



Department of Sports Science and Yoga

Ramakrishna Mission Vivekananda Educational and Research Institute
(Declared by Govt of India as Deemed University u/s 3 of UGC Act, 1956)
Belur Math, Howrah 711202, West Bengal

Integrated M.Phil -PhD Yoga: 2019 session

Course list – Semester I

Subject Code	<u>Subject Name</u>	Credits (theory)	Credits (practical)	Total Credits
Mandatory core courses				
MPY CT 101	Yogic Lifestyle	4	0	4
MPY CT 102	Physiology of Yogic Practices	3	0	3
MPY CT 103	Biomechanics and Kinesiology (Theory)	3	0	3
MPY CP 103	Biomechanics and Kinesiology (Practical)	0	1	1
MPY CT 104	Fundamentals of Neuroscience (Theory)	4	0	4
MPY CP 104	Fundamentals of Neuroscience (Practical)	0	1	1
MPY CP 105	Communicative English I	0	1	1
MPY CT 106	Comparative Philosophy & Religion	2	0	2
	Total	16	3	19
Mandatory make up courses				
MPY CT 107	Sanskrit Language I	2	0	2
	Total	2	0	2

* Students, who do not have proficiency in basic Sanskrit, have to take **Sanskrit Language I** in the 1st semester and **Sanskrit Language II** in the 2nd semester, along with the PGDY regular batch. Any other student willing to take this course may also attend it.

Note: 1 cr Theory = 1 hour/week, 1cr Practical = 2 hours/week

DETAIL SYLLABUS – FIRST SEMESTER

Subject Code	Subject Name	Credits (theory)	Credits (practical)	Total Credits
MPY CT 101	Yogic Lifestyle	4	0	4

Unit - 1: CONCEPT OF BODY, HEALTH AND DISEASE

Definition & Importance of Health According to WHO; Dimensions of Health: Physical, Mental, Social and Spiritual; Concept of Body, Health and Disease in Yoga – Yogic concept of Body from Taittiriya Upanishad, Yogic Concept of Health and Disease: Meaning and definitions, Concept of Adhi and Vyadhi according Yoga Vasistha and remedial measures; Holistic health care through Yoga. Concepts of Trigunas, Pancha-mahabhutas, Panchaprana and their role in Health and Healing; Concept of Pancha-koshas & Shat-chakra and their role in Health and Healing

Unit - 2: CAUSES OF ILL HEALTH AND REMEDIAL MEASURES ACCORDING TO PATANJALI

Potential causes of Ill-health: Mental and Emotional ill Health: Styana, Samshaya, Pramada, Avirati, Duhkha, Daurmanasya, Bhranti-darsana, Alabdha-bhumikatva and Anavasthitatva; Shuddhi Prakriyas in Yoga : Role of Shuddhi Prakriyas in preventive and curative Health, Karma Shuddhi (Yama, Niyama), Ghata Shuddhi (Shat-karma), Snayu Shuddhi (Asana), Prana Shuddhi (Pranayama), Indriya and Mano Shuddhi (Pratyahara) Mana, Buddhi, Ahamkar and Chitta Shuddhi (Dharana, Dhyana and Samadhi)

Unit - 3: YOGIC PRINCIPLES AND PRACTICES OF HEALTHY LIVING -I

Definition of Mental Health & Mental Hygiene & Total Health ; Indian approach to personality and personality integration Psycho-Social Implications of yoga; Adjustment; Personal and interpersonal adjustment through yogic methods Niyamas & Yamas; Attitude change towards yoga through individualized counseling, Psychological & yogic method Tackling ill effects of conflict and Frustration; Yogic methods, Yoga Psychology for Adjustment: Psychological, philosophical and yogic counseling; the remedial measures.

Unit - 4: YOGIC PRINCIPLES AND PRACTICES OF HEALTHY LIVING - II

Attitude change towards yoga through individualized counselling, Psychological & yogic method Tackling ill effects of conflict and Frustration; Yogic methods Yoga Psychology for Adjustment: Psychological, philosophical and yogic counselling; the remedial measures;

TEXT BOOK

1. Ghosh, Shyam : The Original Yoga Munshiram Manoharlal, New Delhi, 1999)
2. Jnanananda Bharati : Essence of Yoga Vasistha Pub: Sanata Books, Chennai
3. Hatha Ratnavali : Tirumala Tirupathi Devasthanam, Andhra Pradesh.

Subject Code	Subject Name	Credits (theory)	Credits (practical)	Total Credits
MPY CT 102	Physiology of Yogic Practices (Theory)	3	0	3

Unit-1 The concept of homeostasis and effect of yoga

Regulatory system of the body, characteristics of control systems, physiological basis of mind body medicine; Effect of yogic practices in setting up the internal environment of the body. Hypothalamo-hypophysial axis: Feedback regulation, Hypothalamus as a neuroendocrine organ, Releasing Factors, Tropic hormones of hypothalamus. Vascular and neural connections between the hypothalamus and the pituitary. circadian rhythm, Biorhythms of LH, FSH, Prolactin, Estrogen, Progesterone, ACTH GH, Cortisol. Light dark cycle and regulation of pineal hormone. Cardiovascular changes during horizontal, erect postures. Physiology of yoga as exercise and its effect on physical performance

Unit -2 Yogic breathing manuevers / Pranayama

Cardiovascular and respiratory changes during pranayama and other yogic breathing manuevers. Its long term effect. Role of different respiratory muscles in normal and forced inhalation and exhalation. Changing status of respiratory pump during yogic breathing manuevers as in pranayama and kriya. Peripheral and central chemo receptors. its sensitivity and effect of yoga on it and applications. Effect of Yogic breathing manuevers on lung volumes. Physiological mechanisms of Kevala, Antar and Bahir kumbhaka.

Unit -3

- Measurement of arterial blood pressure at rest
- Measurement of peak expiratory flow rate by peak flow meter.
- Step test and determination of physical fitness.
- Measurement of pulse rate.
- Anthropometric parameters: Weight, stature, shoulder height. Knee height (sitting)
- Measurement of BMI, BSA.

TEXT BOOKS

- Anatomy of Hatha Yoga: A Manual for Students, Teachers, and Practitioners; Book by Herbert David Coulter; Publisher Body and Breath, 2001
- A Handbook for Yogasana Teachers: The Incorporation of Neuroscience, Physiology, and Anatomy by Mel Robin, Publisher: Wheatmark; 1 edition (15 May 2009)

REFERENCE BOOKS

- Simon Borg Olivier and Bianca Machiss; Applied Anatomy and Physiology of Yoga; 3rd edition, 2007.
- Clinical Anatomy: A Revision and Applied Anatomy for Clinical. Students , Harold Ellis, Blackwell Publishing, 2006
- Essentials of Pathophysiology: Concepts of Altered Health States Carol Mattson Porth, Lippincott Williams & Wilkins, 2006

Subject Code	Subject Name	Credits (theory)	Credits (practical)	Total Credits
MPY CT 103	Biomechanics & Kinesiology (Theory)	3	0	3

Unit 1: Introduction to Kinesiology and the principles of Biomechanics in Yoga

Meaning and Definition of Kinesiology ; Basic Biomechanical terms – [Displacement], velocity; acceleration; [Angular displacement], angular velocity; angular acceleration; Mass; [Weight], Pressure; Gravity; [CM and CG], Friction; work; Power; Energy; Torque; Bio mechanical description of movement of the human body; Kinematics and Kinetics; Kinetics – the [reason behind] forces [and torques] producing motion e.g. muscles, gravity; Kinematics – the description of motion e.g. type, location, direction, planes of movement; Type of displacement (movement); Location in space; Direction of movement; Magnitude of movement; Rate of movement; Importance of Kinesiology and Biomechanics for Yoga.

Unit 2: Fundamental Concept

Fundamental concepts of following terms – Axes and Planes, Centre of Gravity, Equilibrium, Line of Gravity; Fundamental movements at various joints; Fundamental concepts of the following terms – Angle of Pull, All or None Law, Reciprocal Innervations and inhibition; Stretch and postural reflex during the practice of Yoga postures; Force – Meaning, definition, types and its application to various Yoga postures; Lever – Meaning, definition, types and its application to human body; Newton’s Laws of Motion – Meaning, definition and its application to Yoga activities.

Unit-3 : Biomechanics of Hip and spine

Biomechanics of Hip Structure & function of the bones & non contractile element of the Hip, mechanics & patho-mechanics of muscle activity at the hip & analysis of the forces on the Hip during various Yoga postures; Biomechanics of Spine: Structure & function of the bones & joints of the cervical spine, mechanics & patho-mechanics of the cervical musculature, analysis of the forces on the cervical spine during activity, structure & function of the bones & joints of the thoracic spine, mechanics of the thoracic musculature, analysis of the forces on the thoracic spine during Yoga Postures & structure & function of the bones & joints of the lumbar spine. c. Mechanics of the lumbar musculature, analysis of the forces on the lumbar spine during Yoga postures, structure & function of the bones & joints of the pelvis, mechanics of the muscle activity in the pelvis & analysis of the forces on the pelvis during activity.

Unit-4: Biomechanics of Shoulder, elbow and wrist

Biomechanics of Shoulder: Structure & function of the bones & joints of the Shoulder complex, mechanics & patho-mechanics of the muscle activity in the Shoulder complex & analysis of the forces on the Shoulder complex during Yoga postures; Biomechanics of Elbow: Structure & function of the bones & no contractile element of the elbow, mechanics of muscle activity at the elbow & analysis of the forces on the elbow during Yoga postures; Biomechanics of Wrist & Hand Structure & function of the bones & joints of the wrist & hand, mechanics of the muscle activity in the wrist & hand, analysis of the forces on the wrist during activity, mechanics of the Special connective tissue in the hand

TEXT BOOKS

1. Hay, J.G. and Reid, J.G.: Anatomy, mechanics and human motion. Englewood Cliffs, N.J.: prentice Hall Inc. 1988.
2. Knudson, D.: Fundamentals of biomechanics. New York, NY: Springer, 2007

REFERENCE BOOKS

1. McGinnis, P.: Biomechanics of sport and exercise. Champaign, IL: Human Kinetics, 2013
2. Franc Bell: Principles of Mechanics and Biomechanics, Stanley Thornes Publications, 1998
3. Iwan W. Griffiths, Principles of Biomechanics & Motion Analysis, Published by Lippincott Williams & Wilkins, 2006

Subject Code	<u>Subject Name</u>	Credits (theory)	Credits (practical)	Total Credits
MPY CP 103	Biomechanics & Kinesiology (Practical)	0	1	1

1. Measurement and error
2. Distance and Displacement, Vectors and Scalars
3. Speed and Velocity measurement, concept of graph
4. Acceleration and Retardation - measurement and graphical representation
5. Measurement of acceleration due to gravity by simple pendulum
6. Young's modulus by Searle's apparatus
7. Modulus of rigidity by dynamical method
8. Concept of angular motion using rotating stool method
9. Moment of Inertia determination
10. Concept of center of gravity of regular and irregular solids
11. Center of gravity determination of a human body by segmental procedure, uses of graph paper
12. Friction, Co-efficient of friction
13. Momentum, conservation of momentum
14. Kinetic and potential energy determination by sliding toy-cars
15. Collisions = Elastic
16. Staircase climbing – Analysis for motion, Work done per unit time, Energy

Subject Code	<u>Subject Name</u>	Credits (theory)	Credits (practical)	Total Credits
MPY CT 104	Fundamentals of Neuroscience (Theory)	4	0	4

Unit -1 Neurophysiology:

Central nervous system: Functional anatomy of Cerebrum, Cerebellum, spinal cord; Functions and importance of the parts of the brain viz., cerebrum, pons, medulla, thalamus, hypothalamus, amygdala, cerebellum. Neuronal layers of brain. Sleep and its different stages. Basic concepts of neural plasticity, Concepts of empathy related neuron, Role of yoga meditation in the management of various mental conditions, Current concepts on the changes in meditative brain.

Unit-2 Basics of biomedical recording systems & technology used in neuroscience:

Genesis of electrical potentials in brain, electroencephalogram, various brain waves and their significance, preliminary ideas about evoked potential. Basic principles of the measurement of various neural signals EEG, Evoked potentials, fMRI, NIRS.

Unit-3 Neuropsychology:

Cognitive Psychology: Basic concept of - Sensation, Perception, Attention, Memory Emotional intelligence and it's significance. Short term and long term memory, stages foundation and maintenance, Barriers to concentration; concentration according to modern concentration according to eastern psychology. Creativity and IQ: Creativity; eastern , Learning. of memory psychology, concept ofcreativity, silence and creativity; practices for creativity development; Facets of Intelligence. Personality: Nature and types. Personality development. Outline of Personality theories of Freud, Adler and Jung, Rogers. Yogic concept of Personality. Emotions, anger and anger management, learning, attention, deficits in specific cognitive domains and multiple domains. Spiritual quotient.

Unit-4 Neuropathology:

Basics of Brain Disorder, Pathology of Neurons: Apoptotic neuronal cell death, Hypoxic/ischemic neuronal necrosis, Neuronal loss in neurodegenerative disease, axonal pathologies, Axonal degeneration following neuronal death, Neuronal changes following axonal damage, neuronal inclusions. Normal aging related dementia.

Subject Code	<u>Subject Name</u>	Credits (theory)	Credits (practical)	Total Credits
MPY CP 104	Fundamentals of Neuroscience (Practical)	0	1	1

Practical: (32 Hrs)

1) Identifying EEG, EMG, Evoked potential waves, Polygraphy

2) Measurement of various psycho physiological parameters:

Reaction time, Borg's Perceived Exertion scale, Mental wellbeing, Intelligence and it's measurements.

- 3) Personality Assessment by Cattell's 16PF (Personality Factor) questionnaire, Eysenck Personality Questionnaire (EPQ).
- 4) Intelligence assessment by Alexander's Pass- along Test or any other suitable test.
- 5) Assessment of Anxiety by State Trait Anxiety Inventory (STAI).
- 6) Assessment of Depression by Beck's Depression Inventory (BDI).

TEXT BOOK

1. Guyton, A.C. and Hall, J.E. (2006) Textbook of Medical Physiology. Elsevier Saunders, Philadelphia, 11th Ed.
2. Drake, R. L., Vogl, W., Mitchell, A.W.M., Gray, H. (2015) Gray's Anatomy for Students. Churchill Livingstone /Elsavier.
3. Nagendra, H.R. and Nagarathna (2013) Yoga for Personality Development Series, Published By SVYP, Bangalore.
4. Purves, D., Augustine G. J., Fitzpatrick, D., Hall, W. C., LaMantia, A-S, and White, L. E. (2018) Neuroscience. Sinauer Associates, an imprint of Oxford University Press.
5. Daube, J.R., Rubin, D.I.. (Eds) (2009) Clinical neurophysiology. Oxford University Press, Inc.
6. Geraint Rees and Anil K. Seth (Eds) Cognitive neuroscience of consciousness. Special issue of Cognitive Neuroscience, volume 1, Issue 3, 2010 (Psychology Press, Taylor & Francis Online).
7. Paul L. Nunez and Ramesh Srinivasan (2005) Electric Fields of the Brain: The Neurophysics of EEG. (Second Edition), Oxford University Press, Inc.
8. William O. Tatum, Aatif M. Husain, Selim R. Benbadis and Peter W. Kaplan (2008) Handbook of EEG interpretation. Demos Medical Publishing, LLC.

Subject Code	Subject Name	Credits (theory)	Credits (practical)	Total Credits
MPY CT 105	Comparative Religion & Philosophy	2	0	2

Module 1- Basic Feature of Indian Philosophy (04 Hrs)

Module 2- A Brief Introduction to the History of Western Philosophy, An Introduction to the different Heterodox Traditions in Indian Philosophy (08 Hrs)

Module 3-, Carvaka Epistemology, Metaphysics, Carvaka Ethics and its similarity with Western Hedonism, Comparative Study of Carvaka Philosophy with the naturalistic trend in the philosophy of Pre Socratic Age, Jaina Epistemology, Metaphysics and Ethics (12 Hrs)

Module 4- A Study of the Pre-Socratic Age with special reference to the different philosophers of this age and a naturalistic overtone in their cosmological analysis (08 Hrs)

Module 1- A Study of the Buddhist School of Philosophy (06 Hrs)

Module 2- Introduction to Comparative Religion with its Nature, Aim and Objective, A Study of Zoroastrianism as a religion (08 Hrs)

Module 3- A Brief Introduction to the Socratic Age, Study of the Philosophies of Socrates, Plato and Aristotle (14 Hrs)

Module 4- Introduction to the Medieval Age, A study of the Philosophy of St. Augustine, Comparative study of the thought of Plato and St. Augustine (04 Hrs)

Module 1- A Study of the Philosophy of St. Thomas Aquinas and a comparative study of his thought with Aristotle (04 Hrs)

Module 2- An Introduction to the Modern Age in Western Philosophy with the Philosophy of Rene Descartes, A study of the similarity of thought of Rene Descartes with Socrates in emphasizing the role of reason in philosophical analysis, An Introduction to the Religions of Abrahamic Faith, An Introduction to Judaism as a religion (12 Hrs)

Module 3- An Introduction to the Nyaya Vaisesika School of Indian Philosophy (08 Hrs)

Module 4- Similarity of Vaisesika Paramanuvada with the ideas of the Atomists of the Pre Socratic Age, An Introduction to the Philosophy of John Locke (08 Hrs)

Module 1- An Introduction to the Samkhya and Yoga School of Indian Philosophy (10 Hrs)

Module 2- An Introduction to Christianity as a religion (06 Hrs)

Module 3- The Philosophy of Benedict de Spinoza and the similarity of his concept of Abstract Monism with that of Plato, The Philosophy of Gottfried Wilhelm Leibnitz, A study of the similarity of thought of Leibnitz and Jaina tradition in respect of their cosmological analysis (10 Hrs)

Module 4- An Introduction to the Philosophy of George Berkeley (06 Hrs)

Module 1- An Introduction to the Philosophy of David Hume (06 Hrs)

Module 2 – An Introduction to Islam as religion (08 Hrs)

Module 3- An Introduction to Mimamsaka and Vedanta Philosophical traditions (12 Hrs)

Module 4- Similarity of thought of in the Religions of Abrahamic Faith in respect of the concept of resurrection, idea of heaven and hell, concept of evil and some subtle differences of thought in these religions in respect of the nature of God (06Hrs)

Module 1- Jainism and Buddhism as a religion (10 Hrs)

Module 2- Sikhism and Hinduism as a religion (10 Hrs)

Module 3- Appraisal of the eight (08) World Religions, A study of the Transcendental Philosophy of Kant for overall synthesis of the views of different philosophers of Western Philosophy and Indian Philosophical tradition (06 Hrs)

Module 4- Synthesis and Harmony of thought in Ramakrishna and Vivekananda Philosophy (06 Hrs)

Subject Code	<u>Subject Name</u>	Credits (theory)	Credits (practical)	Total Credits
MPY CP 106	Communicative English I	0	1	1

IELTS format of learning English - Speaking, Listening, Writing and Reading

Subject Code	<u>Subject Name</u>	Credits (theory)	Credits (practical)	Total Credits
MPY CP 107	Sanskrit Language I	2	0	2

UNIT I:

Introduction and Importance of Sanskrit language. Introduction of Sanskrit Alphabet, Devangari and Roman script with Diacritical Marks. Pronunciation of Sanskrit characters and its types. Nouns, Pronouns' Shabda Roopa (Balaka, Balika, Pustak, Asmad, Yshmad and Tad) Vachana, Linga. Kaaraka (cases). Sanskrit verbs (Dhatu Roopa) (Patha, Gam, Mud, Kri, Jnaa, as in 5 Lakaras-Lat, Lit, Lang, Lot, Ling) Lakaara (Moods + Tenses), Purusha, Vachana, Sakarmaka Dhatu & Akarmaka Dhatu.

UNIT II:

Voices (Karma vachya, Kartri vachya) sentence formation. Sanskrit Sankhya (1 to 100). Avyaya and its application. Compounding of alphabets (sandhi , Ac, Hal, Visarga). Sentence making and passage reading.

UNIT III:

Understanding Sanskrit verses form 'Yoga Darshan'. "Bhagavadgita", Paratah Smarana. Hatha Yoga texts 'through using Sanskrit grammar learned in the above units. Assessment based on Sanskrit grammar. Assessment based on Sanskrit verses from 'Yoga Darshan', "Bhagavadgita", Paratah Smarana, Hatha Yoga texts.

BOOKS FOR REFERENCE

1. Goldman, Robert P. : Devavanipravesika, MLBD, New Delhi, 2011
2. CLN, Moorthy : First book of Sanskrit, Chaukhambha Sanskrit series, Varanasi, 2010
3. Dwived I., Kapil Dev.: Rachnanuvada Kaumudi, (Vol. III), Chaukhambha Orientalai Publication, Varanasi.
4. Rastriya Sanskrit: Prathama Diksha and Ditiya Diksha Sansthan, New Delhi.
5. Basavaraddi, I.V. & others : Pratah Smaran, MDNIY, New Delhi.