MAHARAJA SURAJMAL BRIJ UNIVERSITY, BHARATPUR

Chak Sakitara, Kumher, Rajasthan, India, 321201

Value Added Courses

As per NEP 2020

(Common for All Postgraduate Courses)

(Dr. Ramesh Swami)

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(Dr. Arvind Kumar)

(Dr. Vikas Pareek)

(Dr. Vijay Singh)

PG VAC 1: DIGITAL EMPOWERMENT

Learning Objectives

The Learning Objectives of this course are as follows:

- Understand the digital world and need for digital empowerment
- Create awareness about Digital India.
- Explore, communicate and collaborate in cyberspace.
- Building awareness on cyber safety and security.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Use ICT and digital services in daily life.
- Develop skills to communicate and collaborate in cyberspace using social platforms, teaching/learning tools.
- Understand the significance of security and privacy in the digital world.
- Evaluate ethical issues in the cyber world

UNIT- I

Digital inclusion and Digital Empowerment (8 hrs)

- Needs and challenges
- Vision of Digital India: DigiLocker, E-Hospitals, e-Pathshala, BHIM, e-Kranti
- (Electronic Delivery of Services}, e-Health Campaigns
- Public utility portals of Govt. of India such as RTI, Health, Finance, Income Tax
- filing, Education

UNIT- II

Communication and Collaboration in the Cyberspace (8 hrs)

- Electronic Communication: electronic mail, biogs, social media
- Collaborative Digital platforms
- Tools/platforms for online learning
- Collaboration using file sharing, messaging, video conferencing

UNIT- Ill

Towards Safe and Secure Cyberspace (7hrs)

- Online security and privacy
- Threats in the digital world: Data breach and Cyber Attacks
- Blockchain Technology
- Security Initiatives by the Govt of India

UNIT- IV

Ethical Issues in Digital World (7 hrs)

- Netiquettes
- Ethics in digital communication
- Ethics in Cyberspace

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Essential Readings /Online Resources

- Rodney Jones and Christoph Hafner. "Understanding digital literacies: A practical
- Introduction". Routledge Books, 2nd edition, 2021.
- https://www.digitalindia.gov.in
- https://www.digilocker.gov.in
- https://www.cybercrime.gov.in
- https://www.cybersafeindia.in
- https://www.meity.gov. in/cyber-su ra ksh it-bha rat-program me

Suggested Readings

- David Sutton. "Cyber security: A practitioner's guide", BCS Learning &
- Development Limited, UK, 2017.
- https://www.mha.gov.in/document/downloads/cyber-safety-handbook

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PGVAC02: EMOTIONAL INTELLIGENCE

Learning Objectives

The Learning Objectives of the course are:

- Introduce the concept of emotional intelligence, its models and components.
- Understand the significance of emotional intelligence in self-growth and building
- effective relationships.
- Identify the measures of emotional intelligence.

Learning outcomes

The Learning Outcomes of the course are

- Self-Awareness, Self-Management, Social Awareness & Relationship Management.
- Discover personal competence and techniques of building emotional intelligence.
- Gain insights into establishing positive relationships.

UNIT- I

Fundamentals of Emotional Intelligence (8hrs)

- Nature and Significance
- Models of emotional intelligence: Ability, Trait and Mixed
- Building blocks of emotional intelligence: self-awareness, self-management, social
- awareness, and relationship management

UNIT- II

Personal Competence (8 hrs)

- Self Awareness: Observing and recognizing one's own feelings, Knowing one's
- Strengths and areas of development.
- Self Management: Managing emotions, anxiety, fear, and anger.

UNIT- III

Social Competence (7 hrs)

- Social Awareness: Others' Perspectives, Empathy and Compassion
- Relationship Management: Effective communication, Collaboration, Teamwork,
- and Conflict management

UNIT- IV

Emotional Intelligence: Measurement and Development (7 hrs)

- Measures of emotional intelligence
- Strategies to develop and enhance emotional intelligence

Essential/recommended readings

- Bar-On, R., & Parker, J.D.A.(Eds.) (2000). The handbook of emotional intelligence.
- San Francisco, California: Jossey Bros.
- Goleman, D. (2005). Emotional Intelligence. New York: Bantam Book.
- Sternberg, R. J. (Ed.). (2000). Handbook of intelligence. Cambridge University Press.

Suggested Readings

- HBR's 10 Must Reads on Emotional Intelligence (2015)
- 15
- HBR's 10 Must Reads on Managing Yourself (2011)
- Self Discipline: Life Management, Kindle Edition, Daniel Johnson.

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PGVAC03: ETHICS AND CULTURE

Learning Objectives

The Learning Objectives of this course are as follows:

- To help students explore ethical and cultural dimensions of their lives.
- To provides a forum for students to pause, revisit their assumptions and beliefs, and
- become mindful of their thoughts, emotions and actions.
- To give the students an opportunity to express themselves and inquire into their
- decision making processes.
- To cultivate ethical values and participate in the creation of a society based on
- acceptance, compassion, and justice.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Explore perspectives on ethics in thoughts, words and actions
- Evolve ethical decision making practices
- Understand the need for an ethical society and culture
- Introspect, become conscious of and assess one's stance in life
- Cultivate empathy, tolerance and compassion
- Apply the values learnt in the course to everyday life

UNIT- I

Introduction - The Basis of Ethics (8hrs)

- Getting to Know Each Other
- What to Expect from the Course?
- Recognition of Our Common Humanity
- Empathy, Compassion and Justice

UNIT- II

The Role of Intelligence, Reason and Emotions (8hrs)

- Discernment: What Is The Right Thing To Do?
- The Art of Conflict Resolution
- Destructive and Constructive Emotions
- The Need for Emotional Balance

UNIT- III

Cultivating Inner Values- Ethics in the World of Work and Play (7hrs)

- Training the Mind: Mindfulness and Kindness
- Meditation
- Discovering your Vocation and Interests
- Self-discipline, Integrity, Commitment, Creativity
- Work-Life Balance

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(Dr. Vikas Saeed)

UNIT- IV

Striving for a Better World I Outreach Activities (7hrs)

- Means and Ends
- Debate and Dialogue
- Culture as Shared Values
- Creating and Sustaining Ethical Cultures: The Role of Philosophy, Religion, Literature, Theatre, Cinema, Music, Media
- Outreach Activities

Suggested Readings:

- Aristotle. Nichomachean Ethics. London: Penguin Classics, 2004
- Swami Vivekananda. The Complete Works of Swami Vivekananda. Advaita Ashrama, 2016.
- https://www.ramakrishnavivekananda.info/vivekananda/complete_works.html
- Panch Parmeshwar in English translation as The Holy Panchayat by Munshi
- Premchand
- The Silas Marner by George Eliot
- Weare Seven by Wordsworth
- The Chimney Sweeper by William Blake

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PGVAC04: SCIENCE AND SOCIETY

Learning Objectives

The Learning Objectives of this course are:

- The primary objective of this course is to instil in students an appreciation for science and a scientific outlook and temper.
- The course further aims to increase awareness about fundamental scientific concepts that play an important role in our daily life using various examples and case studies.
- Pedagogy in this course should largely rely on learning by enquiry, observations, experimentation and group discussions using case studies/examples.
- Efforts should be made to instill an interest in students for science.
- Students should be encouraged to understand and appreciate scientific concepts and their applications rather than solely memorizing factual information.

Learning outcomes

The Learning Outcomes of this course are:

- This paper is interdisciplinary in nature and would provide students with basic exposure to scientific methods, technologies and developments that have played a significant role in the evolution of human society from ancient to modern times.
- Students would also be made aware of the scientific rationale of technological developments that would enable them to make informed decisions about their potential impact on society.

UNIT- I (8 hrs)

Science and Technology- from Ancient to Modern Times

- Philosophy of science, the scientific method, importance of observation, questions and experimental design, rational thinking, myths vs. Facts
- Science, Technology and Traditional Practices: Suggestive areas include: Water harvesting structures and Practices;

UNIT- II (8 hrs)

- Construction, architecture and design - use of natural environment-friendly designs and materials; Agriculture including domestication of plants and animals.

UNIT- III (7 hrs)

Science and Technology in Modern Times

- Public Health: Nutrition, Hygiene, Physical and Mental Health, Vaccines and Antibiotics, Antimicrobial resistance; Food Security: Green Revolution, White Revolution

UNIT- IV (7 hrs)

- IT Revolution, E-Governance; Clean Energy, Renewable Energy; Space Science and Exploration;
- Evolution, Ecology and Environment

Essential/recommended readings

- Basu and Khan (2001). Marching Ahead with Science. National Book Trust
- Gopalakrishnan (2006). Inventors who Revolutionised our Lives. National Book Trust
- Yash Pal and Rahul Pal (2013) Random Curiosity. National Book Trust
- Hakob Barseghyan, Nicholas Overgaard, and Gregory Rupik :- Introduction to History and Philosophy of Science

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- John Avery {2005). Science and Society, 2nd Edition, H.C. 0rsted Institute, Copenhagen.
- Dharampal (2000). Indian Science and Technology in the Eighteenth Century, OIP.

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PGVAC05 : ART OF BEING HAPPY

Learning Objectives

- To synthesize the insights developed by Human Development experts, Psychologists, Anthropologists on one hand, and the intellectual traditions of Vedantic Philosophy and Indology on the other towards the experience of happiness.
- To illustrate various factors that determine the subjective experience of happiness in a cross cultural context.

Learning outcomes

- The students shall be able to evaluate the factors contributing to the phenomenon of happiness in the personal, familial and community life of an individual in different cultures in the Indian context.
- They will be able to develop healthy interpersonal relationships and wellbeing cherishing the values of Indian culture and philosophy.
- They will be able to relate to the global phenomenon of sustainable development and become sensitive to the needs of the planet.
- They will be able to apply the experience of *Aananda* at a personal level.

UNIT- I

Human Ecology and Happiness Lectures (8 hrs)

- Definitions/Factors of Happiness: Environmental and Social
- Physical, emotional and psychological well-being for happiness
- Physiological and hormonal basis of happiness
- Coping with Stress: A life saving skill

UNIT- II

Indological Theories of Happiness (8hrs)

- *Panch Kosh* Theory & Idea ofWell-Being
- Idea of Self and other
- Hierarchy and stages of happiness

UNIT- III

Happiness: Cross-cultural Contexts (7hrs)

- Culture and Happiness
- Interpersonal Relationship: Comparative Perspective towards Self-Actualization

UNIT- IV

Local and Global Perspective of Happiness (7hrs)

- Measuring happiness: Key indicators
- Happiness Index
- India in Global Happiness Indices

Essential/recommended readings

- Banavathy, Vinayachandra & Choudry, Anuradha. (2013). Understanding Happiness: A Vedantic Perspective. Psychological Studies. 59. 141-152. 10.1007 /s12646-013-0230-x.
- Leontiev, Dmitry. (2012). Anthropology of Happiness: the state of Well-Being and the way of Joy,In SocialScience,Vol43. No 2 P 93-104.
- Snyder .C.R. S.J. Lopez & J.T. Pedrotti. (2015). Positive Psychology (The Scientific and Practical Explorations of Human Strengths): Sage Publication. (Chapter 5:

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Subjective Well-being: The Science of Happiness and Life Satisfaction, Page 63 to 73)

- World Development Indicators 2016. (2016).United States: World Bank Publications.
- Zelenski, John. (2019) Positive Psychology: The Science of Well-Being, Carleton University, Ottawa, Canada, Sage Publications Chapter 3:Happiness;page (77 to 110)

Suggestive readings

- Baumgardner,S&Crothers,M.(2014).Positive Psychology. New Delhi: Pearson Education, India.
- Goleman,D.(2007).Social Intelligence: The new science of human relationships, RHUK
- Mathews, Gordon and Carolina Izquierdo (eds). (2010). Pursuits of Happiness: Well being in Anthropological Perspective. Berghan Books
- Seligman,M.(2002). Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfilment. NewYork:Free Press.
- Sri Aurobindo, The Synthesis of Yoga, Part Three: The Yoga of Divine Love, Chapter 7, The Ananda Brahman, pp. 569-570

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PHVAC06 : IPR (Intellectual Property Rights)

Course Objectives

- Learn the basics of intellectual property and Rights for protection.
- To learn the different forms of IP Rights and criteria.
- To learn the significance of protecting one's intellectual property for monetisation.

Course Outcomes

- The learners undergoing the course will be equipped with the basic understanding of their intellectual property rights.
- Acquire knowledge about the provisions of laws for protecting IP regime.
- Learn how to make use of one's IP rights for commercial application in any business venture.

UNIT- I (8 Hrs)

Introduction to Intellectual Property

- Definition of a property - intellectual property, tangible and intangible property. Different forms of IP – Patents, Copyrights and Related Rights, Trademarks, Industrial Designs, Geographical Indications, IC design rights.
- Regulations and International Agencies
  WTO and GATT, WIPO – roles and responsibilities; TRIPS provisions. International conventions governing IP laws.

UNIT- II (8 Hrs)

Patents

- What is a patent? Different types of patents.
- Criteria of patentability, Examination process
- basics of patent draft; compulsory licensing;
- Infringement and provisions of enforcement.
- Indian patent law provisions and guidelines.

UNIT- III (7 Hrs)

Other IP Rights

- Copyrights – criteria, economic and moral rights.
- Trademarks – specifications and guidelines, well known marks, service marks
- Geographical Indications – criteria fulfillment, case study of some well-known Indian GI tags.
- Infringement and enforcement provisions for each under Indian law.

UNIT- IV (7 Hrs)

IP Rights and significance

- Major rationale behind IP rights protection.
- Commercialization of IP Rights – licensing and assignment, exclusive and non-exclusive licensing. Significance in Startup and entrepreneurship ventures

Suggested Books:

- V K Ahuja (2015). Intellectual Property Rights in India. Ed. 2nd LexisNexis ISBN : 9789351433880.
- N.K. Acharya (2014). Text book on Intellectual Property Rights, Ed. 7, Asia Law House
- William Cornish, David Llewelyn (2003). Intellectual Property: Patents, Copyrights, Trademarks & Allied Rights. Sweet & Maxwell; 5th edition.

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e RESOURCES:

- http://biosafety.icgeb.org/inhousepublicationscollectionbiosafetyreviews.
- http://www.igmoris.nic.in/guidelines1.asp
- World Trade Organisation. http://www.wto.org
- World Intellectual Property Organisation. http://www.wipo.int
- International Union for the Protection of New Varieties of Plants. http://www.upov.int
- National Portal of India. http://www.archive.india.gov.in
- National Biodiversity Authority. http://www.nbaindia.org

JOURNALS:

- Journal of Intellectual Property Rights.
- Indian Journal of Traditional Knowledge
- Journal of Biosafety and Biosecurity

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Paper Name-Communication Skill & Personality Development
Paper code- PSVAC 07

TOTAL MARKS-50 (INTERNAL)

Course Objectives

1. To understand the concept of personality.
2. To explore various aspects of personality development.
3. To understand the concept of Communication.
4. To acquire knowledge about the body language.
5. To learn about the leadership development.
6. To understand the concept of time management and communication skills.

Course Outcome:

1. Students will be able to understand the Concept of personality
2. Students will know various aspects of personality.
3. Students will be able develop effective communication skill
4. Students will be able to acquire knowledge of body language.
5. Students will be able to learn about the leadership development.
6. Students will be able understand the concept of time management and communication skill.

Module I: Introduction

Meaning and concept of personality, personality traits, Self-development, Personality development, Theory related to personality development, Motivation

Module II: Aspects of personality development:

Self-image, self-concept, self-identity, self-awareness and components improving self-awareness, emotional intelligence and its components, attitude-its meaning, importance and factors affecting attitude, creativity as personality development

Module III: Team work and Leadership development:

Group dynamic, team development, Body language- its types and role, conflict management, anger management, Leadership and importance of developing leadership

Module IV: Mental health and Time management:

Stress- meaning, nature, types, symptoms, causes, Stress management rules, Role of personality development in reducing stress
Time management- importance, need and techniques, effect of time management on personality

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Module V: Personality skills:

Soft skills, communication skills, interpersonal skills, introduction skills, personal skills, presentation skill, resume writing, personal interview, mock interview, group- discussion

2. Mehta, T. S., et al. (1971) Plug Points for Population Education in School Curriculum. New Delhi: NCERT.

3. Parakh, B. S. and Associates. (1979). National Baseline Survey of Population Education in India. Report of the National Sample Survey. New Delhi: Population Education Unit, NCERT (Mimeographed).
4. Sarma, R. C. (1988). Population, Resources, Environment and Quality of Life. Handbook on Population Education. New Delhi: Dhanpati Rai & Sons.
5. Srinivasan, K., and Pathak, K. B. (eds). (1992). Dynamics of Population Education and Family Welfare 1991. Bombay: Himalayan Publishing House.
6. United Nations. (1983). Population Education Programme in Asia: What Research Says. Bangkok: UNESCO.
7. Rao, D.G., Population Education, sterling publishers.

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PGVAC-08: INDIAN SCIENCE HISTORY

Course Outcomes:

After successful completion of the course on Indian Science History, a student will be able to:

• Understand the life, work, and scientific achievements of prominent Indian scientists across different eras.

• Analyze the historical development of key scientific institutions and technologies in India.

• Understand the interdisciplinary contributions of Indian scholars in fields such as physics, chemistry, mathematics, and space research.

• Understand the socio-political challenges faced by Indian scientists and their influence on national development.

Unit-I

Bibliography of Indian scientists in the field of Science. Work and life of CV Raman and Bhabha.

Unit-II

History of Indian rocket technology, Indian Missile Man, History of Bose-Einstein Condensation, Evolution of Nuclear power in India, ISRO contributions.

Unit-III

Contribution of mathematician Aryabhatta, Contribution made by the Chemists of Ancient India like Nagarjuna and Kanada.

Unit-IV

Shanti Swaroop Bhatnagar - "Father of Research Laboratories" in India, contribution to industrial research and role in establishments of CSIR.

References/Books:

1. Science India. Scientific Magazines by Vijnana Bharati. For details visit: https://scienceindiamag.in.

2. Knowledge Traditions and Practices of India (a text book) 2012, Kapil Kapoor, Michel Danino.

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PGVAC-03: GREEN CHEMISTRY

Learning Outcomes:

After the completion of this course, student will be able to:

1. Understanding of the fundamental principles of green chemistry.
2. Ability to design and develop sustainable chemical processes.
3. Apply green chemistry principles to design sustainable reactions using alternative solvents, energy-efficient methods, and atom-economical strategies.
4. Understanding of the industrial applications and future aspects of green chemistry.

UNIT-1 GREEN CHEMISTRY: PRINICIPALS AND PRACTICES

Definition and principles of green chemistry, twelve principles of green chemistry, History and evolution of green chemistry, Benefits of green chemistry, Green chemistry metrics: Atom economy, Efactor, Role of green chemistry in sustainable development

UNIT-2 GREEN SYNTHESIS AND CATALYSIS

Green solvents: Supercritical fluids, Ionic liquids, Water, Green reagents and catalysts, Biocatalysis in green chemistry, Microwave and ultrasonic-assisted synthesis, Photocatalysis and electrocatalysis, Case studies of green synthesis in industry

UNIT-3 GREEN TECHNOLOGY

Reactions under aqueous medium: Enhancement of selectivity, efficiency and industrial applicability. Solvent free reactions in solid & liquid phase, Ionic liquids; Supercritical fluids. Microwave and Ultrasound assisted reactions; photochemical reactions using sunlight. Atom economy.

UNIT-4 FUTURE TRENDS

Heterogeneous catalysis: Use of zeolites, silica, alumina, clay, polymers, cyclodextrin and supported catalyst; Phase-transfer catalysis; Biocatalysis using enzymes; Biomass conversion to fine chemicals. Flow techniques; combinatorial green chemistry

References:

1. New Trends in Green Chemistry, V.K. Ahluwalia and M. Kidwai, Kluwer Academic Publishers.
2. Handbook of Green Chemistry and Technology, James Clark and Duncan Macquarrie, Blackwell Publishing
3. An Introductory Text on Green Chemistry, Indu Tucker Sidhwani and Rakesh K. Sharma, Wiley Publisher

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PH VAC 101 PHYSICS OF NANO-MATERIALS

Course Outcomes:

After successful completion of the course on Physics of Nano-Materials, a student will be able to:

• Understand the quantum confinement effect and analyze its consequences through simple models.

• Describe different types of fabrication techniques of nanomaterials like PVD and CVD.

• Demonstrate the physics behind various characterization techniques.

UNIT-I

Nanoscale Systems: Length scales in physics, Nanostructures: 1D, 2D and 3D nanostructures (nanodots, thin films, nanowires, nanorods), Density of states (1-D,2-D,3-D), Band structure of materials at the nanoscale, Size Effects in nano-systems.

UNIT-II

Quantum confinement and its consequences on optical, electrical and magnetic properties, Applications of Schrodinger equation- Infinite potential well, potential step, potential box, quantum confinement of carriers in 3D, 2D, 1D nanostructures and its consequences.

UNIT-III

Overview and Synthesis of Nanomaterials: Metals, Metal Oxides, Carbon-based nanomaterials CNT, C60, graphene, Top-down and bottom-up approach, Ball milling, Co-precipitation, Sol-gel and Hydrothermal synthesis, Annealing and sintering process.

UNIT-IV

Vacuum deposition, Thermal evaporation, Physical vapor deposition (PVD), Chemical vapor deposition (CVD), Photolithography.

References/Books:

1. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).

2. S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company).

3. K.K. Chattopadhyay and A. N. Banerjee, Introduction to Nanoscience and Technology (PHI Learning Private Limited).

4. Introduction to Nanoelectronics, V.V. Mitin, V.A. Kochelap and M.A. Stroscio, 2011, Cambridge University Press.

5. Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).

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