NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA, G.B. NAGAR

(AN AUTONOMOUS INSTITUTE)

Affiliated to

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, UTTAR PRADESH, LUCKNOW

Evaluation Scheme & Syllabus

For

Master of Integrated Technology

Computer Science & Engineering

Fifth Year

(Effective from the Session: 2024-25)

Master of Integrated Technology
Computer Science & Engineering

Evaluation Scheme
SEMESTER- IX

Sl. No.	Subject Codes	Subject	Types of Subject	Periods			Evaluation Schemes				End Semester		Total	Credit
				L	T	P	CT	TA	TOTAL	PS	TE	PE		
			3 WEEKS COMPULSORY INDUCTION PROGRAM											
1	AMICSE0901	Research Process & Methodology	Mandatory	3	0	0	30	20	50		100		150	3
2		Open Elective -IV	Open Elective	2	0	0	30	20	50		100		150	2
3	AMICSE0959	Dissertation-I	Mandatory	0	0	18				100		300	400	9
4		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		TOTAL											**700**	**14**

* List of MOOCs Based Recommended Courses for Fifth year (Semester-IX) M. Tech Int. Students

Sr. No.	Subject Code	Course Name	University / Industry Partner Name	No of Hours	Credits
1	AMC0325	Kanban In Practice	Infosys Wingspan (Infosys Springboard)	24h	1.5

List of open Elective IV

Sr. No.	Subject Code	Name of Open Elective Subjects	Subject offered to Program	Types of Subject	Semester
1	AOE0961	Total Quality Management	All Programs	Open Elective	9
2	AOE0962	Food Nutrition for Healthy Living	All Programs except BT	Open Elective	9
3	AOE0966	Sustainable Technologies	ALL the Programs	Open Elective	9
4	AOE0967	Industry 4.0	All Programs except ME	Open Elective	9

Abbreviation Used:

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., PE: Practical End Semester Exam, CE: Core Elective,OE:Open Elective, DE: Departmental Elective, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR
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Master of Integrated Technology
Computer Science & Engineering

Evaluation Scheme
SEMESTER- X

Sr. No.	Subject Codes	Subject	Types of Subject	Periods			Evaluation Schemes			End Semester			Total	Credit
				L	T	P	CT	TA	Total	PS	TE	PE		
1	AMICSE1059	Dissertation-II	Mandatory	0	0	36				200		400	600	18
2		*Massive Open Online Courses (For B.Tech. Hons. Degree)	*MOOCs											
		TOTAL											**600**	**18**

* List of MOOCs Based Recommended Courses for Fifth year (Semester-X) M. Tech Int. Students

Sr. No.	Subject Code	Course Name	University / Industry Partner Name	No of Hours	Credits
1	AMC0326	Salesforce Visualforce Pages	Infosys Wingspan (Infosys Springboard)	22 h 45 m	1.5

Abbreviation Used:

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., PE: Practical End Semester Exam, CE: Core Elective,OE:Open Elective, DE: Departmental Elective, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

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A student will be eligible to get Under Graduate degree with Honours only, if he/she completes the additional MOOCs courses such as Coursera certifications, or any other online courses recommended by the Institute (Equivalent to 20 credits). During Complete B.Tech. Program Guidelines for credit calculations are as follows.

1. For 6 to 12 Hours =0.5 Credit
2. For 13 to18 =1 Credit
3. For 19 to 24 =1.5 Credit
4. For 25 to 30 =2 Credit
5. For 31 to 35 =2.5 Credit
6. For 36 to 41 =3 Credit
7. For 42 to 47 =3.5 Credit
8. For 48 and above =4 Credit

For registration to MOOCs Courses, the students shall follow Coursera registration details as per the assigned login and password by the Institute these courses may be cleared during the B. Tech degree program (as per the list provided). After successful completion of these MOOCs courses, the students shall provide their successful completion status/certificates to the Controller of Examination (COE) of the Institute through their coordinators/Mentors only.

The students shall be awarded Honours Degree as per following criterion.

i. If he / she secures 7.50 as above CGPA.

ii. Passed each subject of that degree program in the single attempt without any grace.

iii. Successful completion of MOOCs based 20 credits

M. Tech Int. (CSE) FIFTH YEAR	
Subject Code: AMICSE0901	**L T P** **3 0 0**
Subject Name: Research Process and Methodology	**Credits** **3**

Course objective: The course objective is to analyse the concept / fundamentals of research and apply research design methods to develop analysis and technical paper writing skills.	
Pre-requisites: None	

Course Contents / Syllabus		
Unit-1	**Introduction to Research** Definition, objective and motivation of research, types and approaches of research, Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical, Research methods versus Methodology, significance of research, criteria of good research. Research Process. Conceptualization and formulation of research problems.	**8 Hours**
Unit-2	**Research Formulation and Design** Research process and steps involved, Definition and necessity of research problem. Importance and objective of Literature review, locating relevant literature, Reliability of a source, writing a survey and identifying the research problem, Literature Survey, Research Design, Methods of research design. Defining the methodology: Deciding the units of analysis, Interpreting the findings.	**8 Hours**
Unit-3	**Data Collection** Classification of Data accepts of method validation, Methods of Data Collection, Collection of primary and secondary data, sampling, need of sampling, sampling theory and Techniques, steps in sampling design, different types of sample designs, ethical considerations in research. Data Interpretation: Descriptive statistics and inferential statistics	**8 Hours**
Unit-4	**Data Analysis** Processing Operations, Data analysis, Types of analysis, Statistical techniques and choosing an appropriate statistical technique, Hypothesis Testing, Data processing software (e.g. SPSS etc.), statistical inference, Chi-Square Test, Analysis of variance (ANOVA) and covariance, Data Visualization – Monitoring Research Experiments. Data processing software, Correlation and regression analysis – discriminate analysis – factor analysis – cluster analysis, measures of relationship.	**8 Hours**
Unit-5	**Technical Writing and Reporting of Research** Types of research report: Dissertation and Thesis, research paper, review article, short communication, conference presentation etc., Referencing and referencing styles, Research Journals, Indexing, citation of Journals and Impact factor, Types of Indexing. Significance of conferences and their ranking, plagiarism, IPR- intellectual property rights and patent law, commercialization, copy right, royalty, trade related aspects of intellectual property rights (TRIPS); scholarly publishing- IMRAD concept and design of research paper.	**8 Hours**

Course outcome: After completion of this course students will be able to:

CO1	Understand the concept/ fundamentals of different types of research	K1
CO2	Analyze relevant research design technique for research process	K3
CO3	Apply appropriate Data Collection technique	K4
CO4	Evaluate statistical analysis which includes various parametric test and non-parametric test	K4
CO5	Create research paper and publish ethically	K4

Textbooks:

1. C. R. Kothari, Gaurav Garg, "Research Methodology Methods and Techniques", New Age International publishers,5th Edition, 2023.

2. Ranjit Kumar, Research Methodology: A Step-by-Step Guide for Beginners, SAGE Publication, 4th Edition, 2023.

3. Deepak Chawla, Neena Sondhi, Research Methodology, Vikas Publication,2nd Edition,2018.

Reference Books:

1. Donald Cooper & Pamela Schindler, Business Research Methods, TMGH, 12th edition, 2018.

2. Creswell, John W. Research design: Qualitative, quantitative, and mixed methods approach sage publications,5th Edition, 2018

Links:

1	Research Paper "Review, analysis and classification of the literature on QFD—Types of research, Difficulties and benefits https://www.sciencedirect.com/science/article/abs/pii/S0925527308001138 Scholar.google.com (https://scholar.google.com/schhp?hl=en&as_sdt=0,5) Researchgate.net (https://www.researchgate.net/) Academia.edu (https://www.academia.edu/
2	Miletus.Edu.uahttps://miletus.mnau.edu.ua/wp-content/uploads/2019/05/WP2_DEV-2.4.2_2.5.1-Research-methodology-course_PU.pdf Research Paper "Real-time data collection in Linux: A case study" https://link.springer.com/article/10.3758/bf03195362
3	"A comparison of two data collecting methods: interviews and questionnaires". https://www.academia.edu/7607280/A_COMPARISON_OF_TWO_DATA_COLLECTING_METHODS_INTERVIEWS_AND_QUESTIONNAIRES "Guide to the Design of Questionnaires". https://nats-www.informatik.uni-hamburg.de/pub/User/InterculturalCommunication/top2.pdf
4	Software Used: Statistical Package of Social Sciences (SPSS) for statistical Analysis (https://www.ibm.com/products/spss-statistics), Konstanz Information Miner (KNIME) for Data Analytics https://www.knime.com/ Tableau for Visualization (https://www.tableau.com/).
5	Research Paper "A Guide to Writing the Dissertation Literature Review" https://scholarworks.umass.edu/pare/vol14/iss1/13/ Research Paper "Academic Writing Guide" https://www.vsm.sk/Curriculum/academicsupport/academicwritingguide.pdf

M. Tech Int. (CSE) FIFTH YEAR					
Course Code	**AOE0966**	**L**	**T**	**P**	**Credit**
Course Title	**Sustainable Technologies**	**3**	**0**	**0**	**3**

Course objective:

This course explores the main principles that guide modern science and technology towards sustainable solutions. It covers topics as resource management technologies, waste and wastewater treatment, renewable energy technologies, high performance buildings and transportation systems, application of informatics and feedback to sustainable systems, and more the real-life examples and taps into current practices of technology analysis.

Pre-requisites:

Course Contents / Syllabus		
UNIT-I	**Basics of sustainability**	**8 hours**

Principle of sustainable systems; sustainability definitions, growth and no growth dilemma, principles of sustainable design, principle of sustainable engineering, fundamental of system analysis, growth decay and tipping points.

Technology developments and lifecycle assessments; Technology as a part of anthropogenic environment. Technology readiness levels (TRL), Emerging, converging, disruptive technologies, Life Cycle Assessment

UNIT-II	**Metrics for Technology Evaluation**	**8 hours**

Metrics for Technology Evaluation; Purpose of metrics and how they are selected ,Environmental Metrics, Economic Metrics , Social Metrics, Sustainability Index, Metric Balance, Green Chemistry; Principles of Green Chemistry, Mitigating Environmental Risk, Frameworks for, assessment of alternatives, Case of Garment Cleaning Solvents, Green chemistry examples, Multifunctional Materials and Their Impact on Sustainability

UNIT-III	**Waste management purpose and strategies**	**8 hours**

Waste management purpose and strategies, recycling: open-loop versus closed-loop thinking, Recycling efficiency, Management of food waste and composting technologies, E-waste stream management, Solar PV Recycling, Reuse and redistribution programs, Circular Economy

UNIT-IV	**Applied Renewable Energy Technologies**	**8 hours**

Renewable Energy Basics, Building Integrated Solar Energy Technologies, Solar Thermal Electric Power Generation, Utility Scale Geothermal Energy Systems, Wind Energy Applications and Technologies, Bio-mass Fuelled Combined Heat and Power Systems, Environmental Impact of Renewable Energy.

UNIT-V	Base Load Energy Sustainability	8 hours

Base Load Energy Sustainability, Smart Grid and Demand Response Technologies, Examples of Demand Response Innovations, Can Renewables Meet Global Energy Demand?

Sustainable Transportation Technologies; Alternative Fuel Vehicle Technologies Zero Emission Vehicles, Sustainable Community and Mass Transit Technologies

Course outcome: After completion of course students will be able to

CO 1	Understand the principles of sustainable systems and demonstrate how the economic and technical performance of sustainable technologies can be measured and compared.	K_2
CO 2	Identify the technical and economic obstacles to the widespread use of sustainable technologies.	K_3
CO 3	Assess sustainable technologies to show the greatest long-term promise in terms of social, environmental, and economic metrics.	K_3
CO 4	Identify types of sustainable energy technologies that are closest to commercialization.	K_2

Text books :

1. Sustainable Technologies for the Building Construction Industry" by Alevtina Smirnova
2. Sustainable Technologies: Environmental Issues and Solutions" by T. A. Kuder and B. C. Pijanowski
3. Industrial Ecology and Sustainable Engineering" by T. E. Graedel and B. R. Allenby

Reference Books:

1. Sustainable Technology Development by Paul Weaver , Leo Jansen , Geert van Grootveld , Egbert van Spiegel , Philip Vergragt Routledge; 1st edition.
2. Sustainable Energy Technologies by Eduardo Rincon Mejia, Alejandro de las Heras, CRC press

Link: NPTEL/ YouTube/ Faculty Video Link:

Unit 1	https://onlinecourses.nptel.ac.in/noc21_me83
Unit 2	https://www.youtube.com/watch?v=YygGzfkhtJc
Unit 3	https://www.youtube.com/watch?v=cjIacnNRLHE&list=PLwdnzlV3ogoXAap_BHeApkcF7M8nt13hv
Unit 4	https://www.youtube.com/watch?v=mh51mAUexK4&list=PLwdnzlV3ogoXUifhvYB65lLJCZ74o_fAk
Unit 5	https://www.youtube.com/watch?v=t1sNQHqt75M

M. Tech Int. (CSE) FIFTH YEAR				

Course Code	AOE0967	L	T	P	Credit
Course Title	INDUSTRY 4.0	3	0	0	3

Course objective:

The student develop concept related to Automation, familiarize students with the concepts and techniques of robot manipulator, its drive systems and end effectors, introduce the students with Cloud Computing, Bigdata, Cyber Security, understand various types of systems and models in simulation and familiarize students with the concepts rapid prototyping.

Pre-requisites:

Course Contents / Syllabus

UNIT-I	INTRODUCTION TO AUTOMATION	8 hours

Pneumatic system: production and distribution of compressed air, components of pneumatic system, Different types of valves, graphical symbols, graphical representation and design of pneumatic system, electro- pneumatics. Hydraulic system: Different types of valves such as flow, direction control valve, hydraulic pumps, Actuators and auxiliary elements in hydraulics, their applications and use of their graphical symbols, Synthesis and design of circuits (up to 2 cylinders), hydraulic system design, electro-hydraulics.

UNIT-II	FUNDAMENTALS OF ROBOT	8 hours

Robotics – Introduction – Basic structure(manipulator) – classification of robot and Robotic systems – laws of robotics – work space, precision movement. Drive systems Hydraulic, pneumatic and electric systems– servo motors – stepper motors – servo-control. Robot Kinematics: forward and inverse kinematics – trajectory planning: interpolation and approximation. End Effectors: Types of robot end effectors – grippers: mechanical, magnetic, vacuum grippers – Tools as end effectors – Robot applications.

UNIT-III	INTRODUCTION OF CLOUD, BIG DATA AND CYBER SECURITY	8 hours

Introduction to Cloud Computing: Introduction to Cloud Computing, Definition of Cloud, Characteristics of Cloud Computing, Cloud Computing Layered Architecture and Deployment Models, Cloud Computing Service Models

Introduction to Big Data: Types of digital data, history of Big Data innovation, introduction to Big Data platform, drivers for Big Data, Big Data architecture and characteristics, 5 Vs of Big Data, Big Data technology components, Introduction to Security, Security Threats and Vulnerabilities Need of security, CIA Triad, Introduction to security attacks, services and mechanism. Overview of Security threats and Vulnerability: Types of attacks on Confidentiality, Integrity and Availability.

Vulnerability and Threats, Malware: Virus, Worms, Trojan horse. Security Counter Measures:Intrusion Detection and its categories, Antivirus Software.

UNIT-IV	SIMULATION	8 hours

Introduction: Simulation: a tool, advantages and disadvantages of simulation, areas of application, systems and system environment, components of a system, discrete and continuous systems, discrete event system simulation.

General Principles: Concepts in discrete event simulation, time advance algorithm, manual simulation using event scheduling, basis properties and operations.

Models In Simulation: Terminology and concepts, statistical models: queuing systems; inventory systems; reliability and maintainability, limited data, discrete distributions: Bernoulli distribution; Bionomial distribution; Geometric distribution, continuous distribution: Uniform distribution; Exponential distribution; Gamma distribution; Normal distribution; Weibull distribution; Triangular Distribution; Lognormal distribution, poisson process.

UNIT-V	Additive Manufacturing	8 hours

Elementary Introduction & Understanding of 3D Printing and necessary skill set to pursue in Technology. Design Requirements and Analysis and Career Aspects. A Model Printing on FFF Material i.e. PLA or ABS. Deep Understanding of Composite FDM 3D Printing Technology. Introduction to LDM Technology, Mechanism for Clay Extrusion, Operations & Precautions. Slurry Preparation & Material Prospects & Explanation of slicing software (Preform) for SLA technology. Detailed Explanation of Reverse Engineering, Methods of Reverse Engineering, Advantages and Applications.

Course outcome: After completion of course students will be able to

CO 1	Understand the concept of self-driven vehicles.	K_3
CO 2	Explain the basic concepts of hardware and software architectures.	K_3
CO 3	Know on the safety assurance for Autonomous vehicles.	K_3
CO 4	Understand and explain latest trends and technology in vehicle dynamic modeling	K_4
CO 5	Understand the concept related to vehicle longitudinal control.	K_3

Text books :

1. The Handbook of Research on Integrating Industry 4.0 in Business and Manufacturing

Reference Books:

1) M. Gordan, "Industry 4.0 - Perspectives and Applications".
2) Routledge," Additive Manufacturing in Industry 4.0".

Link: NPTEL/ YouTube/ Faculty Video Link:

Unit 1	https://onlinecourses.nptel.ac.in/noc21_me83
Unit 2	https://www.youtube.com/watch?v=vSaGIzbw_kQ
Unit 3	https://www.youtube.com/watch?v=PEl3RWFKOFk
Unit 4	https://www.youtube.com/watch?v=zmbS_TmNDP4&list=PLSGws_74K01-4rcWuB5BEATHSsOrBd1ye
Unit 5	https://www.youtube.com/watch?v=t7yv4gSnNkE&list=PLwdnzlV3ogoWI8QEu4hsT-n_r8UbWbquy

M. Tech Int. (CSE) FIFTH YEAR

Course Code	AOE0961	L	T	P	Credit
Course Title	Total Quality Management	3	0	0	3

Course Objective: The objective of this course is to:	Duration: 40 Hours

1	Get familiarized with the basic concept and framework of Total Quality management.
2	Understand the Implication of Quality on Business.
3	Understand the tools and techniques used in TQM.
4	Outline the evolution of the TQM philosophy.
5	Understand the Continuous Process Improvement in TQM.

Pre-requisites: NIL

Course Contents / Syllabus

UNIT-I	**Introduction to Quality Management**	8 Hours

Introduction – Need for quality –Definitions of quality –— Basic concepts of TQM – TQM Framework –Barriers to TQM – Customer focus – Customer orientation, Customer satisfaction, Customer complaints, Customer retention.

UNIT-II	**TQM Thinkers and Thoughts**	8 Hours

Quality Councils – Employee involvement –Team and Teamwork- Recognition and Reward- PDCA cycle, 5S-Kaizen- TQM Gurus

UNIT-III	**Tools and Techniques for Quality Management**	8 Hours

The seven traditional tools of quality – New management tools – Six sigma: Concepts, Methodology, DMAIC, applications to manufacturing, service sector including IT –Bench marking process

UNIT-IV	**Statistical process and Quality control**	8 Hours

Introduction to Statistical process control -Quality function deployment (QFD) – Taguchi quality loss function – Total Productive Maintenance (TPM)

UNIT-V	**Quality Systems and Certification**	8 Hours

Quality Systems- ISO 9000, ISO 9000:2000, ISO 14000, other quality systems. Quality Auditing

Course outcome: At the end of course, the student will be able to:

CO 1	Understand the concepts of Quality, TQM, and benefits of TQM.	Understand (K2)
CO 2	Understand the thoughts of various gurus of quality management.	Understand (K2)
CO 3	Understand the tools and techniques utilized for Quality improvement	Understand (K2)
CO 4	Apply quality control concepts to solve industrial problems.	Apply (K3)
CO 5	Understand various Quality Systems and Auditing on implementation of TQM	Understand (K2)

Text books

1. Besterfield, D.H., Besterfield, C., Besterfield, G.H., Besterfield, M., Hemant, U. and Rashmi, U., Total QualityManagement, ed.v, 2018, Pearson.
2. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, South-Western (Thomson Learning), 2011

Reference Books

1. Evans J. R, and Lidsay W. M. – 'The Management and Control of Quality' – Southwestern (Thomson Learning) – 2002
2. Feigenbaum A. V. – 'Total Quality Management – Vol I &II ' – McGraw Hill ,1991
3. Ramasamy, S., Total Quality Management, , McGraw Hill Education,2017
4. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd.,2006.

M. Tech Int. (CSE) FIFTH YEAR			
Course code	**AOE0962**	L T P	credits
Course title	**FOOD NUTRITION for HEALTHY LIVING**	3 1 0	

Course objective:

1	To understand the functions and role of nutrients, their requirements and the effect of deficiency and excess. To create awareness with respect to deriving maximum benefit from available food resources and understand the functions, role and scope of macronutrients. Students are also able to clear the concept of an adequate diet and the importance of nutrients in recommended dietary allowances	K1,K2, K3

Pre-requisites: Students should have basic knowledge of Food & Nutrition.

Course Contents / Syllabus

UNIT-I	**Basic concepts in food and nutrition** Definitions – Food, nutrients, principle components of foods, functions of foods, classification of foods, properties of foods, Dimension of health and function of food- Physical, social and mental health. Food guide – Basic food groups, my plate.	**8h**
UNIT-II	**Food Groups** Selection, nutritional contribution and changes during cooking of the following food groups: Cereals, Pulses, Fruits and vegetables, Milk & milk products, Eggs, Meat, poultry and fish, Fats and Oils.	**8h**
UNIT-III	**Macro Nutrients** Protein, Carbohydrate, Fat-Classification, functions, Digestion & absorption (in brief), RDA, sources and deficiencies	**8h**
UNIT-IV	**Micronutrients** Macrominerals Calcium, Phosphorus and magnesium: Functions, absorption, RDA, sources and deficiencies. Micro Minerals: Iron, Zinc, Fluorine and Iodine: function, absorption, RDA, sources and deficiency. Vitamins Fat-soluble Vitamins (A, D, E & K) Function, RDA, sources and deficiency and excess. Water soluble vitamins: Thiamin, Riboflavin, Niacin, B12, Folic acid, Biotin and Vitamin C: functions, RDA, food sources, deficiencies and excess.	**8h**

UNIT-V	**Methods of Cooking and Preventing Nutrient Losses** Dry, moist, frying and microwave cooking, Advantages, disadvantages and the effect of various methods of cooking on nutrients, Minimizing nutrient loss.	**8h**

Course outcome:

CO 1	The student will be able to apply basic nutrition knowledge in making foods choices and obtaining an adequate diet.	K1,K2
CO 2	The student will gain knowledge about different food groups.	K1,K2
CO 3	The student will understand the functions and role of macronutrients, their requirements and the effect of deficiency and excess	K1,K2
CO 4	The student will be able to analyze the role of various minerals and vitamins important in maintaining health.	K1,K2,K3
CO 5	The student gains competence in connecting the role of various nutrients in maintaining health and learn to prevent nutritional losses	K1,K2

Text books (Atleast 3)

Gaman, P.M. and Sherrington, K.B. (1996), The science of food, oxford, Butterworth – Heinemann.

Potter, Norman N. and Hotchkiss (1996) Food Science, 5th ed. C.B.S. Publication.

Manay, N. Shakuntala and Shadaksharaswami, N. (1987), Foods: Facts and Principles, Wiley Eastern Ltd.

Reference Books (Atleast 3)

Mudambi, SR and Rajagopal, MV. Fundamentals of Foods, Nutrition and Diet Therapy; Fifth Ed; 2012; New Age International Publishers

Srilakshmi B. Nutrition Science; 2012; New Age International (P) Ltd.

Bamji MS, Rao NP, and Reddy V. Text Book of Human Nutrition; 2009; Oxford & IBH Publishing Co. Pvt Ltd.

NPTEL/ Youtube/ Faculty Video Link:

Unit 1	https://www.youtube.com/watch?v=Eqz2Eav0FK0&t=1s
Unit 2	
Unit 3	
Unit 4	
Unit 5	