, model, graph or any other type of graphics such as diagrams, cartoon, info-graphs, cut-outs, bulletin board, flannel board, globe, objects, picture, map etc.

UNIT 3 : Mechanical Aids:

- **Audio:** teaching machine, Radio, tape recorder.
- **Visual**: motion picture, Projector, epidiascope, filmstrips, etc.
- **Audio-Visual**: Video, Cassettes, Films, television, etc. Visual Material Aids: visual material aids such as outline charts, tabular charts, flow charts and organization charts, Flip charts and flow charts

INVERTIS UNIVERSITY

Department of Education

YOGA & LIFESKILLS

CourseCode:VAPE601   **ContactHours:60**

After going through the course the teacher trainee will be able –
• To recognized the concept of holistic health education.
• To explain the various dimensions and determinants of health.
• To assess the school health Programme and its importance.
• To justify the need and importance of Physical Education.
• To discuss the benefits and activities of Meditation, Stress management and physical fitness.
• To judge the procedure for health related fitness evaluation.

Course Outline:
Unit I: Health and Physical Fitness
• Introduction; Meaning & Definition, Dimensions and determinants of health
• Importance of balanced diet, School health Programme and role of teacher in development of health
• Definition, Meaning, Types, Factors and Benefits of physical fitness
• Factors affecting physical fitness, Importance of physical activities at school level
• Assessment of physical fitness (Weight, Height etc.)

Unit II: Philosophical bases of Health Education and Yoga
• Role of Institutions (School, Family and Sports),
• Policies and major programmes for Health Education and Yoga
• Introduction, Meaning and miss-concepts of Yoga
• Types of Yoga and their main features, nature and educational implications.
• Hatha Yoga Pradipika: Asanas, Shatkriyas and Pranayamas – Types and benefits,

Unit III: Meditation & Stress Management
• Meditation: Meaning, Nature & Relationship with mind.
• Importance of Meditation in school
• Stress: Meaning, Nature, Types and Factors
• Role of Meditation in Stress Management.

Suggested Reading:
• Dr. Ajmer Singh (2003). Essentials of physical Education. Ludhiana: Kalyani publishers.
• Daryl Syedentop (1994). Introduction to physical education, fitness and sports (2nd ed.). London: Mayfield publishing company.
• Dr.A.K.UppalandDr. G. P. Gautam (2004). Physical education and Health. Delhi: Friends publisher.
• Dr.SopanKangane and Dr. Sanjeev Sonawane (2007). Physical Education (D. Ed.). Pune:
• Nirali publication.

Registrar
Invertis University
Bareilly

INVERTIS UNIVERSITY

Department of Education

YOGA & LIFESKILLS

CourseCode:VAPE601   **ContactHours:60**

After going through the course the teacher trainee will be able –
• To recognized the concept of holistic health education.
• To explain the various dimensions and determinants of health.
• To assess the school health Programme and its importance.
• To justify the need and importance of Physical Education.
• To discuss the benefits and activities of Meditation, Stress management and physical fitness.
• To judge the procedure for health related fitness evaluation.

Course Outline:
Unit I: Health and Physical Fitness
• Introduction; Meaning & Definition, Dimensions and determinants of health
• Importance of balanced diet, School health Programme and role of teacher in development of health
• Definition, Meaning, Types, Factors and Benefits of physical fitness
• Factors affecting physical fitness, Importance of physical activities at school level
• Assessment of physical fitness (Weight, Height etc.)

Unit II: Philosophical bases of Health Education and Yoga
• Role of Institutions (School, Family and Sports),
• Policies and major programmes for Health Education and Yoga
• Introduction, Meaning and miss-concepts of Yoga
• Types of Yoga and their main features, nature and educational implications.
• Hatha Yoga Pradipika: Asanas, Shatkriyas and Pranayamas – Types and benefits,

Unit III: Meditation & Stress Management
• Meditation: Meaning, Nature & Relationship with mind.
• Importance of Meditation in school
• Stress: Meaning, Nature, Types and Factors
• Role of Meditation in Stress Management.

Suggested Reading:
• Dr. Ajmer Singh (2003). Essentials of physical Education. Ludhiana: Kalyani publishers.
• Daryl Syedentop (1994). Introduction to physical education, fitness and sports (2nd ed.). London: Mayfield publishing company.
• Dr.A.K.UppalandDr. G. P. Gautam (2004). Physical education and Health. Delhi: Friends publisher.
• Dr.SopanKangane and Dr. Sanjeev Sonawane (2007). Physical Education (D. Ed.). Pune:
• Nirali publication.

Registrar
Invertis University
Bareilly

INVERTIS UNIVERSITY

Department of Education

SOFT SKILLS AND PERSONALITY DEVELOPMENT

CourseCode:VAPE701   **ContactHours:60**

COURSE OBJECTIVE:

- To give complete knowledge of soft skill and personality development.
- Help student to get educate about unproductive thinking, self-defeating emotional impulses, and self-defeating behaviors.
- Introduce students, to increase a persons' self-esteem, to develop cognitive skills
- Helpful to improve Personal Qualities & Work Ethic

Course Outline:

Unit I. Introduction to Soft Skill:

- Introduction to Soft Skill, Purpose and Objectives of Soft Skill
- Soft skill strategies
- Meaning of Verbal Communication, Visual Communication, Physical Communication
- Meaning of Communication skill and Problem Solving Skills

Unit II. Soft Skill Training

- Soft Skill Training- its meaning and oncept
- Soft Skill training programs
- Introduction to Leader, Leadership Qualities and Effective Leadership Skills
- Self – Motivation

Unit III: Personality Development

- Introduction to Personality Development- Purpose and Objectives of Personality Development
- Personality Traits and Personal Growth
- Concept of Moral Development

Unit IV: Theories of Personality Development

- Theories of Personality Development
- Introduction to Confidence and Motivation: Its role and importance in Personality Development
- Meaning and Concept of Body Language.

Registrar
Invertis University
Bareilly

COURSE OUTCOMES:

After completing this course students will be able to:

- Get out of their comfort zones and become a better personal leader
- Create a life strategy around their personal brand, passion, purpose and motivations
- Find value in themselves and others and develop personal management skills
- Create a personal framework for their health in several areas, including: physical disciplines, mental well-being, financial responsibility and emotional health

INVERTIS UNIVERSITY

Department of Education

Professional Etiquettes

CourseCode:VAPE 801   **ContactHours:35**

Course Description: A study of the interpersonal and communication skills fundamental for success in the work place. Students have their professional style as they study topics including professional behavior, interpersonal interaction, communicative and soft skills as they relate to work place.

Course Objectives: After completion of this course a student should be able to;

- Determine the attitudes and behaviors appropriate to workplace situations and settings
- Use interpersonal and communication skills to enhance his/her job effectiveness
- Adopt attitudes and behaviors consistent with standard work[place expectations
- Develop national ideals of education among students

Unit-I: Objectives Contribute to professional Development:
Etiquettes; Significance of etiquette; Etiquette for professional; Social media etiquette and behavior. Work place etiquette

Unit-II: Introduction to the concept of professional Ethics:
Profession: characteristics of Profession; Teaching as a profession: Code of Professional ethics for school teacher as given by (NCTE);Professional Elements.

Unit-III: Effective Skills:
Soft skills; significance of soft skills in teaching, Essential soft skills required for a teacher; Time management Skill   ; Event management skill.

Types of Values & Profession

● Constitutional or national values - Democracy, socialism, secularism, equality, justice, liberty, freedom and fraternity.

● Professional Values-Knowledge thirst, sincerity in profession, regularity, punctuality and faith.

● Religious Values - Tolerance, wisdom, character. ● Modernity vs. Value crisis, Issues and challenges ● Value orientation of Teacher education curricula in India

- ❖ Malhotra P.L. Education, Social Values and Social Work-the Task for the New Generation, New Delhi: N.C.E.R.T.
- ❖ Kothari D.S. Education and Values, Report of the orientation course-cum-workshop on Education in Human Values. New Delhi.

Registrar
Invertis University
Bareilly

BT 01- Bio-diesel Production from Algal Biomass

Course Name	Bio-diesel Production from Algal Biomass
Objective of the Course	This course "focuses on combustion fuels made from nonpetroleum sources and introduces the sources, processing, and social impacts of biofuel utilization. At the end of the course, "students will be able to describe: how petroleum and bio-based fuels affect the global carbon cycle, the attributes of biofuels that make them suitable as a fuel for a specific application, limitations of biofuels, global impacts of biofuels on food and energy supplies, and technological advances and challenges to be overcome for a wide-scale biofuel adoption."
Brief Outline of the Course	The prospects of biofuel production from microalgal carbohydrates and lipids coupled with greenhouse gas mitigation due to photosynthetic assimilation of CO_2 have ushered in a renewed interest in algal feedstock. Furthermore, microalgae (including cyanobacteria) have become established as commercial sources of value-added biochemicals such as polyunsaturated fatty acids and carotenoid pigments used as antioxidants in nutritional supplements and cosmetics. This article presents a comprehensive synopsis of the metabolic basis for accumulating lipids as well as applicable methods of lipid and cellulose bioconversion and final applications of these natural or refined products from microalgal biomass. For lipids, one-step *in-situ* transesterification offers a new and more accurate approach to quantify oil content. As a complement to microalgal oil fractions, the utilization of cellulosic biomass from microalgae to produce bioethanol by fermentation, biogas by anaerobic digestion, and bio-oil by hydrothermal liquefaction are discussed. Collectively, a compendium of information spanning green renewable fuels and value-added nutritional compounds is provided.
Eligibility of participants	B.Sc. / B.Tech. / M.Sc. Biotechnology Students
Course duration	36 Hours (6 Hours Per Day; Monday to Saturday) Spread into 6 lectures of 1 hr/day and 6 Hands on training 5 hrs/day
Certificate (if Yes then criteria)	N.A.

Samtosh.

Registrar
Invertis University
Bareilly

BT 02 - Hospital Infection Control

Course Name	Hospital Infection Control
Objective of the Course	To prepare "Infection Control Practitioners" of highest caliber, who can effectively minimize opportunities for transmission of pathogens to patients as well as to themselves & other healthcare workers with the commitment to promote infection control best practice in health care organizations.
Brief Outline of the Course	Some of the important topics included in the curriculum are Basic Microbiology & Epidemiology of Organisms, Specimen Collection and Transport for Microbiological Investigation, Disinfection, Sterilisation & Environmental Cleaning, Hospital Acquired Infection (HAI) and its transmission, Standard & Extended Precautions, Drug Resistance, Antibiotic Utilisation & Control Indwelling Devise Care, Injection & Infusion Safety, Bio-Medical Waste Management Spillage Management, Engineering Control, HAI–Surveillance and Outbreak Management along with a number of other interesting topics like the Basics of Research, Working in Teams, and Time and Stress Management. The courses will emphasise on both theoretical and practical aspects with hospital visits and hands-on activities. At the end of the course, students will acquire knowledge as well as skills required by an Infection Control Practitioner.
Eligibility of participants	Any student of life science/ Nurse with GNM (General Nursing and Midwifery) / BSc Nursing are eligible for the course. Any other interested health care workers involved directly or indirectly with infection control practices may also apply.
Course duration	Three months course. This includes one week of theory session followed by project work of 11 weeks to be conducted at respective work places.
Certificate (if Yes then criteria)	NA

Registrar
Invertis University
Bareilly

FACULTY OF SCIENCE

Value Added Course

ASH01: Mathematics for Competitive Examinations

Hours: 30 Hrs.

Learning Objective (LO): To introduce concepts of mathematics with emphasis on analytical ability and computational skill needed in competitive examinations.

Unit-1: Problems on General Arithmetic:
Problems of ages – Ratio and proportions -Inverse ratio-properties (Addendo, subtrahendo, componendo & dividendo) -ratio of four numbers -increasing and decreasing order of fractions.

Unit-2:
Percentages - Gain and loss percents - Partnership problems.

Unit-3: Time, Distance and Work:
Time and work – Time and distance.

Unit-4: Commercial Arithmetic:
Simple interest - Compound interest – Stocks and Shares.

Unit -5: Data Interpretation:
Tabulation – Bar graphs and Pie charts – Line Graphs.

Text Book:
R.S. Agarwal, Content and treatment as in the book Quantitative Aptitude, S. Chand & Co, New Delhi, 2015.

Unit – I	Sections 1.8 and 1.12
Unit – II	Sections 1.10, 1.11 and 1.13
Unit – III	Sections 1.15 and 1.17
Unit – IV	Sections 1.21, 1.22 and 1.29
Unit – V	Sections 2.36 to 2.38

Supplementary Reading:
1. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Tata McGraw –Hill Pub. Co. Ltd. New Delhi, IV Edn., 2011.
2. RSN Pillai and A. Bagavathi, Statistic, S.Chand & Co., 7th Revised Edition, 2008.

Course Outcome:
By the end of the course, students will be able to face the Mathematics part of competitive examinations easily.

Registrar
Invertis University
Bareilly

FACULTY OF SCIENCE

VALUE ADDED COURSE

ASH02 - IMPACT OF MEDICINAL PLANTS ON SOCIETY

Hours: 30 Hrs

Unit – I:

Medicinal Plants – Importance and Scope. Cultivation of medicinal plants – Processing and utilization. Chemical nature of crude drugs - Extraction, Preparation and preservation of crude drugs.

Unit – II:

Traditional herbal teas. Herbs for woman, Babies and children. Concepts of Herbal garden– Home, School Herbal gardens.

Unit – III:

Classification and Estimation of primary metabolites- Carbohydrates, fatty acids, aminoacids and Proteins. Secondary Metabolites - Classification , General characters, Chemical nature, Extraction and Estimation methods for Glycosides, Tannins, Volatile oils, Resinous substances, Terpenoids – Phenolic compounds and Alkaloids.

Unit – IV:

Antioxidants - Role of antioxidants - Estimation of antioxidants – Ascorbic acid, α – Tocopherol.

Unit – V:

Post-harvest technology in medicinal plants: scope and importance. Importance of herbal marketing -Future prospects and constraints of the herbal drug industry - Regulatory status of herbal medicine in India.

Practicals:

Estimation of Carbohydrates
Estimation of Proteins Estimation
of fatty acids Estimation of Phenols
Estimation of Flavionoids
Preparation of crude extracts
Herbarium preparation
Estimation of Ascorbic acid and α – Tocopherol.

Registrar
Invertis University
Bareilly

References:

1. Faroogi, A.A. and B. S. Sreeramu, 2004. Cultivation of medicinal and aromatic crops. Revised edition, Universities Press (India) Private Limited, Hyderabad.
2. WHO, 2002. Quality control methods for medicinal plant materials, World Health Organization, Geneva, A.I.T.B.S., Publishers and Distributors, New Delhi.
3. Harbone, J.B. 1998. Phytochemical Methods; A guide to modern techniques of plant analysis. 3rdEdn., Springer (India) Private Limited , New Delhi.
4. Halliwall, B. and J.M.Gutteridge. 1985. Free radicals in Biology and medicine. Oxford university press.

Registrar
Invertis University
Bareilly

FACULTY OF SCIENCE
VALUE ADDED COURSE
ASH03 – ADVANCED TECHNIQUES IN CLINICAL MICROBIOLOGY

Hours: 30 Hrs.

Learning Objectives (LOs)

To learn the basic and advanced techniques in clinical Laboratory.

Unit – 1: Laboratory Safety

Organization of laboratory and safety precautions in laboratory – Personal hygiene and care – General health care – Vaccination Schedule for technicians – Laboratory care and cautions – Do's and Dont's – lab accidents – Cuts and wounds – Fire Accidents (Chemical Gas, Flammable Chemicals, Electrical , Spirit Lamp, Gas) – Chemical burns.

Unit – 2: Sample Analysis

Sample collection, processing, preservation and transportation of various clinical pathology samples. Pathological Analysis of clinical specimens.

Unit – 3: Microscopic Analysis

Microscopic analysis of clinical specimens – Urine, Stool, Sputum, Pus, Blood, CSF and other body fluids.

Unit – 4: Culture Methods

Culture methods – Culturing and isolation of pathogens from clinical specimens. Culture media – General purpose media – special media – selective media – differential media – transport media.

Unit – 5: Advanced Techniques & Automation

ELISA – PCR- Fluorescence Microscopy – Automated culture systems – automated Blood culture – Automated Urine culture – Automated Antibiotic Sensitivity testing.

Text Books:

1. Ananthanarayanan.R. and Paniker C.K.J Text Book of Microbiology, 9th Edition Orient Longman, (2013).

2. P. Chakraborthy, A Text Book of Microbiology 3rd Edn, New Central book Agency (P) Ltd, Kolkata, India 2005.

3. Praful Godkar, Darsan, 2014. Text book of Medical Laboratory Technology Vol I & II, Bhalani Publishing House.

4. James cappuccino, Natalie Sherman.(2004) Microbiology: A Laboratory manual. 7th Edition.

Supplementary Books

5. Ochei.J and A. Kolhatkar, 2000. Medical laboratory science: Theory and Practice, McGraw Hill Education.

Registrar
Invertis Universit,
Bareilly

6. Sood Ramnik. 2009. Medical Laboratory Technology: Methods and Interpretations. Jaypee Brothers, Medical Publishers Pvt. Limited.

7. Glick, B.J., Pasternak, J.J., Patten, C.L. 1994. Molecular Biotechnology: Principles and Applications of Recombinant DNA, 4th edition, ASM Press.

8. David Greenwood, Richard Slack and John Peutherer. (2000). Medical Microbiology.15th edition, Church Hill Living stone Publication.

Course Outcomes (COs)

At the end of this course, students will be able to,

CO1:	Understand laboratory safety methods.
CO2:	Understand pathological analysis of clinical specimens.
CO3:	Gain knowledge about automated techniques in Clinical Laboratory Technology.

Registrar
Invertis University
Bareilly

Faculty of Science
Value Added Course

ASH04 - Phytochemistry and Biological Activities of Medicinal Plants

No. of Hours –30 Hrs.

Unit-1

Extraction – purification of bio-active compounds from plants - cold & hot extract extraction- Soxhlet extraction - crude extracts purification by various solvents.

Unit-2

Isolation of bioactive compounds- chromatographic techniques - thin layer chromatography- liquid chromatography - HPLC and UPLC.

Unit-3

Structural analysis of bioactive compounds - IR spectroscopy - Mass spectroscopy - NMR spectroscopy.

Unit-4

Herbal medicine - History of herbal medicine - different types of herbal medicine - Ayurveda, Siddha and Unani - Pharmacological action - clinical research and traditional uses of Indian medicinal plants - *Eclipta alba, Gymnema sylvestre, Ocimum sanctum, Curcuma longa*.

Unit-5

Phytopharmaceuticals and their health benefits - anthocyanins, carotenoids, lycopene, isoflavones, polyphenols, omega 3 - fatty acids, biological effects of resveratrol.

Activity
1. Extraction of active ingredients from medicinal plants.
2. Demonstration of *in vitro* antioxidant activity of phytochemicals.

Text Books
1. Harbone, J.B. Phytochemical Methods: A guide to modern techniques of plant analysis, Springer (India) Private Limited, 3rd ed. New Delhi. 1998.
2. Silverstein R. M., Wester F. X. - Spectroscopic identification of organic compounds. John- Wiley. 1998.
3. Willard H.H., Merrit L. L., Dean J. A.. Instrumental Methods of Analysis, 1987.
4. Godte V. M.. Ayurvedic pharmacology and therapeutic uses of medicinal plants. Bharathiya Vidya Bhavan, Mumbai. 2000.
5. Grewal R.C. Medicinal Plants. Campus Books International, New Delhi. 2000.

Registrar
Invertis University
Bareilly

Value Added Course

Course Details:

Name of the Course: - Personal Grooming	**Course Code- PH-01**
Course Offered to - B.Pharm. & D.Pharm.	**Course Duration – 36 Hrs**

Purpose of the Programme:

Projecting a positive professional image as a representative of your company is vital to your company and your personal success. Before selling a product or your company you have to sell yourself first. It is the first impression you give. The course focuses on non-verbal communication and behavioral skills. There will be hands on and discussions. The course will provide the knowledge and skills required to project a professional image and confidence in you.

Course Objectives:

➢ Able to use the right make up technique to enhance your features

➢ Able to know which hairstyle is right for your face shape

➢ Understand the importance of Personal Hygiene, as it's the first step to good grooming

➢ Know individual body shapes for the purpose of selecting clothes and accessories that are complementary as well as professional

➢ Understand your skin type and right skin care to slow down aging process

Syllabus:

Course and Content:

1. Appearance:

➢ How to enhance your attractive features

➢ 10 steps Make-up

➢ Hair, Dental Care

➢ Clean Body

➢ Shaving / Waxing

➢ Lip Balm / Lip gross

➢ Dress Elegantly

- ➤ Make use of Cologne / Perfume
- ➤ Shine your Shoes

2. Body Shape:

- ➤ Know your physical features
- ➤ Understand own neckline & right necklace
- ➤ Understand own color (Warm or Cool)
- ➤ Choose the right clothing style
- ➤ Well Proportion

3. Hair Style:

- ➤ What face shape are you
- ➤ What kind of hair style suit you
- ➤ Glasses & Sunglasses

4. Personal Hygiene:

- ➤ Breath
- ➤ Perspiration- Body Odour
- ➤ Fragrance

5. Skin care:

- ➤ Identify skin type
- ➤ Under the skin layers and its functions
- ➤ Intrinsic & Extrinsic aging

Value Added Course

Course Details:

Name of the Course: - Solar Energy

Course Code – EE01

Course Offered to – B.Tech EE & ECE

Course Duration – 30 Hours

Course Coordinator: - Mr. Gyanendra singh

OBJECTIVE:

The entire objective of workshop is to setup a comprehensive capacity – building mechanism for professionals entering or established in the solar photovoltaic power sector. Purpose of the workshop was to provide cutting-edge education to transform professionals into 'Solar' professionals. The idea was, not only provide room for perceptive thinking but also to make the professionals employ these skills in their respective work domains. The curriculum had been carefully crafted to make the technical, theoretical and practical ends meet. With the testimonies and feedbacks we have been able to evolve and set new benchmarks and achieve new heights in content development and course delivery.

PRE-REQUISITE(s):

Basic Knowledge of Solar cell.

OVERVIEW:

Solar energy is generated by nuclear reactions within the body of the sun. This energy reaches the surface of the earth in the form of electromagnetic radiation. The amount of energy carried by solar radiation is normally expressed in terms of the solar constant which measures the quantity of solar energy passing through one square meter of space perpendicular to the direction of travel of the radiation at the average distance of the earth from the sun. According to the World Energy Council, the value of this constant is 1367 W/m^2. When absorption and scattering are taken into account, the total solar flux reaching the surface of the earth is estimated to be 1.08×10^8 GW and the total amount of energy reaching the surface of the earth each year is 3,400,000 EJ. This is between 7000 and 8000 times annual global primary energy consumption. If 0.1% of this energy was converted into electricity with 10% efficiency, it would provide an equivalent of around 10,000 GW of generating capacity. The global total is around 6000 GW.

Why take this course?

- Make educated decisions for implementing solar photovoltaic power projects

- Access site potential and suitability for establishing a plant

- Selection of Various PV Modules, Inverter and other Technologies

Registrar
Invertis University
Bareilly

- Appreciate the details for installing a solar power plant

- Theoretically deduce the plant performance and output and ensures best practices in terms of safety and quality

What you will learn in this course:

Learn and Build a project on Solar and Smart Energy using Embedded System in this course. This includes practical exposure to solar energy production along with the real-life application of charging a battery. Students also learn the concepts of Smart energy and other industry trends like green energy, smart building, smart grid and energy harvesting technologies. In today's time it's a need to switch to reneweable energy sources to save our climate, save non-renewable energy, reduce pollution, money saving etc. In this workshop students will learn about the benefits of renewable sources like Solar Energy with practical exposure on how to use solar energy and convert it to smart energy with some real time projects.

Who this course is for:

- To help participants learn about the efficient use of electrical energy, a prototype Smart Traffic Control System is executed as project outcome.

- To practical exposure of solar energy production along with real-life application of charging mobile devices.

Faculty for the Course:-

- Prof. Ranjana Jha (NSIT,New Delhi)
- Mr. yogesh kumar singh (senior research scientist,NISE, Gurgaon)
- Prof. G.N.Tiwari (IIT,New Delhi)

Course Outline:

	Topic	No. of hours allocated
Module 1	Introductory	5
Module 2	Solar Radiation Basics and Measurement	5
Module 3	PV System Concept and Components	5
Module 4	PV System Design	5
Module 5	Advance Topics	5
Module 6	Troubleshooting of PV systems Safety	5

Registrar
Invertis Universit
Bareilly

Value Added Course

Course Details:

Name of the Course: - MATLAB Applications in
Electrical & Electronics Engineering

Course Code –EE02

Course Offered to – B.Tech./Diploma(AllBranches)

Course Duration – 35Hrs

Course Coordinator: -Mr. Mon Prakash Upadhyay
Mr. Santosh Kumar

OBJECTIVE:

- To introduce the basic concepts of MATLAB & explore its importance &challenges
- To enable the student on how to approach for solving engineering problems using simulation tools
- To accelerate the research, reduction in development time & deploy advanced applications
- To integrate computation, visualization & programming in an easy to use environment where problems & solutions are expressed in familiar mathematical notations.

PRE-REQUISITE(s):

Basic skills and understanding of C programming, Logical Reasoning

OVERVIEW:

MATLAB (Matrix Laboratory) is a multi-paradigm numerical computing environment and proprietary programming language developed by MathWorks. MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages, including C, C++, Java, Fortran and Python. MATLAB has more than 3 million users worldwide. MATLAB users come from various backgrounds of engineering, science and economics.

Why take this course?

- It uses the programming system and language called MATLAB to do so because it is easy to learn, versatile and very useful for engineers and other professionals.
- MATLAB is a special-purpose language that is an excellent choice for writing moderate-size programs that solve problems involving the manipulation of numbers.
- The design of the language makes it possible to write a powerful program in a few lines.
- The problems may be relatively complex, while the MATLAB programs that solve them are relatively simple: relative, that is, to the equivalent program written in a general-purpose language, such as C++ or Java.
- MATLAB is being used in a wide variety of domains from the natural sciences, through all disciplines of engineering, to finance, and beyond, and it is heavily used in industry. Hence, a solid background in MATLAB is an indispensable skill in today's job market.

What you will learn in this course:

- Common methodologies of solving questions related to Verbal Aptitude, LogicalReasoning and QuantitativeAptitude.
- Learn the various question types and their basicapproaches.
- Create a bridge for the advance levels of aptitude and prepare for EnhancementProgram.

Who this course is for:

- Students of B.Tech./M.Tech. Programmes

- Any UG/PG/Research Scholars

Faculty for the Course: -
- Dr. Dheeraj Khatod, IIT Roorkee
- Dr. Yogesh Vijay Hote, IITRoorkee

Course Outline:

	Topic	No. of hours allocated
Module 1	The MATLAB environment	5
Module 2	Matrices & Operators	5
Module 3	Functions	5
Module 4	Image processing Toolbaox	5
Module 5	Simulink	5
Module 6	Hardware integration	5
Module 7	Project	5

Registrar
Invertis University
Bareilly

<u>Value Added Course</u>

Course Details:

Name of the Course: - Robotics workshop

Course Code – EEC01

Course Offered to – B.Tech EE & ECE

Course Duration – 35 hours

Course Coordinator: - Mr. Mon Prakash Upadhayay

OBJECTIVE:

The goal of this workshop is to bring together researchers from robotics, natural language processing, machine learning, and cognitive science to examine the challenges and opportunities emerging from the interdisciplinary research field covering language and robotics. This goal is motivated by two fundamental observations.

PRE-REQUISITE(s):

To learn robotics, the best way to do so is developing proficiency in computer science, coding, physics, and linear algebra.

OVERVIEW:

The future evolution of robotics requires to get closer to the natural human communication, and to demonstrate similar adaptability and flexibility in language use. Robots, likewise humans, should be able to adapt to each person they talk to, not using identical stereotypical sentences for each interaction. Moreover, humans are not only able to use language but also able to learn it. In order to have similar proficiency, robotic systems may have to learn it as well, probably not exactly in the same way, but it is rather unlikely that it would rely only on an ungrounded and disembodied language module identical to any robot. Furthermore, input data received by language learners is not written text data, but multimodal sensor, motor information including speech signal, haptic information, visual information, etc. Language learning strategies in real-world environments which are full of uncertainty would need to extract the best of multimodal information available. Making this learning and understanding of utterances possible, in a real-world environment with a situated and embodied system, is a key challenge for natural language processing

Why take this course?

- Hands-on training on specific core areas of the selected topic.

- Real-time implementations through practical sessions.

- Multipurpose project based trainer kits.

- Well versed materials like Datasheets, Installation guides, Sample Codes, Circuit Diagrams, Softwares, Study Material, PPT's and User Manuals.

- Experienced & dedicated training professionals.

- Internationally valid certification.

- Free R&D project assistance.

- Internship opportunity & Free Placement assistance.

What you will learn in this course:

The primary goal of robotics workshops is to offer students a technology-driven learning experience that will teach them all the skills they need to thrive in the dynamic, exciting, and ever-changing world that lies ahead of them. Planned thoroughly to achieve precise learning goals, our workshops will teach kids how to construct robots from scratch thus giving them a first-hand experience and in-depth knowledge of robotics

Who this course is for:

- To design intelligent machines that can help and assist humans in their day-to-day lives and keep everyone safe.
- To increased the flexibility with being capable of performing a variety of tasks and applications

Faculty for the Course:-

- Mr. dheeraj Chauhan (Embedded Engineer,3D Computing,new Delhi)

Course Outline:

	Topic	No. of hours allocated
Module 1	Introduction	4
Module 2	Hardware vs firmware	5
Module 3	Embedded electronics	4
Module 4	Power electronics	4
Module 5	Communication	4
Module 6	Sensors	5
Module 7	Motors and actuators	4
Module 8	Weight Budget or Power to Weight Ratio	5

Value Added Course

Course Details:

Name of the Course: - Arduino 1.0

Course Offered to – B.Tech (All Branches)

Course Coordinator: - Dr. Ankur Rai

Course Code – EEC02

Course Duration – 35Hrs

OBJECTIVE:

There is the following objective that we will cover in this course;

- Program an Arduino microcontroller
- Interface an Arduino with analog and digital sensors (detecting things like light, noise, or pressure)
- Use software libraries to control motors, lights, sounds, and more
- Apply key concepts for prototyping from TinkerCad (such as basic electronics, and project-based learning)

PRE-REQUISITE(s):

Basic skills and understanding of C programming, Basic Electronics Knowledge

OVERVIEW:

Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices. Its hardware products are licensed under a CC-BY-SA license, while software is licensed under the GNU Lesser General Public License or the GNU General Public License, permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially from the official website or through authorized distributors.

Why takes this course?

- it's **open-source**: the source code and electronic diagrams of Arduino software and hardware are open-source.
- it's well documented: the use of all the code which can be used with Arduino are detailed in an online reference www.arduino.cc/reference/en/
- This means that once you learn the basics, you can use these resources to do more advanced things without much extra guidance!
- it's relatively inexpensive: the price of an official classic Arduino board called Arduino UNO is about rupees 300 only.
- it's used by a large community. This reinforces the second point above: the growing number of people using this platform is an undeniable asset. Thanks to the power of the Internet, it is possible to find documentation and tutorials of what others have used Arduino for, such as smart objects for your home, smart clothing, art Installations...

What you will learn in this course:

- Understand what an Arduino is and how it works
- Learn how to use an Arduino safely
- Program your Arduino using code that you've written in the Arduino IDE (Integrated Development Environment)
- Learn programming concepts using C and C++ along with Arduino specific programming
- Understand best practice concepts for programming and prototyping
- Use a wide variety of hardware and components and prototype your projects using a breadboard
- Build your own innovative project with Arduino

Who this course is for:

- Anyone whom would like to get started with digital electronics and build their own projects.
- Those who are willing to learn extra apart from the regular definedcourse.

Faculty for the Course:-
    Dr. Ankur Rai

Course Outline:

	Topic	No. of hours allocated
Module 1	Getting started with Arduino	5
Module 2	LEDs	5
Module 3	Serial Monitoring	5
Module 4	Digital Inputs	5
Module 5	Analog Inputs	5
Module 6	LCD Display	5
Module 7	Servo Motor	5

Value Added Course

Course Details:

Name of the Course: - Auto Cad

Course Code – CE01

Course Offered to – B.Tech. Civil

Course Duration – 36Hrs

Course Coordinator: - Mr. Shravan Kishore Gupta

OBJECTIVE:

The objective of this course is to teach users the basic commands and tools necessary for professional 2D drawing, design and drafting using AutoCAD / AutoCAD LT. After completing this course users will be able to:

✓ Use AutoCAD for daily workingprocess.
✓ Navigate throughout AutoCAD using major navigatingtools.
✓ Understand the concept and techniques todraw.
✓ Create multiple designs using several oftools.
✓ Create layers to control the objects'visibility.
✓ Explain drawing usingannotations.
✓ Plot or print the drawing byscale.
✓ To use constraint for certaindesign.

PRE-REQUISITE(s):

This guide is designed for new users of AutoCAD. It is recommended that you have a working knowledge of:
• Microsoft® Windows® 7, Microsoft® Windows® 8 or Microsoft® Windows®10.

OVERVIEW:

AutoCAD is a commercial software application for 2D and 3D computer-aided design (CAD) and drafting. ... AutoCAD is used across a wide range of industries, by architects, project managers, engineers, designers, and other professionals and is the most ubiquitous CAD program worldwide

Course Outline:

AutoCAD 2D

Chapter 1: Getting started • About Autodesk & AutoCAD • CAD History • Graphical User Interface • Application Menu • Workspaces • Ribbon • File Tabs • Accessing Help • Drawing Templates • Standards Based Design • Create New Drawings and Templates

Chapter 2: Object Property & Layer Management • Managing Layers • Configure Object Property Settings • Automatic Management of Layers • Layer Functions and Display

Chapter 3: Drawing Geometry • Drawing Creation Workflows and Organization • Structuring Data in Drawings • Reusing and Editing Structured Data

Chapter 4: Tools for Creating Key Geometry • Core Design Tools: Creating Rectangles, Placing Hatch, Fillets, Chamfers, Contours • Power Snaps • Centerlines • Construction Lines • Designing with Lines • Adding Standard Feature Data for Holes and Slots

Chapter 5: Tools for Manipulating Geometry • Editing Tools • Power Commands • Associative Hide Chapter 6: Creating Drawing Sheets • Model Space Views in Layouts 2 • Creating Drawing Sheets in Model Space • Annotation • Title Blocks and Drawing Borders

Chapter 7: Dimensioning and Annotating Drawings • Annotation and Annotation Symbols • Creating Dimensions • Editing Dimensions

Chapter 8: Setting Up a Layout • Printing Concepts • Working in Layouts • Creating Layouts • Guidelines for Layouts

Chapter 9: File Management • Import & Export • DWG Files • IGES Files • Project Documentation

Chapter 10: Plotting & Printing •Printing Layouts • Print & Plot Settings • Projects Printing / Plotting

Invertis University
Bareilly

Value Added Course

Course Details:

Name of the Course: -STAAD PRO

Course Code – CE02

Course Offered to – B.Tech. Civil

Course Duration – 36Hrs

Course Coordinator: -

OBJECTIVE:

STAAD stands for **Structural** Analysis and Design. It is used for 3D model generation, analysis and multi-material design. The **course objective** is to train the students in **Structural** Modeling, Designing and Analysis, Integrated Design and Finite Element Analysis

OVERVIEW:

STAAD PRO **is one of the most widely used structural analysis and design software products worldwide.** STAAD **can be used for analysis and design of all types of structural projects from plants, buildings, and bridges to towers, tunnels, metro stations, water/wastewater treatment plants and more.**

Course Outline:

- Introduction to **STAAD**.**Pro**.
- Geometry creation.
- Constants, Supports, and Specifications.
- Seismology.
- Member truss.
- Water tank analysis.
- Foundation design.
- Concrete Design.

Santosh.

Registrar
Invertis University
Bareilly

MBA 04- Value Added course on Technical Analysis

Duration: 40 Hrs

Unit-1 Investment- Meaning and types of investors, Long term investment and short term investment. Fundament analysis: Meaning and purpose , Difference between Fundamental Analysis and Technical Analysis. History of technical analysis.

Unit-2 Meaning of Technical Analysis, Assumptions of technical Analysis. Dow Theory: Meaning and Application. Charts: Line chart, bar chart, Japanese Candle stick and explanation, Support and Ressitance: meaning and construction of S&R and reliability of S&R

Unit 3 : Candle stick: single candle stick-The Marubozu, The Spinning Top, Spinning tops in an uptrend, The Dojis, Paper Umbrella-Hammar, Hangning man, The shooting star, Multiple candle stick:The Engulfing Pattern-Bulliesh engulfing and bearish engulfing, The Harami Pattern- BulishHarami and Bearish Harami , The Gaps-Gap up opening and Gap Down opening, The Morning Star, The Evening Star. Entry and Exist pattern of candle stick.

Unit 4: Volumes: Meaning and explainatiion, Moving Average: Simple Average and Exponential moving averages MACD, Crossover system of moving average, Indicators: Relative Strength Index and others indicators

MBA – 03 Value add course on Learning R

Total Time: 40 Hrs

UNIT 1: What is R and why R?, Getting help in R, Libraries in R, Command line versus scripts, Basic mathematical calculations using R, Functions and matrix operations using R, Working with missing data & logical operators.

UNIT 2: Control structures in R, Aspects of sequence, Use of repetition command in R, Sorting and ordering, Lists, Issues related to indexing of a vector, Variables and factors.

UNIT 3: Display and formatting of strings- 'paste' function, 'cat' function, splitting, replacement and manipulations with alphabets, matching of an expression in the string.

UNIT 4: Data set and data frames, importing data files of other software and redirecting output, writing to csv files.

UNIT 5: Introduction to statistical functions-Introduction, Frequencies and Partition Values, Graphics and Plots, Central tendency and Variation, Boxplot, Skewness and Kurtisis, Bivariate and three-dimensional plots, Correlation,

Santosh.

Registrar
Invertis University
Bareilly

FACULTY OF SCIENCE

Value Added Course

ASH01: Mathematics for Competitive Examinations

Hours: 30 Hrs.

Learning Objective (LO): To introduce concepts of mathematics with emphasis on analytical ability and computational skill needed in competitive examinations.

Unit-1: Problems on General Arithmetic:
Problems of ages – Ratio and proportions -Inverse ratio-properties (Addendo, subtrahendo, componendo & dividendo) -ratio of four numbers -increasing and decreasing order of fractions.

Unit-2:
Percentages - Gain and loss percents - Partnership problems.

Unit-3: Time, Distance and Work:
Time and work – Time and distance.

Unit-4: Commercial Arithmetic:
Simple interest - Compound interest – Stocks and Shares.

Unit -5: Data Interpretation:
Tabulation – Bar graphs and Pie charts – Line Graphs.

Text Book:
R.S. Agarwal, Content and treatment as in the book Quantitative Aptitude, S. Chand & Co, New Delhi, 2015.

Unit – I	Sections 1.8 and 1.12
Unit – II	Sections 1.10, 1.11 and 1.13
Unit – III	Sections 1.15 and 1.17
Unit – IV	Sections 1.21, 1.22 and 1.29
Unit – V	Sections 2.36 to 2.38

Supplementary Reading:
1. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Tata McGraw –Hill Pub. Co. Ltd. New Delhi, IV Edn., 2011.
2. RSN Pillai and A. Bagavathi, Statistic, S.Chand & Co., 7th Revised Edition, 2008.

Course Outcome:
By the end of the course, students will be able to face the Mathematics part of competitive examinations easily.

Santosh.

Registrar
Invertis University
Bareilly

MBA – 05 LEADERSHIP SKILLS

Course Name	Leadership Skills
Objective of the Course	• Discover your role as a people manager • Learn to manage yourselves as people manager • Apply principles and practices to engage • manage and develop your employees
Eligibility of participants	Under graduation and Graduation Students
Course duration	36 hours
Teaching Methodology	Activity Based
Outcome	Students will be able to demonstrate leadership Skills

MODULE I (08 Sessions): Personality: Meaning & Concept, Personality Patterns, Symbols of Self, Moulding the Personality Pattern, Persistence & Change. Personality & Personal Effectiveness: Psychometric Theories – Cattele and Big Five, Psychodynamic Theories - Carl Jung and MBTI, Transactional Analysis, Johari – Window, Personal Effectiveness.

MODULE II (06 Sessions): Personality Determinants: An overview of Personality determinants. Evaluation of Personality: Sick Personalities and Healthy Personalities.

UNIT III (06 Sessions): Training: Concept, Role, Need and Importance of Training, Types of Training, Understanding Process of Learning, Developing an Integrated Approach of Learning in Training Programme. Training Need Assessment

UNIT IV (08 Sessions): Leadership – Meaning, Concepts and Myths about Leadership, Components of Leadership- Leader, Followers and situation. Leadership Skills – Basic Leadership Skills, Building Technical Competency, Advanced Leadership Skills, Team Building for Work Teams, Building High Performance Teams.

UNIT V (08 Sessions): Assessing Leadership & Measuring Its effects. Groups, Teams and Their Leadership. Groups – Nature, Group Size, Stages of Group Development, Group Roles, Group Norms, Group Cohesion. Teams – Effective Team Characteristics and Team Building, Ginnetts Team Effectiveness Leadership Model.

MBA - 02 Value Add course for EMPLOYBILITY ENHANCEMENT
(for MBA Students)

Total: 40 Hrs

1. Self Awareness
Personal SWOT Analysis, Goal Setting, Confidence Building

Activities:
- (a) Icebreaking Games
- (b) Theatre Class – Motivational Movie for confidence building/Videos of introductions
- (c) Self Introduction- To be shot on video camera individually

2. Personal Effectiveness
Developing Positive Attitude, Personality profile- Creating Professional Resume and Job application (To be verified by faculty member), Group Discussions- Videos to show how to initiate and conduct a GD

Activities:
- (a) Extempore/JAM Session
- (b) Oral Presentations – To be shot on video camera
- (c) Group Discussions- Conference Hall required- To be shot on video camera

3. Managerial Effectiveness
Business Etiquette/Soft Skills Basics, Interpersonal Skills, Interview techniques

Activities:
- (a) Interpersonal Skills Role Play
- (b) Lunching out for dining etiquette- (To be decided on the basis of students' willingness to contribute)
- (c) Mock Interviews- Resource persons required from CRC (Assisted by PC Dept.)

4. Leadership &Team Building
Leadership and growth
Ground rules for team development
English Aptitude

Activities:
- (a) Team building activities- Resources required from CRC
- (b) English language Quiz
- (c) Business Quiz

Santosh.

Registrar
Invertis University
Bareilly

MBA01 - Digital Marketing

Total:50 Hrs Module

MODULE 01: INTRODUCTION TO DIGITAL MARKETING (03 Hrs)

- ➢ What is marketing?
- ➢ What is Traditional Marketing?
- ➢ What is Digital Marketing?
- ➢ Benefits of Digital Marketing over Traditional Marketing
- ➢ Different approaches to Digital Marketing
- ➢ Main Components of Digital Marketing
- ➢ Phases of Digital Marketing

MODULE 02: INTRODUCTION TO WEBSITE CREATION (03 Hrs)

- ➢ Introduction to Website Creation
- ➢ What are Types of websites?
- ➢ Corporate Website
- ➢ E-commerce Website
- ➢ Informative Website
- ➢ Types of Informative Websites
- ➢ Social Media Website
- ➢ Personal Website
- ➢ Static and Dynamic websites
- ➢ What is Responsive Web-design
- ➢ Content Management System (CMS)
- ➢ What is Domain Name?
- ➢ What is Hosting and Types
- ➢ What is Wireframe?
- ➢ What is Navigation, Sidebar and Content Area

MODULE 03: ADVANCE WEBSITE PLANNING & CREATION (04 Hrs)

- ➢ How to purchase a domain ?
- ➢ How to purchase hosting ?
- ➢ How to install C Panel ?
- ➢ Understanding cpanel for website
- ➢ Wordpress CMS installation
- ➢ Wordpress dashboard introduction
- ➢ How to create post ?
- ➢ How to create a page using Page Builder ?
- ➢ Global navigation area
- ➢ Theme options overview

MODULE 04: CONTENT/ INBOUND MARKETING (03 Hrs)

- ➢ What is Content Marketing
- ➢ Rules of Content Marketing
- ➢ Advantages of content Marketing
- ➢ Plagiarism Checker
- ➢ Content Spinning

- ➢ Content Generation Strategies
- ➢ Content Strategy Calendar

MODULE 05: Video Marketing & Graphic Designing (03 Hrs)
- ➢ Content Marketing Types
- ➢ Content Creation Tools
- ➢ Blogging - Different Types of biogs
- ➢ Video Marketing
- ➢ Infographics& Images
- ➢ Emailers

MODULE 06: EMAIL MARKETING FOR BUSINESS   (03 Hrs)
- ➢ Getting started with Email Marketing
- ➢ Factors effecting email delivery
- ➢ Improve the rate to reach inbox
- ➢ Email marketing list building
- ➢ Types of email campaigns
- ➢ Opt-in email marketing
- ➢ Bulk Email Marketing
- ➢ Creating perfect emails
- ➢ Email marketing tools:
- ➢ Mailchimp, Aweber, GMass, Send in Blue
- ➢ Email reporting & measuring efforts

MODULE 07: SEARCH ENGINE OPTIMIZATION   (03 Hrs)
- ➢ Introduction to Search Engine Optimization
- ➢ How search engine works
- ➢ Google Adwords account creation
- ➢ Introduction to Google Adwords dashboard
- ➢ Keyword research process
- ➢ Keyword planner tool

ON-PAGE SEARCH ENGINE OPTIMIZATION   (03 Hrs)
- ➢ On-Page optimization
- ➢ Meta Tags-Title and Description
- ➢ Understanding image optimization
- ➢ SEO Plugins forWordpress

OFF-PAGE SEARCH ENGINE OPTIMIZATION   (03 Hrs)
- ➢ Introduction to Off-Page Optimization
- ➢ Different types of backlinks
- ➢ Search Engine Submissions
- ➢ Directory Submission
- ➢ Blog & Forum
- ➢ PR, PA, DA, Spam level etc

MODULE 08: LEAD GENERATION & CONVERSION OPTIMIZATION   (03 Hrs)

- Define a lead
- Understanding 4 pillars of lead generation
- Landing Pages
- Know types of landing pages
- Landing pages essentials
- How to create optimized form
- Key offers to promote

MODULE 09: GOOGLE PPC INTRODUCTION   (03 Hrs)

- Introduction to Google Adwords
- Account management basics
- Keyword targeting
- Types of Google Ads - Search and Display
- Understanding what ore PPC and CPC
- Understanding 7 different A&Nords Keywords - including negative keywords
- Understanding keyword research

MODULE 10: ADVANCED SEARCH ADVERTISING   (03 Hrs)

- Introduction to Search Advertising
- What is bidding - different bidding methods
- Creating A&Nords Search Network Campaign
- Bidding strategies
- Ad Scheduling
- Ad Targeting
- Understanding different Ad Extensions
- Budgets & bidding
- Search advertising advanced

MODULE 11: ADVANCED DISPLAY NETWORK ADVERTISING   (03 Hrs)

- Introduction to Google Display Network
- Google display planner tool
- Launching Display Campaign
- App Install Campaigns

MODULE 12: SOCIAL MEDIA MARKETING   (03 Hrs)

- What is Social Media
- Importance of Social Media in Digital Marketing
- Introduction to different social Media networks

MODULE 13: FACEBOOK AND INSTAGRAM ADVERTISING   (03 Hrs)

- Introduction to facebook Advertisements
- Setting up facebook Advertisements goal
- Creating facebookAd campaign
- Creating, organizing and managing facebook ads

Registrar
Invertis University
Bareilly

- ➢ Introduction to instagram ads
- ➢ Facebook ad bidding strategies
- ➢ Facebook ad analysis and ROI

MODULE 14: GOOGLE ANALYTICS   (04 Hrs)

- ➢ Introduction to Google Analytics
- ➢ Getting started with Google Analytics
- ➢ Google analytics account creation
- ➢ Understanding account structure
- ➢ Setting up google analytics tracking
- ➢ Key metrics & dimensions
- ➢ Understanding analytics report
- ➢ Adwords&Analytics description
- ➢ Goals, Ecommerce, Multi-Channel, Funnels &Attribution
- ➢ Advance google analytics

Registrar
Invertis University
Barellly

EVS – 01 ENVIRONMENTAL SCIENCE

COURSE OBJECTIVE:

The objectives of this course is to provide knowledge about multidisciplinary nature of environment, various sources of natural energy, ecosystem, environment, factors affecting it, environmental ethics and its protection through lectures, presentations, documentaries and field visits.

Unit 1:

1. Introduction to Environmental studies: Definition, scope and importance, Need for public awareness.
2. Natural resources: Renewable and Non-renewable resources. Role of an individual in the conservation of natural resources, Concept of sustainability and sustainable development. **-10hrs**

Unit 2:

3. Biodiversity and its conservation: Introduction- definition, Types of diversity: genetic, species and ecosystem biodiversity. Value of biodiversity: Consumptive use, productive use, social, ethical and aesthetic values.
4. Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity. **-07hrs**

Unit 3:

5. Ecosystems: Concept of ecosystem, Structure and function of ecosystem, Producers, consumers and decomposers.
6. Energy flow in an ecosystem: food chain, food web, ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries),biogeochemical cycles(nitrogen cycle, water cycle, carbon cycle) **-10hrs**

Unit 4:

7. Environmental Pollution: Air pollution: definition, causes, effects and Control measures. Water pollution: definition, causes, effects and control measures. Soil pollution: Causes of soil degradation, effects and control measures. Noise pollution: Causes, effects and control measures. Nuclear hazards.
8. Global warming: Depletion of ozone layer, green house effect. Acid rain, Disaster management: Floods, Earthquakes, Cyclones, Landslides. **-10hrs**

Santosh.

Registrar
Invertis University
Barellly

Unit 5:

9. Social issues and the Environment: Environmental movements: Chipko, Appiko, Silent valley, Bishnois of Rajasthan.

10. S olid w aste m anagement: C auses, e ffects a nd c ontrol m easures of ur ban a nd i ndustrial wastes.

11. E nvironment pr otection A ct, W ildlife pr otection A ct, F orest c onservation A ct, water protection Act and Air protection Act. **-10hrs**

Unit 6:

12. Population explosion: F amily w elfare p rogramme, methods of s terilization, urbanization, environment a nd hum an he alth. Infectious di seases, water-related diseases, risks due t o chemicals in food, cancer. HIV/AIDS, Woman and child welfare. **-05hrs**

Unit 7:

- Field work Visit to an area to document e nvironmental a ssets r iver/ forest/ g rassland/ hill/ mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc- **5 hrs**

COURSE OUTCOMES:

1. S tudents w ill be a ble t o unde rstand about t he va rious environmental i ssues a nd pr oblems associated with the human population and the environment.

2. Students will be able to describe a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

REFERENCES:

1. Agarwal, K.C.(2001) Environmental Biology, Nidi Publ. Ltd. Bikaner.
2. Odum,E.P., Odum, h.T. & Andrews, J.!971. Fundamnetals of Ecology. Philadelphia: Saunders
3. Bharucha, E.- Environmental Studies, U.G.C. New Delhi.
4. Joseph Benny- Environmental Studies, Tata Mcgraw Hill Publications.
5. Kannan - Environmental Pollution, S. Chand & Co. New Delhi.
6. Rajgopalan, R.- Environmental Studies, Oxford Publication.
7. Sharma P.D.- Ecology & Environment, Rastogi Publications.

Registrar
Invertis University
Bareilly

HVE – 01 HUMAN VALUES AND PROFESSIONAL ETHICS

COURSE OBJECTIVES:

a. To give basic insights and inputs to the student to inculcate Human values to grow as responsible human beings with a proper personality.

b. Professional Ethics instills the student to maintain ethical conduct and discharge their professional duties.

c. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human being.

d. To facilitate the development of a Holistic perspective among students towards life, profession and happiness.

e. To highlight plausible implications of the above Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature

UNIT - I:

1. Understanding the Harmony in the Society (society being an extension of family), Integrity, Work Ethic, Courage, Empathy, Self Confidence, Moral Autonomy, Concensensus and Controversy, Professional and Professionalism, Professional Ideas and Virtues.

2. Understanding the Principals of Ethics and Morality:- Ethics as a Subset of Morality, Ethics and Organizations, Employee Duties and Rights, Discriminatory and Pre-judicial Employee Practices, Understanding Harmony in Nature, Natural Acceptance of Human Values

3. Understanding the need, basic guidelines, content and process for Value Education. Self Exploration - what is it? - its content and process; 'Natural Acceptance' and Experiential Validation - as the mechanism for self exploration

UNIT - II:

4. Understanding Harmony in the Human Being - Harmony in Myself! : Understanding human being as a co-existence of the sentient 'I' and the material 'Body'.

5. Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer).

6. Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail.

Santosh.
Registrar
Invertis University
Bareilly

UNIT - III:

7. Understanding harmony in the Family the basic unit of human interaction. Understanding values in human - human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship.

8. Understanding the meaning of Vishwas; Difference between intention and competence. Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship.

9. Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astiva as s comprehensive Human Goals. Visualizing a uni versal harmonious order in society - Undivided Society (Akhand Samaj), Universal Order(Sarvabhaum Vyawastha) - from family to world family!

UNIT - IV:

10. Understanding the harmony in the Nature. Interconnectedness and mutual fulfillment among the four orders of nature - recyclability and self-regulation in nature.

11. Understanding Existence as Co-existence (Sah-astiva) of mutually interacting units in all-pervasive space. Holistic perception of harmony at all levels of existence.

UNIT -V:

12. Understanding Collegiality an Loyalty:- Respect of Authority, Collective Bargaining, Confidentiality, Professional Rights, Intellectual Property Rights, Multinational Corporations, Honesty, Moral Leadership, Sample Code of Conduct, Corporate Responsibility.

13. Understanding Social Audit and Ethical Investing, Computer and Ethics, Management Patterns,

UNIT - VI:

14. Understanding the Competence and Professional Ethics-

i) Ability to Utilize the Professional Competence for Augmenting Universal Human Order

ii) Ability to identify the scope and Characteristics of people-friendly and eco -friendly production

iii) Ability to identify and develop appropriate technologies, and Management and pattern for above production system.

15. Understanding the Strategy for Transition from the Present State to Universal Human Order-

i) At the Level of Individual- as Socially and Ecologically Responsible Technologists and Managers

ii) At the Level of Society- as Mutually Enriching Institutions and Organizations. Case studies of typical holistic technologies and management patterns.

EXPECTED OUTCOMES:

1. The students identify the importance of human values and skills for sustained happiness.

2. The students strike a balance between profession and personal happiness/ goals.

3. The students realize/ explain the significance of trust, mutually satisfying human behavior and Enriching interaction with nature.

4. The s tudents de velop/ pr opose a ppropriate t echnologies a nd m anagement pa tterns t o c reate harmony in professional and personal life

TEXT BOOKS:

1. R. R . G aur, R S angal, G P B agaria, 2009, A   Foundation C ourse i n H uman Values and Professional Ethics.

2. Prof. K . V . S ubba R aju, 2013, S uccess S ecrets f or E ngineering S tudents, S mart S tudent Publications, 3rd Edition.

REFERENCES:

1. Ethics in Engineering , Mike Martin and Roland Schinzinger, McGrawHill.

2. Engineering ethics-concepts and cases, Charles E Harris, Michael S Pritchard

3. Thompson Learning. E thics a nd t he conduct of bus iness ,J ohn R B oatright, P earson education.

4. Ethical Choices in Business, R.C.Sekhar, Response Books.

5. Business ethics, William Shaw , wordsworth Publishing company.

6. Business Ethics-Concepts and cases, Manual G. Valasquea, Pearson Education.

Registrar
Invertis University
Bareilly

BSE001 - Financial Modeling in Collaboration with BSE

Course Name	Financial Modeling
Objective of the Course	• to estimate the valuation of a business • to compare businesses to their peers in the industry • to do strategic planning on financial issues
Eligibility of participants	Graduation Students
Course duration	75 hours
Teaching Methodology	Activity Based
Outcome	Able to take financial decisions

Module1: Introduction to Financial Modeling and Spreadsheet Essentials (15hrs)

- Introduction to Financial Modeling
    - Strengths and weaknesses of spreadsheets
    - Golden rules of spreadsheet design
    - Do we make the most of modeling?
- Spreadsheet essentials
    - Lookup and reference functions
    - NPV and IRR functions
    - Data tables
    - IF function
    - Excel Skils - Shortcuts, Formulas, Array Function and Pivot Tables
    - VBA
    - Macros
    - Simple exercise/models in excel

Module 2: Integrated financial modeling I (Data, cost and revenues) (20 hrs)

Frameworks and concepts covered

- Data Collection and Data Structuring
- Preliminary Scrutiny of the Data and Information
- Understand the Business Model and Operating Model
- Modeling the Historical Statement
- Business Drivers Identification and Modeling
- Modeling Assumptions for Future Action
    - Modeling Revenue Build-up - projecting the future revenues
    - Modeling Cost Build-up - projecting the future cost
    - Modeling the Asset Schedule

Registrar
Inverus University
Barellly

Module 3: Integrated financial modeling (Financial statement analysis) (20hrs)

- Equity Modeling - Equity Infusion
- Modeling Paid Up Capital and Share Premium Account
- Modeling Retained Earning Schedule
- Modeling the projected P/L and BS
- Modeling the projected Cash Flow Statement
- Conducting Covenant Testing
- Performing Ratio Analysis
- WACC and Cost of Equity Analysis
- Performing V aluation us ing D CF (FCFF & E nterprise V alue) a nd Comparable analysis (Relative Valuation)

Module 4: Measuring Risk (10hrs)

- Estimating betas with regression analysis
- Using daily, weekly, and monthly data
- Testing market efficiency
  - With regression analysis
  - With pivot tables
  - Recording and editing macros

Module 5: Advanced risk analysis (10hrs)

- **Sensitivity, Scenario**
- Monte-Carlo simulation
- Risk analysis of discounted cash flow models
- Spreadsheet features
  - Using @Risk for Monte-Carlo simulation
  - Combining macros with @Risk

Case study 1
Case study 2
Case study 3

Registrar
Invertis University
Bareilly

Value Added Course

Course Details:

Name of the Course: - Computerized Accounting with Tally ERP.9   **Course Code –** BC01

Course Offered to – B.Com (H) Final Year   **Course Duration –** 50Hours

Course Coordinator: - Mr. Naveen Agrawal

OBJECTIVE:

The objective of this course is develop accounting professionals who are ready to deal with the complex transactions in the corporate world. This course will enable the student to record large number of transactions and maintain the books of accounts according to the requirements of the industry.

PRE-REQUISITE(s):

Working knowledge of financial accounting and should be able to operate a computer system independently.

OVERVIEW:

Tally is an accounting software that is very much useful in making calculations in small and mid-level businesses. All the Banking, Auditing and Accounting work can be done using this software. Tally's accounting features permit you to record business transactions instantly and easily. Record transactions necessary for your business by creating and maintaining vouchers, masters and generating reports. It helps you manage all the major accounting operations in your business.

Why take this course?

- To develop accounting skills required in an industry.
- To attain knowledge of the recent accounting practices introduced in the finance field
- To be able to independently record and maintain accounts with the help of the accounting software "Tally ERP.9"

What you will learn in this course:

- Maintaining books of accounts in the computerized environment.
- Preparing financial statements such as Balance Sheet, Statement of Profit & Loss and Cash Flow Statement.
- Recently introduced tax regime "Goods & Services Tax".

Who should take this course:

- Students interested in making their career in the accounting field.
- Those who wants to learn and perform accounting, inventory and taxation work on Tally
- Those who are keen in understanding different accounting softwares.
- Those who have interest in accounts and finance.

Course Outline:

	Topic	No. of hours allocated
Topic 1	User Interface and Company Management	1
Topic 2	Masters: Ledgers and Groups	3
Topic 3	Payment Voucher & Receipt Voucher	2
Topic 4	Day Book	1
Topic 5	Contra & Journal Voucher	2
Topic 6	Masters: Inventory	3
Topic 7	Goods & Services Tax (GST)	4
Topic 8	Purchase Voucher & Sales Voucher (with GST)	3
Topic 9	Making Bills in Tally	2
Topic 10	Debit Notes & Credit Notes	2
Topic 11	Bank Reconciliation	3
Topic 12	Stock Transfers	1
Topic 13	Batch wise details	1
Topic 14	Interest Calculations	1
Topic 15	Voucher types	2
Topic 16	Party Ledger Analysis	1
Topic 17	Purchase & Sales Report	2
Topic 18	Cash & Bank Reports	2
Topic 19	Search, Filter and Sorting	2
Topic 20	Financial Reports	3
Topic 21	Export, Import, Backup & Restore	2
Topic 22	Finalisation entries	2
Topic 23	Printing Reports	1
Topic 24	Miscellaneous	1
Topic 25	Shortcut keys	3

BT – 03 Understanding genomics with Next Generation Sequencing (NGS)

Course Name	Understanding genomics with Next Generation Sequencing (NGS)
Objective of the Course	The Value Added Courses aim to provide additional learner centric graded skill oriented bioinformatics training, with the primary objective of improving the employability skills of engineering students. The main objectives of the program is to aware young students to understand the pattern of genes, Single nucleotide polymorphism (SNP), Transcription Factor Binding Sites (TFB), Open Reading Frames (ORF) etc in the genome of the organism. The key features include: 1. To provide students an understanding of the Linux platform and software associated with NGS. 2. To improve employability skills of engineering students in programming language like R and Python. 3. To bridge the skill gaps and make students research orientated. 4. To provide an opportunity to students to develop inter-disciplinary skills and apply there theoretical knowledge with practical's.
Brief Outline of the Course	The course is divided in 6 stages 5 hours each in short will be of 30 hours: 1. Understanding the Linux platform and commands used for text manipulation by the help of awk, sed, grep etc. 2. Understanding the data generation from different types of NGS sequencing platforms like Illumina, Solex etc. 3. Understand the fastq file format, Quality Control and Preprocessing of fastq file generated from different platforms. 4. Mapping with the reference genome and understanding the alignment with the help of different mapping software BWA,

	Bowtie etc.
	5. Preprocessing of the mapped file, statistical analysis of the mapped data, summary generation and filtering.
	6. Population based analysis of SNP association and statistical analysis by means of Principal Component Analysis (PCA) and clustering algorithms.
Eligibility of participants	The participate should have gone through following bacis: 1. Basics of Molecular Biology: Mutations, SNPs, Genome and genes. 2. Bioinformatics Practical: BLAST, NGS Data Generation, Clustering algorithms. 3. Programming: Data Structure, R and Python (not mandatory)
Course duration	30 hours
Certificate (if Yes then criteria)	Not Applicable

Santosh.

Registrar
Invertis University
Bareilly

ARW 01 Academic Research Writing

Course Name	Academic Research Writing
Objective of the Course	➢ To provide the fundamental knowledge required for effective and result oriented academic writing. ➢ To develop the methods of citation, conventions of style and organization, and critical thinking skills necessary for writing research papers.
Brief Outline of the Course	Its helps to learn basic research and writing skills that are necessary for clear and accurate written communication. The course includes lectures on topics including selecting a topic, conducting research, citing sources, ethics and legalities, and, finally, proofreading and publishing.
Eligibility of participants	PG students, Research Scholars and interested faculty members
Course duration	36 hrs (Two sessions of one hour per day for 20 days)
Certificate (if Yes then criteria)	Not Applicable

COURSE SYLLABUS: Academic Research Writing

Course Description

This course will help to teach you the basic research and writing skills that are necessary for clear and accurate written communication. The goal is to prepare you for research project requirements for courses within Invertis University but also in any academic endeavour you might pursue. The course includes lectures on topics including selecting a topic, conducting research, citing sources, ethics and legalities, and, finally, proofreading and publishing. These topics, which are succinctly presented, will serve as an online resource for you to return to often in your academic pursuits..

Course Objectives

- To Demonstrate efficient planning, drafting, revision, and editing strategies;
- To understand the fundamental knowledge required for effective and result oriented academic writing.
- To apply selected scientific and professional genres, including digital texts, summaries, abstracts, and critical reviews;
- To analyze message, audience, language choice, tone, purpose, and author's ethos in selections from a text;
- Evaluate sources for relevance and reliability
- To develop the methods of citation, conventions of style and Organization, and critical thinking skills necessary for writing research papers.

Eligibility:

- PG students, research scholars, young scientists and faculty members of Biotechnology Department.

Registrar
Invertis University
Bareilly

Course Lecturers :

1. **Dr. Ravi Deval**
   Associate Professor, Invertis Univeristy

   Education: PhD in Biotechnology

   Teaching Career: 8 years of teaching experience

   Research Expertise: Reproductive Toxicology, Immunology, Molecular Biology

2. **Dr. Pankaj Kumar Rai**
   Assistant Professor, Invertis University

   Education: PhD in Biotechnology

   Teaching Career: Five Years

   Research Expertise: Industrial Microbiology, Biofuel Production, Bioprocess Development, Environmental Microbiology

Course Texts:

Required text for this course and style guide for Academic writing
Kate L. Turabian, A Manual for Writers of Research Papers, Theses, and Dissertations, revised by Wayne C. Booth, Gregory A. Colomb, Joseph M. Williams, and the University of Chicago Press Editorial Staff, 7th edition, Chicago Style for Students and Researchers (Chicago: University of Chicago Press, 2007).

Academic Honesty:

- *Quizzes and Exams*: Any student found guilty of cheating on a quiz or exam will automatically receive a score of zero for that quiz or exam. A second offense will result in automatic course failure and possible disciplinary action and/or expulsion from Course.
- *Plagiarism:* If a student's work is found to be plagiarized, consequences will vary depending on the nature of the plagiarism.
  If an offense is deemed unintentional, the student will have an opportunity to resubmit the work. A second offense will result in an automatic score of zero for that assignment, which may also result in failure of that course.
  More serious plagiarism offenses could result in automatic course failure, disciplinary action, or expulsion from Course.

Course Methods:

Registrar
Invertis University
Bareilly

Throughout this course, a number of methods will be used to engage the students in learning and processing information and applying the learning to their lives. These methods include the following:

Media/Materials:

The course will include media presentations of lectures and supplementary materials to be viewed and/or read throughout the lessons of the course.

Video-based teaching

The primary teaching session in each lesson is provided in Flash (FLV) and HTML5 (MP4) format. For international or domestic students who do not have the bandwidth required to view the video (384 Kbps DSL minimum), we provide the option of reading the lesson from a transcript of the teaching video (found in the Class Time activity).

Multisensory learning

For students who wish to use a medium other than video, we provide the option of reading the lesson from a transcript of the teaching video (found in the Class Time activity). Students can choose the medium (or combination of media) that most closely aligns with their individual learning styles.

Readings and other media
Reading from the required textbook will be assigned to students with each lesson.

Application
Lessons are accompanied by exercises designed to help students apply the concepts learned in the lectures.

Course Requirements:
This course is provided to prepare you for research writing but does not offer academic credit. To meet the requirements of applicable IU programs, you must complete all requirements as listed. This study consists of readings, video lectures, and trial exercises. The information regarding these course components and expectations is as follows:

Reading :
Study assignments covered in this course should be read in the context of the lesson in which they are assigned.

Registrar
Invertis University
Bareilly

Throughout this course, a number of methods will be used to engage the students in learning and processing information and applying the learning to their lives. These methods include the following:

Media/Materials:

The course will include media presentations of lectures and supplementary materials to be viewed and/or read throughout the lessons of the course.

Video-based teaching

The primary teaching session in each lesson is provided in Flash (FLV) and HTML5 (MP4) format. For international or domestic students who do not have the bandwidth required to view the video (384 Kbps DSL minimum), we provide the option of reading the lesson from a transcript of the teaching video (found in the Class Time activity).

Multisensory learning

For students who wish to use a medium other than video, we provide the option of reading the lesson from a transcript of the teaching video (found in the Class Time activity). Students can choose the medium (or combination of media) that most closely aligns with their individual learning styles.

Readings and other media
Reading from the required textbook will be assigned to students with each lesson.

Application
Lessons are accompanied by exercises designed to help students apply the concepts learned in the lectures.

Course Requirements:
This course is provided to prepare you for research writing but does not offer academic credit. To meet the requirements of applicable IU programs, you must complete all requirements as listed. This study consists of readings, video lectures, and trial exercises. The information regarding these course components and expectations is as follows:

Reading :
Study assignments covered in this course should be read in the context of the lesson in which they are assigned.

Registrar
Invertis University
Bareilly

Video Lectures:

Each of the lessons in this course features a video lecture of approximately 15 to 30 minutes in length delivered by instructors. These lectures are required and can be viewed as many times as needed. The written text of the lectures, as well as a guided outline to assist in note taking, are made available in PDF format in the Class Time activity. There are five lectures in this course.

Trail Exercises:

Each lesson in this course includes assignments that will help you put into practice the concepts you learned in the reading and lesson lecture. Though you will not turn these assignments in, you will be asked to confirm that you completed all assignments when you submit your course validation at the end of the course.

Course Grading:

This course is provided for your preparation only. Although it is required, only pass/fail grades will be issued.

Lesson Topics and Assignments:

Lesson 1: Introduction to the Writing Process: Brainstorming and Prewriting
• View Lecture #1.
• Complete brainstorming exercises.

Lesson 2: Drafting (Research and Sources)
• View Lecture #2.
• Find and list possible sources for a topic that interests you.
• Become familiar with online resources.
• Read from course text: Part 1, "Research and Writing: From Planning to Production."

Lesson 3: Citations and Style Guides
• View Lecture #3.
• Complete citation exercises.

Lesson 4: Ethical and Legal Issues in Writing
• View Lecture #4.
• Review recent writing to screen for unintentional plagiarism.
Lesson 5: Revise, Proofread, Publish
• View Lecture #5.
• Complete proofreading exercise.
• Review from course text: Part 3, "Style."

Lesson 5 Follow-Up

- Complete validation form indicating completion of all course requirements.
- Complete and submit course survey form.

Santosh.

Registrar
Invertis University
Bareilly

PC – 02 Professional Communication Course

Course Name	Professional Communication Course
Objective of the Course	To develop and practice effective Written, oral and Visual communication skills in order to apply in various professional situations.
Brief Outline of the Course	This course helps to send clear messages, choose appropriate social behaviours, acquire essential listening skills, develop strong problem solving strategies, obtain proper speaking skills, learn how to work well in a group setting, and gain self-confidence. Topics will be covered through real life examples that encourage students to work with authentic documents. Written and oral responses to these documents will be used to facilitate discussion and ground theory in real world examples.
Eligibility of participants	First year students of B. Tech in Biotechnology
Course duration	48 hrs (four hrs per week for whole semester with maximum 48 lectures)
Certificate (if Yes then criteria)	

Registrar
Invertis University
Bareilly

Value Added Course

Course Details:

Name of the Course: -AutoCAD

Course Offered to – B.Tech (ME)

Course Coordinator: - Mr. Dheeraj Sagar

Course Code – ME01

Course Duration – 60 Hrs

OBJECTIVE:

The entire objective of the 60 hours this program is to develop the basics of the students in designing and analysis of various mechanical systems and to get the knowledge of drafting the Mechanical Components and develop the geometry of the mechanical systems.

PRE-REQUISITE(s):

Basic knowledge of Operating Computer.

OVERVIEW:

Engineering drawing is the common language of the engineers across globe. It provides the required knowledge and process of creating drawing for any engineering application. A utocad drawn and logical way following the standards and formats help an efficient way to communicate the design information. It describes specific component in a way that the viewer of the drawing understands without misinterpretation.

Why take this course?

- To develop basic skills related engineering drawing.
- To give more insight to the geometrical perspective of mechanical systems.
- To solve design related problems more efficiently.
- To meet the industrial skill demands and ready with the added skill in design field.

What you will learn in this course:

- Common methodologies of designthe mechanical components
- Knowledge of basic design tool
- Basic understanding of geometry of the mechanical systems.

Who this course is for:

- For the students of Mechanical Engineering and civil engineering background this course is in great demand form design and construction point of view.

Faculty for the Course:-

-
-

Course Outline:

	Topic	No. of hours allocated
Module 1	Introduction to Engineering drawing and AutoCAD	8
Module 2	Drafting Basic Geometry Shapes in AutoCAD	10
Module 3	Advanced Drafting Tools	7
Module 4	Layer management	8
Module 5	Hatching and Annotations	6
Module 6	Application of blocks and external references	6
Module 7	Layout ,Plot and publish	8
Module 8	Project work	7

Registrar
Invertis University
Bareilly

ME02 - ANSYS

OBJECTIVE:

The entire objective of the 60 hours this program is to develop the basics of the students designing and analysis.

Introduction to FEA and Ansys

- Introduction toFEA
- General Working ofFEA
- Nodes, Elements, and ElementShapes
- General Procedure of Conducting FiniteElement Analysis
- FEA throughANSYS
- Effective Utilization ofFEA
- FEASoftware
- Advantages and Limitations of FEASoftware
- Key Assumptions inFEA
- Assumptions Related toGeometry
- Assumptions Related to MaterialProperties
- Assumptions Related to BoundaryConditions
- Assumptions Related toFasteners
- Types ofAnalysis
- StructuralAnalysis
- ThermalAnalysis
- Fluid FlowAnalysis
- Electromagnetic FieldAnalysis
- Coupled FieldAnalysis
- Important Terms andDefinitions
- Strength (Resistance toDeformation)
- Load
- Stress
- Strain
- ElasticLimit
- UltimateStrength
- Factor ofSafety
- Lateral Strain and Poisson'sRatio
- BulkModulus
- Creep
- EngineeringMaterials
- Introduction toANSYS
- SystemRequirements
- Getting Started withANSYS
- InteractiveMode
- BatchMode
- Starting a New File Using the ANSYSProduct Launcherwindow

- Command WindowIcon
- Raise HiddenIcon
- ResetPicking
- ContactManager
- ANSYSToolbar
- Model ControlToolbar
- User PromptInformation
- CurrentSettings
- Setting the AnalysisPreferences
- Units inANSYS
- Other Important Terms Related toANSYS
- DialogBoxes
- GraphicsDisplay
- Panning, Zooming, and Rotating theModel
- Dividing the GraphicsArea
- The Pan-Zoom-Rotate DialogBox
- GraphicsPicking
- Using Mouse Buttons forPicking
- ANSYS Database andFiles
- Saving theFile
- Resuming theFile
- Clearing theDatabase
- Some Basic Steps in General AnalysisProcedure
- Points to Remember while Performing anAnalysis
- ExitingANSYS
- Self-EvaluationTest

Basic Solid Modeling

- Solid Modeling inANSYS
- Solid Modeling and DirectGeneration
- Solid ModelingMethods
- Bottom-upConstruction
- Top-downConstruction
- Considerations before Creating a Model forAnalysis
- DetailsRequired
- Symmetry
- Creating GeometricEntities
- CreatingLines
- CreatingArcs
- CreatingB-Spines
- Creating Fillets between IntersectingLines
- CreatingAreas
- Creating and Modifying Workplanes
- Display WorkingPlane
- Show WPStatus

Registrar
Invertis University
Bareilly

- WPSettings
- Offset WP byIncrements
- Offset WPto
- Align WPwith
- Coordinate Systems inANSYS
- Global CoordinateSystem
- Local CoordinateSystem
- Active CoordinateSystem
- Display CoordinateSystem
- Nodal CoordinateSystem
- Element CoordinateSystem
- Results CoordinateSystem
- Creating New CoordinateSystems
- Deleting ExistingCoordinate

Advanced Solid Modeling

- Advanced SolidModeling
- CreatingVolumes
- ExtrudingEntities
- Extending theLine
- Creating Complex Solid Models by PerformingBoolean Operations
- Modifying the SolidModel
- Scale
- Move
- Copy
- Reflect
- Deleting Solid ModelEntities
- Importing SolidModels
- Importing the IGESFile
- Importing Models fromPro/ENGINEER
- Importing the Model fromUnigraphics

Finite Element Modeling (FEM) – I

- An Overview of the Finite ElementModeling
- ElementAttributes
- ElementTypes
- Reasons Why ANSYS has a Large ElementLibrary
- RealConstants
- MaterialProperties
- MultipleAttributes
- Assigning Multiple Attributes beforeMeshing
- Assigning Default Attributes beforeMeshing
- Modifying Attributes afterMeshing

- WPSettings
- Offset WP byIncrements
- Offset WPto
- Align WPwith
- Coordinate Systems inANSYS
- Global CoordinateSystem
- Local CoordinateSystem
- Active CoordinateSystem
- Display CoordinateSystem
- Nodal CoordinateSystem
- Element CoordinateSystem
- Results CoordinateSystem
- Creating New CoordinateSystems
- Deleting ExistingCoordinate

Advanced Solid Modeling

- Advanced SolidModeling
- CreatingVolumes
- ExtrudingEntities
- Extending theLine
- Creating Complex Solid Models by PerformingBoolean Operations
- Modifying the SolidModel
- Scale
- Move
- Copy
- Reflect
- Deleting Solid ModelEntities
- Importing SolidModels
- Importing the IGESFile
- Importing Models fromPro/ENGINEER
- Importing the Model fromUnigraphics

Finite Element Modeling (FEM) – I

- An Overview of the Finite ElementModeling
- ElementAttributes
- ElementTypes
- Reasons Why ANSYS has a Large ElementLibrary
- RealConstants
- MaterialProperties
- MultipleAttributes
- Assigning Multiple Attributes beforeMeshing
- Assigning Default Attributes beforeMeshing
- Modifying Attributes afterMeshing

- Verifying AssignedAttributes
- Element AttributesTable

Finite Element Modeling (FEM) – II

- Finite Element Modeling (FEM) -II
- Mesh Generation
- MeshDensity
- Meshing the SolidModel
- Setting ElementAttributes
- Defining theMesh
- Defining the Entity to beMeshed
- Defining the MeshingType
- Meshing theModel
- Refining the MeshLocally
- Extruding theMesh
- Transitional PyramidElements
- Requirements for Creating PyramidElements
- Creating Transitional Pyramid Elements (Hex-to-TetMeshing)
- Converting Degenerate Tetrahedral (20 nodes) Elementsinto
- Non-degenerate (10 nodes) TetrahedralElements
- Plotting PyramidElements
- Meshing the Beam with OrientationNodes
- Creating the Beam Mesh with OrientationNodes
- Creating the Beam Mesh with Two OrientationNodes
- Improving the Tetrahedral ElementMeshes
- Improving Tetrahedral Meshed Volumes by UsingVolumes
- Improving Tetrahedral Meshed Volumes by UsingDetached Elements
- Some Additional Tips while Meshing theModel
- ApplyingLoads
- The Nodal CoordinateSystem
- Loads in DifferentDisciplines
- Types of Loads inANSYS
- Load Steps, Sub steps, andTime
- ApplyingLoads
- DeletingLoads
- Deleting DOFConstraints
- Deleting all Loads and Load StepOptions
- Deleting all Loads Applied on SolidModel
- Deleting all Loads Applied on Finite ElementModel

Solution and Postprocessor

- Solution
- Defining the New AnalysisType

Registrar
Invertis University
Bareilly

- starting theAnalysis
- Setting SolutionControls
- Setting AnalysisOptions
- Solving the AnalysisProblem
- Post processing theResult
- POST1 (GeneralPostprocessor)
- POST26 (Time-historyPostprocessor)
- Result Coordinate System(RSYS)
- Displaying the Deformed Shape of theModel
- Displaying the Minimum and MaximumStresses
- Listing ReactionForces
- Listing Stress Values at eachNode
- QueryPicking
- PathOperations
- Load CaseCombinations

Static Structural Analysis

- Effect of self-weight on a cantileverbeam
- Analysis of a bicyclehandle
- Analysis of a stud(pin)
- Analysis of amaster

Advanced Structural Analysis (Dynamic andNonlinear)

- Advanced StructuralAnalysis
- DynamicAnalysis
- Performing the ModalAnalysis
- Specifying the Analysis Type, Analysis Options, andApplying Loads
- Obtaining theSolution
- ReviewingResults
- Performing the HarmonicAnalysis
- Specifying the Analysis Type, Analysis Options, andApplying Loads
- Obtaining theSolution
- ReviewingResults
- Performing the TransientAnalysis
- Specifying the Analysis Type, Analysis Options, andApplying Loads
- Obtaining theSolution
- ReviewingResults
- NonlinearAnalysis
- GeometricNonlinearity
- MaterialNonlinearity
- Boundary Nonlinearity (ChangingStatus)

- ApplyingLoads
- Obtaining theSolution

Advanced Structural Analysis

- Steel tubes and springsstructure
- Modal analysis of an airplanewing
- Nonlinear analysis (materialnonlinearity)

Thermal Analysis

- ThermalAnalysis
- Important Terms Used in ThermalAnalysis
- Heat TransferModes
- ThermalGradient
- ThermalFlux
- BulkTemperature
- FilmCoefficient
- Emissivity
- Stefan–BoltzmannConstant
- ThermalConductivity
- SpecificHeat
- Types of Thermal Analysis
- Steady-State ThermalAnalysis
- Transient ThermalAnalysis
- Performing Steady-State ThermalAnalysis
- Setting the AnalysisPreference
- Creating or Importing a SolidModel
- Defining ElementAttributes
- Meshing the SolidModel
- Specifying the Analysis Type, Analysis Options, andApplying Loads
- Solving the AnalysisProblem
- Post processingResults
- Performing Transient ThermalAnalysis
- Specifying the Analysis Type and Setting SolutionControls

Generating the Report of Analysis

- Starting the ANSYS ReportGenerator
- Capturing Images for theReport
- Capturing Animations for theReport
- Capturing Data Tables for theReport
- Capturing Lists for theReport
- Compiling theReport
- Changing the Default Settings of the ANSYS ReportGenerator

- Error Estimation inSolution
- Percentage Error in Energy Norm(SEPC)
- Element Energy Error(SERR)
- Element Stress Deviations(SDSG)
- Maximum and Minimum Stress Bounds (SMXBand SMNB)