NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL



Mandatory Non-Credit Courses

Third Year

B.Tech. Program

(Effective from 2021-22)

Scheme of Instruction

Mandatory Non-Credit Courses

S.No.	Course Code	Name of the Course	L	T	P	Credits	Sem
1	IC301	Integrated Self-Management	1	0	0	0	V/VI
2	IC302	Integrated Yoga for Promotion of Positive Health	1	0	0	0	V/VI
3	IC303	Health, Wellness and Fitness Management	1	0	0	0	V/VI
4	IC304	Holistic Human Health	1	0	0	0	V/VI
5	IC305	Intellectual Property Rights and Patents	1	0	0	0	V/VI
6	IC306	Disaster Management	1	0	0	0	V/VI
7	IC307	Sustainable Development	1	0	0	0	V/VI
8	IC308	Environmental Science and Engineering	1	0	0	0	V/VI
9	IC309	Engineering Biology	1	0	0	0	V/VI

Course Code: IC301	INTEGRATED SELF MANAGEMENT	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Identify critical evidence gaps to guide the development
CO2	Review pedagogical practices used by teachers in formal and informal
CO3	Demonstrate the effectiveness of pedagogical practices
CO4	List the factors supporting effective pedagogy

Syllabus:

Attitude: Proactivity, perception, self-awareness, SWOT Responsibility and Discipline

Stress Management: Identifying personal Stressors, effective study habits Areas of concern, coping up technique, guided relaxation Cognition: thought process, assumptions, presumptions, beliefs, values Integrating the thinking process for effective outcome. Emotions management: compassion, empathy, discipline.

Time management: an insight into time- activity assessment/24 hours Methods to distribute time judiciously to manage studies, play, leisure. Goal Setting: purpose of setting goals, advantages, daily goals, weekly goals to lon term goals. Identifying steps leading achieving the target

Group Dynamics: team building, group activity, discussions, debates, conducting event. Listening skills., Win/ Win attitude. Presentation; grooming, personality, being aware of nonverbal and verbal habits

Assertiveness: understanding between non-Assertive v/s ASSERTIVE v/s Aggressive behavior. Added advantage of assertive behavior is to have WIN/WIN situations Public speaking; independent expression and Talk Show Inter Personal Relation building: Introduction to Transactional Analysis

Learning Resources:

Text Books:

1. Stephan R. Covey, ‘The 7 Habits of Highly effective People‘, Freepress Publications, 1989
2. David D. Burns, ’Feeling Good: The New Mood Therapy’, first published 1980
3. M. Scott Peck, ’The Road Less Travelled’ 1976
4. Daniel Goleman, ‘Emotional Intelligence’, 2002
5. Thomas Anthony Harris, ’I'm OK – You're OK’, 1967

Course Code: IC302	INTEGRATED YOGA FOR PROMOTION OF POSITIVE HEALTH	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Understand the foundation and stages of Yoga
CO2	Enumerate the importance of practicing yoga
CO3	Identify the benefits & effects of Kriyas, Bandhas, Pranayama
CO4	Understand relation of yoga, health & mental health
CO5	Accomplish overall health of body and mind
CO6	Build social health through healthy mind in healthy body

Syllabus:

- Basics of Yoga
- Ashtang Yoga
- Yoga and Mental Health
- Research Reviews (Minimum Eight) Related to Yoga
- Yoga Related Practical Work, Field Work

Learning Resources:

Text Books:

1. Yogic Asanas for Group Training - Part-I, Janardan Swami Yogabhyasi Mandal, Nagpur
2. Rajayoga or conquering the Internal Nature, Swami Vivekananda, Advaita Ashrama (Publication Department), Kolkata.
3. Ministry of AYUSH, International Yoga Day 21st June, Common Yoga Protocol, GOI, GOP Complex, INA, New Delhi, 2015.
4. Dr. Nagarathna. R., Nagendra H.R., Yoga, ISBN: 978-81-87313-16-8, Published by Vivekananda Yoga Research Foundation, 2009.
5. Sahay G.S., Subodh Tiwari, Yoga Modules for Institutions of Higher Learning, yeshtha Purpnima, Kaivalyadhama Ashram Publication, ISBN – 89485-51-2, Lonavla, Pune, Maharashtra, India, 2009.
6. “Yoga An Instruction Booklet”, ISBN : 81-89248-00-6, Vivekananda Kendra Prakashan trust, Chennai, July 2012.

Online Resources:

1. www.harekrsna.de/surya/suryaya-namaskar.pdf
2. www.lexiyoga.com/yoga-quotes.

Course Code: IC303	HEALTH, WELLNESS AND FITNESS MANAGEMENT	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Understand knowledge of Health, Wellness & Personal fitness management.
CO2	Identify the components of personal Fitness & Wellness dimension.
CO3	To know the about Obesity and Body Weight control.
CO4	Prepare Balanced Diet based on the Nutritional principles.
CO5	Develop the Physiological concepts of Personal Fitness Training.

Syllabus:

- Introduction to Health, Wellness & fitness Management
- Fitness Training Methodology
- Obesity & Body Weight Management
- Physiological Concepts of Training
- Course Practice

Learning Resources:

Reference Books:

1. Lumpkin, A. (2010). Introduction to physical education, exercise science, and sport studies. Boston, MA: McGraw-Hill.
2. Park's Text Book of Social and Preventive medicine. K Park
3. Periodization Training for Sports, By Tudor Bompa and Carlo A. Buzzichelli. (3rd Ed.). IL: Human Kinetics
4. Fitness and Wellness by Wener and W.K. Hoeger Tenth Edition
5. Greenberg, Dintiman, Oakes. (2004). Physical fitness & wellness (3rd Ed.). IL: Human Kinetics
6. Physical Fitness and Wellness -3rd Edition Changing the Way You Look, Feel and Perform, By Jerrold George Dintiman, Barbee Myers Oakes. Human Kinetics.
7. Howley& Franks (1997). Health fitness instructor's Handbook (3rd Ed.) IL: Human kinetics.
8. ACSM (1998) ACSM's resource manual for guidelines for exercise testing & Prescription (3rd Ed.) Lippincott, Williams & Wilkins
9. Durstine & Moore (2003) ACSM's exercise management for person's with chronic diseases & Disabilities (2nd Ed.) IL: Human Kinetics.

Course Code: IC304	HOLISTIC HUMAN HEALTH	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Understand important issues related to gender in contemporary India
CO2	Identify measures for countering gender discrimination in our society
CO3	Understand the gendered division of labour and its relation to politics and economics
CO4	Respond to put an end to gender violence
CO5	Practice egalitarian interactions between men and women.

Syllabus:

Module 1: Human Health

Holistic health, Harmony, Human Constitution, Daily routine, Cleansing, physical activities

Module 2: Food for Health

Food (quality and quantity, preparation); Consumption, Air, Water, Sunlight

Module 3: Being Healthy and Restoration

Labour and Exercise, Posture and Pranayam, Sleep, Protection of body, handling diseases, Health of family and society

Module 4: Mental Health

Stress, Control of thoughts, resolving mental conflicts, meditation, awareness

Learning Resources:

Text Books:

1. The Complete Book of Ayurvedic Home Remedies: A comprehensive guide to the ancient healing, Little, Vasant Lad, Brown Book Group (2 November 2006)
2. Mental & Holistic Health: Some International Perspectives (Health and Human Development), Joseph L Calles, Nova Science Publishers Inc; 1st edition (1 December 2015)

Course Code: IC305	INTELLECTUAL PROPERTY RIGHTS AND PATENTS	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Understand IPR law
CO2	Discuss registration process, maintenance and litigations associated with trade marks
CO3	Illustrate the copy right law
CO4	Enumerate the trade secret law.

Syllabus:

UNIT I: Introduction to Intellectual Property Law – The Evolutionary Past - The IPR Tool Kit- Para -Legal Tasks in Intellectual Property Law – Ethical obligations in Para Legal Tasks in Intellectual Property Law - Introduction to Cyber Law – Innovations and Inventions Trade related Intellectual Property Right

UNIT II: Introduction to Trade mark – Trade mark Registration Process – Post registration Procedures – Trade mark maintenance - Transfer of Rights - Inter parts Proceeding – Infringement - Dilution Ownership of Trade mark – Likelihood of confusion - Trademarks claims – Trademarks Litigations – International Trade mark Law

UNIT III: Introduction to Copyrights – Principles of Copyright Principles -The subjects Matter of Copy right – The Rights Afforded by Copyright Law – Copy right Ownership, Transfer and duration – Right to prepare Derivative works – Rights of Distribution – Rights of Perform the work Publicity Copyright Formalities and Registrations - Limitations - Copyright disputes and International Copyright Law – Semiconductor Chip Protection Act

UNIT IV: Introduction to Trade Secret – Maintaining Trade Secret – Physical Security – Employee Limitation - Employee confidentiality agreement - Trade Secret Law - Unfair Competition – Trade Secret Litigation – Breach of Contract – Applying State Law

Learning Resources:

Text Books:

1. Intellectual Property, Debirag E.Bouchoux, Cengage learning , New Delhi
2. Intellectual Property Right, M. Ashok Kumar and Mohd. Iqbal Ali, Serials Pub.
3. Intellectual Property Rights, Prabhuddha Ganguli, Tata Mc-Graw –Hill, New Delhi

Course Code: IC306	DISASTER MANAGEMENT	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Understand key concepts in disaster risk reduction and humanitarian response.
CO2	Evaluate disaster risk reduction and humanitarian response policy
CO3	Understand the strengths and weaknesses of disaster management approaches
CO4	Identify disaster prone areas in India

Syllabus:

Introduction: Disaster: Definition, Factors and Significance; Difference Between Hazard And Disaster; Natural And Manmade Disasters: Difference, Nature, Types AndMagnitude.

Repercussions of Disasters and Hazards: Economic Damage, Loss of Human And Animal Life, Destruction of Ecosystem; Natural Disasters: Earthquakes, Volcanisms, Cyclones, Tsunamis, Floods, Droughts and Famines, Landslides and Avalanches, Man-made disaster: Nuclear Reactor Meltdown, Industrial Accidents, Oil Slicks and Spills, Outbreaks of Disease and Epidemics, War and Conflicts.

Disaster Prone Areas in India: Study of Seismic Zones; Areas Prone to Floods and Droughts, Landslides and Avalanches; Areas Prone to Cyclonic and Coastal Hazards with Special Reference to Tsunami; Post-Disaster Diseases and Epidemics

Disaster Preparedness and Management: Preparedness: Monitoring of Phenomena Triggering a Disaster or Hazard; Evaluation of Risk: Application of Remote Sensing, Data From Meteorological and Other Agencies, Media Reports: Governmental and Community Preparedness.

Risk Assessment: Disaster Risk: Concept and Elements, Disaster Risk Reduction, Global and National Disaster Risk Situation. Techniques of Risk Assessment, Global Co- Operation In Risk Assessment and Warning, People's Participation in Risk Assessment. Strategies for Survival.

Disaster Mitigation: Meaning, Concept and Strategies of Disaster Mitigation, Emerging Trends in Mitigation. Structural Mitigation and Non-Structural Mitigation, Programs of Disaster Mitigation in India.

Learning Resources:

Text Books:

1. Disaster Management in India: Perspectives, issues and strategies, R. Nishith, Singh AK, NewRoyal book Company.
2. Disaster Mitigation Experiences and Reflections, Sahni, Pardeep Et.Al. (Eds.), Prentice Hall of India, New Delhi.
3. Disaster Administration and Management Text and Case Studies, Goel S. L., Deep & Deep Publication Pvt. Ltd., New Delhi.

Course Code: IC307	SUSTAINABLE DEVELOPMENT	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Describe the national and global environmental, economic and social issues and the principles of different sustainable development frameworks
CO2	List the factors governing sustainable development
CO3	Apply the sustainable development principles during the planning of developmental activities

Syllabus:

INTRODUCTION: Status of environment – Environmental, Social and Economic issues – Need for sustainability – Nine ways to achieve sustainability – population, resources, development and environment.

CHALLENGES OF SUSTAINABLE DEVELOPMENT AND GLOBAL ENVIRONMENTAL ISSUES: Concept of sustainability – Factors governing sustainable development – Linkages among sustainable development- Environment and poverty – Determinants of sustainable development – Case studies on sustainable development – Population, income and urbanization – Health care – Food, fisheries and agriculture – Materials and energy flows.

SUSTAINABLE DEVELOPMENT INDICATORS: Need for indicators – Statistical procedures – Aggregating indicators – Use of principal component analysis – Three environmental quality indices.

Learning Resources:

Text Books:

1. The Science of Sustainable Development: Local Livelihoods and the Global Environment, Sayer, J. and Campbell, B., (Biological Conservation, Restoration &Sustainability), Cambridge University Press, London, 2003.
2. Sustainable Development, Kirkby, J., O'Keefe P. and Timberlake, Earth scan Publication, London, 1993.
3. An introduction to sustainable development, Peter P. Rogers, Kazi F. Jalal, John A. Boyd, Glen Educational Foundation, 2008.

Reference Books:

1. An introduction to sustainable development, Jennifer A. Elliott, London: Routledge: Taylor and Francis group, 2001.
2. Principles of Sustainable Development, Douglas Muschett, St. Lucie Press, 1997.

Course Code: IC308	ENVIRONMENTAL SCIENCE AND ENGINEERING	Credits 1-0-0: 0

Course Outcomes:

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

CO1	Identify environmental problems arising due to engineering and technological activities and the science behind those problems.
CO2	Estimate the population - economic growth, energy requirement and demand.
CO3	Analyze material balance for different environmental systems.
CO4	Realize the importance of ecosystem and biodiversity for maintaining ecological balance.
CO5	Identify the major pollutants and abatement devices for environmental management and sustainable development

Syllabus:

Introduction to Environmental Science: Environment and society, major environmental issues: Ozone layer depletion, Acid rains, global climate change etc., sustainable development, Environmental impact assessment, environmental management

Natural Resources Utilization and its Impacts: Energy, minerals, water and land resources, Resource consumption, population dynamics, urbanization.

Ecology and Biodiversity: Energy flow in ecosystem, food chain, nutrient cycles, eutrofication, value of biodiversity, biodiversity at global, national and local levels, threats for biodiversity, conservation of biodiversity

Water Pollution: Sources, types of pollutants and their effects, water quality issues, contaminant transport, self-purification capacity of streams and water bodies, water quality standards, principles of water and wastewater treatment.

Air Pollution: Sources, classification and their effects, Air quality standards, dispersion of pollutants, control of air pollution, automobile pollution and its control.

Solid Waste Management: Sources and characteristics of solid waste, effects, Collection and transfer system, disposal methods

Learning Resources:

Text Books:

1. G.B. Masters, Introduction to Environmental Engineering and Science, Pearson Edn, 2013.
2. Gerard Kiely, Environmental Engineering, McGraw Hill Education Pvt. Ltd., 2007.
3. W P Cunningham, M A Cunningham, Principles of Environmental Science, Inquiry and Applications, Tata McGraw Hill, 8th Edition, 2016.
4. M. Chandrasekhar, Environmental science, Hi Tech Publishers, 2009.

Course Code: IC309	ENGINEERING BIOLOGY	Credits 1-0-0: 0

Course Outcomes:

At the end of the course, the student will be able to

CO1	Realize the significance of biomolecules for sustaining life
CO2	Identify the difference between unicellular to multi-cellular organisms
CO3	Understand heredity, variation and central dogma of life
CO4	Analyze and understand the concepts of biology for engineering the cell

Syllabus:

Molecules of life, water and carbon: chemical basis of life, protein structure and function, nucleic acids and the RNA world, carbohydrates, lipids, membranes and first cells.

Cell structure and function: inside the cell, cell–cell Interactions, cellular respiration and fermentation, photosynthesis, cell cycle, biological signal transduction.

Gene structure and expression: Mitosis, Meiosis, Mendel and the gene, DNA and the gene: synthesis and repair, how genes work, transcription, RNA processing, and translation, control of gene expression, analysing and engineering genes, genomics.

Engineering concepts in biology: genetic engineering, disease biology and biopharmaceuticals, stem cell engineering, metabolic engineering, synthetic biology, neuro transmission, biosafety and bioethics.

Learning Resources:

Text Books:

1. Quillin, Allison Scott Freeman, Kim Quillin and Lizabeth Allison, Biological Science, Pearson Education India, 2016.
2. Reinhard Renneberg, Viola Berkling and Vanya Loroch, Biotechnology for Beginners, Academic Press, 2017.