



St. Mary's College (Autonomous)
Reaccredited with 'A+' Grade by NAAC (Cycle IV)
Thoothukudi



**CRITERION 6 - GOVERNANCE, LEADERSHIP AND
MANAGEMENT**
6.1 Institutional Vision and Leadership. Year: 2018-2023



6.1 Institutional Vision and Leadership

6.1.1 The institutional governance and leadership are in accordance with the vision and mission of the Institution and it is visible in various institutional practices such as NEP implementation, sustained institutional growth, decentralization, participation in the institutional governance and in their short term and long-term Institutional Perspective Plan.

➤ Skill Development

The curriculum was framed to develop the necessary and competent skills in the respective domains of study. The institution follows the credit structure in alignment with National Skills Qualifications Framework for the Value Added and Career Advancement courses. The Skill based courses like Epigraphy, Archaeology, Horticulture, English for Proficiency, Study of the English Language, Media Writing, Documentation using LaTeX, Fishery Products, Clinical Laboratory Technology, Computer for Digital era and soft skills, Business Mathematics, Business Statistics, Agricultural Chemistry and water management, Pharmaceutical Chemistry, Practical in Medical laboratory technology, Biostatistics, Instrumentation, Physics for Competitive Examinations, Microprocessors, Web Technology, Entrepreneurial Development, Women and Economic Development, Principles of Marketing, Web Commerce, Social skills development, Inner child healing etc., are incorporated in the syllabus to train the students to develop their skills. Institution provided value-based education to motivate positivity among the students to develop humane conduct, universal human values, righteous conduct, and life skills etc. The students are trained through IIC on Entrepreneurial Skill and Startups. These skill-based courses and programmes inculcate appropriate skills among the students to enrich their academic career. They also stimulate the interest and the passion for their respective domain. These skills helped them reach and reveal new perspectives in their subjects. They also support them in the research and project work and make them feel at ease. These courses enhance the ability of the students to excel in their respective domains of study and in the academia. The skill-based courses nourish the students with rich experience of academic pursuits and employment opportunities. Skills are imparted through hosting seminars, workshops, hands on training and training programmes, etc., give them courage to emerge as successful entrepreneurs. These skills form the pre-requisites of the students to get better jobs and excel in all walks of their life.

Some of the courses has been attached for sample.

Lewis Rose
Principal
St. Mary's College (Autonomous)
Thoothukudi-628 001.

SEMESTER –V			
Common Skill Based		Core :Computer for Digital Era and Soft Skills	
CourseCode:18UCSB51	Hrs/Week:2	Hrs/Semester:30	Credits:2

Objectives:

- To provide basic knowledge of digital computers.
- To create awareness of e-learning and security issues.
- To develop self-confidence by mastering interpersonal skills, team management skills and leadership skills.

Course Outcome:

CO.No.	Upon completion of this course, students will be able to	PSO's addressed	CL
CO-1	understand the different types of computer, software and its impact.	2	Re
CO-2	enhance and develop the IOT applications.	2	Re
CO-3	be aware of social medias and social networking.	2	Re
CO-4	impart soft skills for the professional progress.	2	Re
CO-5	appreciate self and team building for effective career.	4	An

SEMESTER –V			
Common Skill Based Core Computer for Digital Era and Soft Skills			
CourseCode:18UCSB51	Hrs/ Week:2	Hrs/Semester:30	Credits:2

Unit I: Fundamentals of Computers:

Introduction to computers- Components of computers-Working principle - Types of computers-Tablet-Notebook-Smart phone-PDA-Impact of computers on society-Types of software.

Unit II: Recent Trends in Computer Science and E-Commerce :

IoT - applications-Mobile applications - E-Learning - E-Commerce - digital payments.

Unit III: Social Media:

Facebook-Twitter-Linked In-Instagram-Advantages of Social Networking-Issues/Risks of SocialNetworking-Protecting ourselves from social Networking problems - Cybercrimes - Hacking -Phishing-Cyber Security

Unit IV: Introduction to Soft Skills:

Learning objectives – What are soft skills?-Categories of Soft Skills-Integral Parts of Soft Skills.

Unit V: Understanding Self and Team Building:

Introduction- Transactional Analysis (TA) -Structural analysis of Ego states- The functional model of Ego states - Egogram-Strokes – Life Position - Egogram and Life Positions Questionnaire-Team and Team Building- Features of effective creative teams.

Books for Reference:

1. Peter Norton, Introduction to Computers 6th Edition
2. Charles P Pfleeger, Shari Lawrence Pfleeger, Security in Computing, I Edition, Pearson Education, 2003.
3. E.Balagurusamy ,Fundamentals of Computers ,McGraw Hill
4. Henry Chan, Raymond Lee ,Tharam Dillon, Elizabeth Chang ,E-Commerce fundamentals and applications ,Wiley Student edition
5. Benita Bhatia Dua, Deepa Jeyaraman ,Profit with Social Media ,CNBC
6. Dr.K.Alex, Soft Skills ,S.Chand& Co.

E-Learning Resources:

7. <http://www.digitalindia.gov.in/content/social-media-analytics>
8. https://www.researchgate.net/publication/307878962_Introduction_to_E-Governance
9. <http://www.ijqr.net/journal/v10>
10. https://www.researchgate.net/publication/258339295_FUNDAMENTALS_OF_COMPUTER_STUDIES

SEMESTER-III			
Core-IX- Industrial and Pharmaceutical Microbiology			
Course Code:21PMIC31	Hrs/Week:5	Hrs/Sem:75	Credits:4

Objectives:

1. To impart the professional ability and skill by increasing the global knowledge,
Understanding and application in Industrial and Pharmaceutical Microbiology.
2. To empower the learners to address current and future challenges faced by the
humanity using Industrial and Pharmaceutical Microbiology.

Course outcome:

CO No	Upon completion of this course, students will be able to	PSO addressed	CL
CO -1	revise the idea about the usage of microorganisms in the field of industrial microbiology	3	An
CO -2	analyse the knowledge of various industrial and pharmaceutical products and its impacts on the society.	4	Un
CO -3	knowledgeable in industrial fermentation	3	Un
CO -4	have an insight on industrial microbiological techniques	2	Re
CO -5	understands in the field of pharmaceutical microbiology	1	Un
CO-6	Knowledge of basics and applied microbiological aspects of industries.	1	Un
CO-7	acquire the knowledge about production of various industrial and pharmaceutical products	4,5	Un
CO-8	know the detail knowledge about antibiotics and production of hormones	2,3,4	Un, Ap

SEMESTER-III			
Core-IX- Industrial and Pharmaceutical Microbiology			
Course Code: 21PMIC31	Hrs/Week:5	Hrs/Sem:75	Credits:4

Unit-I- Basics of Industrial Microbiology

Historical account of microbes in industrial Microbiology; Screening, isolation, preservation and improvement of industrially important microorganisms; Strain improvement; Fermenter - principles and design - types of Fermenter, Instrumentation and control- aeration and agitation. Raw materials and media formulation for fermentation processes; Industrial Sterilization; Microbial growth kinetics in Batch, Continuous and Fed batch fermentation. Downstream processing.

Unit-II- Microbial products

Microbial production of industrially important products: Solvents (Alcohol and Acetone); Aminoacids (Glutamic acid and Lysine); Organic acids (Citric acid and Acetic acid); Enzymes (Microbial rennet, Amylase, Protease); Biopolymers (Xanthan gum and PHB); Biopreservatives (Nisin); Antibiotics - (Penicillin, Cephalosporin and Streptomycin); Vitamins (Riboflavin and Cyanocobalamin); Production of Hormones (Auxins and Gibberellins). Production of protein in bacteria and yeast (Chymosin production) – Synthetic and recombinant vaccines.

Unit-III- Bio pesticides and Bio fertilizers

Bio pesticides – history of development, production of bio pesticides from bacteria (BT), fungi (*Trichoderma viride*), virus (NPV) and their applications against different types of pathogens. Bio fertilizer – mass production of bio fertilizer (*Rhizobium*, *Azotobacter*), quality control and field applications.

Unit-IV- Basics of Pharmaceutical Microbiology

Properties of antimicrobial agents, types of chemotherapeutic agents – Synthetic, Semi synthetic, Natural therapeutic agents. Types of antibiotics and their mode of action: antibacterial, antifungal, antiviral, antiprotozoal. Pharmaceutical Formulation (Tablets, Capsule, Ointments, Syrup, Gel), stages of pharmaceutical product development.

Unit-V- Spoilage and preservation of Pharmaceutical products

Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage. Objectives of preservation, the ideal preservative, preservative system. Antimicrobial preservatives and their properties. Preservative stability and efficacy.

Text books:

- 1) Dubey, R.C. *A Textbook of Biotechnology*. New Delhi: S Chand and Company Limited. 4th Rev. Edition 2006.
- 2) Gupta, P.K. *Elements of Biotechnology*. Meerut: Rastogi Publications, 2005.
- 3) Jogdand, S. N. *Gene Biotechnology*. New Delhi: Himalaya publishing house. 4th Edition, 2016.
- 4) Reed, G Prescott and Dunn. *Industrial Microbiology*. US: Macmillan Publication. 1982.

Books for Reference:

- 1) Wulf Crueger. *A Text Book of Industrial Microbiology*. New Delhi: Panima Publishing Corporation. 1st edition 2000
- 2) Patel A.H. *Industrial Microbiology*. India: Macmillan Limited. 2017.
- 3) Casida L.E. *Industrial Microbiology*. New York: Eastern Limited. 1986.

SEMESTER II			
Core Practical III- Laboratory in Immunology and Medical Microbiology			
Code : 19PMICR3	Hrs/Week : 6	Hrs/Sem : 90	Credits : 3

Vision:

To impart advanced practical knowledge in Immunology and Medical Microbiology.

Mission :

To perform highly specific advanced methodologies for the study of human immune system towards the pathogens.

Course Outcome:

CO No	Upon completion of this course, students will be able to	PSO addressed	CL
CO- 1	demonstrate various immuno diffusion test.	5	Re
CO - 2	develop their ability to perform qualitative and quantitative assay of widal test.	6	Re
CO -3	improve their ability to perform rpr test for syphilis.	6	Un
CO- 4	analyze how to perform latex agglutination and blood grouping techniques.	4,6	An
CO - 5	examine various types of bacterial pathogens like <i>staphylococcus aureus</i> , <i>escherichia coli</i> <i>klebsiella pneumonia</i> .	4	Un
CO- 6	demonstrate antibiotic susceptibility test.	5	Ap
CO -7	test urine samples.	4	Cr
CO - 8	examine stool sample .	4	An

SEMESTER II			
Core Practical III- Laboratory in Immunology and Medical Microbiology			
Code : 19PMICR3	Hrs/Week : 6	Hrs/Sem : 90	Credits : 3

- Precipitation reaction based on immunodiffusion test
 - ODD, b. Single Radial Immunodiffusion
- WIDAL test – qualitative & quantitative assay.
- RPR test for syphilis
- Agglutination reaction with reference to blood grouping & RH typing.
- Examination of Blood cells a) Total count b) Differential count
- Latex agglutination test (ASO)
- Blood smear identification of leucocytes by Giemsa stain
- Biochemical identification of bacterial pathogens.
Following tests to be performed – TSI, Indole, MR, VP, Citrate, Urease, Catalase test for
 - Staphylococcus aureus*, *Streptococcus* sp.,
 - Escherichia coli*, *Proteus vulgaris*
- Isolation of normal flora of the skin and throat
- Urine culture and its microbiological analysis (*E.coli*)
- Isolation of enteric pathogen from stool – (*Vibrio*) .
- Antibiotic sensitivity test – Kirby Bauer method.
- Determination of minimal inhibitory concentration.
- Isolation & identification of pathogens from wound and pus.

Books for Reference:

- Practical microbiology R.C. Dubey & Maheswari, S. Chand&Co.Ltd., New Delhi, 2002.
- Kanika L. Mukherjee, 2010. *Medical Laboratory Technology – Procedure manual for routine diagnostic tests* – McGraw – Hill Publishing Co., Ltd., New Delhi. Vol.I-III.
- R.C. Dubey & Maheswari, 2007. *Practical Microbiology*. S.Chand & Co.Ltd., New Delhi
- Kannan. N. 1996. *Laboratory Manual in General Microbiology*. Palani Paramount Publication, Palani.
- Cappuccino & Sherman, 2011. *Microbiology A laboratory manual*,. IX Edition. Pearson Publication

Semester III			
Elective III		B. Chemical Instrumentation	
Course Code:21PCHE32	Hrs/Week:4	Hrs/Sem:60	Credits:4

Objectives:

- To impart the students with basic principles and concepts in Instrumental techniques.
- To understand the nature and Choice of methods of measurements.
- To learn the limits of detection and amplification.
- To demonstrate the concepts of Operational amplifiers.

Course outcome:

CO No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO1	demonstrate automatic operation and computer control	1,5	Ap
CO2	precise control of current and voltage.	6,8	Ap
CO3	differentiate modulation and demodulation	5	An
CO4	point out limitation on amplifier performance	1	Cr
CO5	predict binary logic concepts, logic gates and multi-vibrators	7	Un
CO6	distinguish visual, filter and spectrophotometers.	6	Ap
CO7	control noise level in a system.	1,7	Cr
CO8	interpret the optimal value of adjustable parameters	7,8	Ev

Semester–III			
Elective III	B. Chemical Instrumentation		
Course Code: 21PCHE32	Hrs/Week: 4	Hrs/Sem: 60	Credits: 4

Unit I Measurement and Instrumentation

Introduction - The nature of a measurement - Choice of a method of measurement - Control of variables - Basic design patterns - General properties of modules - Propagation of uncertainty - Single channel design - Limit of detection and amplification - Automatic operation and computer control.

Unit II Operational amplifiers

The operational amplifiers – Limitations on amplifier performance – Mathematical operations - Differentiation - Integration - Measurement of current and voltage - Precise control of current and voltage.

Unit III Signal-to-Noise Optimisation

Sensitivity and detection limits – Noise – Minimising Noise in a system – Signal averaging - Modulation: Chopping - Demodulation: Phase sensitive detection - Other methods of Optimising Signal-to-Noise ratio.

Unit IV Digital Electronics

Binary logic concepts - Logic gates - Multivibrators - Counters - Wave shaping – Analog to digital convertors – Instruments and Digital computers.

Unit V Instrumentation for Optical Absorption Spectrometry

Visual Photometers - Filter Photometers - Spectrophotometer - Double beam Spectrophotometer - Recording Spectrophotometers - Optimal value of adjustable parameters – Multiple internal reflection assembly – Rapid scanning spectrometer – Non-dispersive Photometers – Photometric titration equipment – Fourier transform Spectrometers.

Textbooks

1. Strobel H.A. *Chemical instrumentation-A systematic approach to Instrumentation Analysis*. Phillipines: Addison-Wesley Publishing Company Inc. 2nd Edition 1973.

Books for Reference

1. Jeffery G.H, Bassett J, Mendham J, Denney R.C. *Vogel's Text book of Qualitative chemical analysis*. Essex: Longman Scientific and technical. 5th Edition 1989.
2. Skoog D.A, Holler F.J, Crouch S.R. *Principles of Instrumental analysis*. Belmont CA: Thompson Brooks/Cole. 6th Edition 2007.

SEMESTER IV	
Self Study (optional)	Web Technology
Course Code: 21UCSSS2	Credits :2

Objectives:

- Understand the principles of creating an effective Web page.
- Learn the language of the web:HTML and CSS
- Develop basic programming skills using javaScript.
- Be able to embed social media content into webpages

Course Outcomes:

CO No.	Upon completion of this course, students will be able to	PSO Mapped	CL
CO-1	understand Internet standard and Internet protocols	1	Un
CO-2	demonstrate JavaScript	6	Ap
CO-3	develop dynamic web pages using JavaScript (client side programming).	5	Ap
CO-4	design interactive web pages using DHTML	5	Ap
CO-5	discuss how XML DTDs differ from XML schemas	1	An
CO-6	design a simple website	6	Ap

SEMESTER IV	
Self Study (optional)	Web Technology
Course Code: 21UCSSS2	Credits :2

Unit I:

Introduction What is Internet? History of Internet, Internet Services and Accessibility, Uses of Internet, Protocols, Web Concepts, Internet Standards

Unit II:

Internet protocols Introduction, Internet Protocols, Host Names, Internet Applications and Application Protocols

Unit III:

Javascript Introduction, Language Elements, Objects of Javascript, Other Objects, Arrays

Unit IV:

Dynamic HTML(DHTML) Introduction, Cascading Style Sheets (CSS), DHTML Document Object Model and Collections, Event Handling, Filters and Transactions, Data Binding

Unit V:

Extensible Mark-Up Language (XML) Introduction, HTML vs XML, Syntax of the XML Document, XML Attributes, XML Validation, XML DTD, The Building Blocks of XML Documents, DTD Elements, DTD Attributes, DTD Entities, DTD Validation, XSL, XSL Transformation, XML Namespaces, XML Schema

Text Book:

1. N.P.Gopalan, J.Akilandeeswari, *Web Technology – A Developer's Perspective*, PHI,2007

Books for Reference:

1. Achyut S Godbole, AtulKahate, *Web Technologies - TCP / IP To Internet Application Architectures*, Tata McGraw - Hill Education,2008.
2. Vipin Kumar, *Web Technologies*, A.B. Publication publisher, 2008
3. Jeffry C. Jakson, *Web Technologies by Computer Science Perspective*,pearson publication, 2005

Semester IV			
SBE		Inner child Healing	
Code:17UPSS41	Hrs/Week:2	Hrs/Sem: 30	Credits:2

Objectives

- To understand the various issues in the students inner child journey
- To overcome the issues related to the inner child

Unit_I

An introduction to inner child journey.

Unit-II

The impact of early childhood.

Unit -III

Inner child work

Unit -IV

Dumping the negative garbage.

Unit-V

Positive belief system.

Reference:

Healing the Inner Child, Compiled by Sundar Wilson OFM Cap.,
Anugraha Publication, Dindigul

Semester- III			
Core Skill Based- Entrepreneurial Development			
Code: 18UECS31	Hours / week :4	Hrs / Semester: 60	Credits :4

Unit I Introduction**10 Hours**

Entrepreneurship – Meaning and definition – Importance – Types and functions of an entrepreneur – Qualities of a successful entrepreneur – Distinction between an Entrepreneur and a Manager-

Unit II Entrepreneurs and Economic Development**10 Hours**

Role of Entrepreneurs in Economic Development – Factors affecting entrepreneurial growth – (Social, Economic, Cultural and Psychological factors)

Unit III Project Analysis**10 Hours**

Business Ventures- Steps for starting small Industry – significance - problems of small scale industry - industrial policy on small scale industries - incentives – subsidies-Proposal Writing

Unit IV Sources of Finance**15 Hours**

Financial Planning- Needs- Sources-Internal sources-External Sources- Role of DIC, TIIC, SIDBI, SIDICO, SIPCOT, and Industrial Estate – Commercial Banks- Micro Finance.

Unit IV Entrepreneurship Development Programme**15 Hours**

Entrepreneurship Development Programme (EDP) – need – objectives – phase– Institutions conducting EDP in India – Institutional support to entrepreneurship Development (NSIC, SIDO, SSIB, SSICS, TIIC, TCO).– Institutions assisting entrepreneurship development in Tamil Nadu

Text Book

VasantDeasi. *Dynamics of Entrepreneurship Development*. Himalaya Publishing, 2013

Books for Reference:

1. Khanka S. S, *Entrepreneurial Development*, S.Chand and Company, 1993
2. Jose Paul, *Entrepreneurship Development*. Himalaya Publishing House, 2001
3. Gupta, C.G.Srinivasa. *Entrepreneurship and Small Business Management*, Sultan Chand and Sons, 1991.

